PUBLIC INQUIRIES ACT

(BRITISH COLUMBIA)

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REPORT OF THE COMMISSIONER

Honourable Gordon McG. Sloan, Chief Justice of British Columbia

relating to

The Forest Resources of British Columbia

1956

VOLUME 2

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FOREST FINANCE

The forest industries contribute directly to Provincial revenues by way of taxes, rentals, royalties, stumpage, and fees. Other contributions are manifold and swell the Provincial coffers by payment of sales taxes and the Provincial share of Federal corporation and personal income taxes. It is estimated that the forest industry is responsible for the payment of about one-third of the sales tax or approximately $38,000,000, and an equal percentage of the $50,000,000 received under the terms of the Federal tax-rental agreement. It would thus appear that from these sources alone approximately $55,000,000 annually of direct taxation can be attributed directly or indirectly to the forest industries.

Direct forest revenues from royalty, stumpage, rentals, land taxes, and such like amount to about $28,000,000 a year. The logging tax brings in about $1,800,000. In the aggregate and in round figures it can be said that the forest industry contributes to the Provincial Treasury by way of direct taxation and by specific revenue items, directly and indirectly, about $85,000,000 a year. When it is remembered that more than 60,000 persons are employed in this industry who are paid over $200,000,000 in wages and salaries annually, it is impossible to calculate with any precision the indirect effect that this wealth has upon the Provincial economy and revenue when measured in terms of the velocity in which money "turns over." Certainly the withdrawal of this amount, or any part of it, from the economic stream would have adverse effects directly apportionate to the extent of its diminution.

Taxes as they affect the forest industries fall into several categories and may be grouped as follows:—

I. Provincial property taxes.
   (*a*) Timber land.
   (*b*) Wild land.
   (*c*) Forest land.
   (*d*) Tree-farm land.
   (*e*) Esquimalt and Nanaimo Railway Belt Land Tax Act.
   (*f*) Forest-protection tax.

II. Tax levies on behalf of local government.
   (*a*) School taxes.
      (1) On timber land.
      (2) On wild land.
      (3) On tree-farm land.
   (*b*) Improvement District taxes (hospital construction).

III. Direct income tax.
   (*a*) Logging Tax Act.

I propose to deal with each of these methods of taxation.

TIMBER LAND

This tax class is defined by the "Taxation Act" as follows:—

"'Timber land' means any land which is held by any owner in sufficient areas for the purposes of forestry, and which is so held for the specific purpose of cutting and removing timber therefrom, or as an investment for the accruing value of the timber thereon, and for no other purpose, and which land contains milling-timber to the average extent, as to each one hundred and sixty acres thereof, of eight thousand feet to the acre west of the Cascade Mountains and of five thousand feet to the acre east of the Cascade Mountains, and which has been classified as timber land for taxation purposes under this Act by the Assessor after he has received from the owner or occupier all certificates required by or under this Act."

This definition was incorporated in the "Taxation Act" in 1905 (chapter 50, section 4), and has remained substantially unaltered up to the present time. Tax rates on timber land have been applied as follows:—

Years	Rate (Per Cent)
1906 to 1916, inclusive	2
1917 to 1924, inclusive (B.C.S. 1917, chapter 62)	3
1925 to 1955, inclusive (B.C.S. 1925, chapter 54)	1½

ASSESSMENT

This 50-year-old tax class originated at a time when timber was generally regarded as being a surplus commodity, and when sustained-yield forest practices were considered academic. Lands which meet the requirements of this tax class are valued in accordance with section 30 of the "Taxation Act," or actual value. The Taxation Branch considers that as the owners of such lands are free to utilize them at their most profitable use, with no restriction as to cut or costs for sustained-yield operations, actual value tends to approximate average current stumpage prices for the timber thereon plus a value for the actual growing-site, with, however, some adjustment for remoteness from markets and such like conditions of adverse effect.

As assessed values on timber land are used not only for purposes of levies under the "Taxation Act," but also for levies under the "Public Schools Act," it is important that assessed values be comparable with other lands and improvement values to ensure an equitable distribution of the local school tax burden. Accordingly, 60 per cent of actual value is used annually for assessed values on timber land.

An annual return is required on timber land under section 33 of the "Taxation Act." This return indicates logging conditions, logging completed during the last twelve months, and the remaining timber inventory as of September 30th annually.

Excellent co-operation has been received by the Taxation Branch from owners in completing this return, and in furnishing up-to-date cruises on their lands. The returns are checked by the use of aerial photography, stumpage and royalty returns of the Forest Branch, and by spot sample cruises as required.

With the physical inventory as a guide, assessed values are determined as follows:—

1. Timber-land parcels that have been sold by the Esquimalt and Nanaimo Railway Belt and lands in the immediate vicinity are valued on the basis of 60 per cent of current-year sale prices of lands with timber thereon from that Belt.

Assessed values per acre substantially reflect actual average Esquimalt and Nanaimo Railway sale prices per thousand in each year. Timber-land assessed values per acre since 1949 approximate 60 per cent of actual average sale prices in the preceding year for sales from the Esquimalt and Nanaimo Railway Belt.

As I have said, as a general rule, timber land is assessed each year at 60 per cent of actual value. However, because of the "Esquimalt and Nanaimo Railway Belt Land Tax Act," and its one-time tax of 25 per cent, the assessed values of timber lands sold by the Company from that Belt are at full sale price in the initial year of levy. The year following alienation the assessment on timber land from the Belt is reduced to 60 per cent of actual value.

2. Other timber-land parcels in the Vancouver Forest District are valued on the basis of 60 per cent of average prices of Forest Branch stumpage sales for the twelve months ending on August 31st, preceding the date of assessment (exclusive of royalty where applicable). A high degree of correlation has been noted of late between the average Forest Branch stumpage sale prices in the Vancouver Forest District and the Esquimalt and Nanaimo Railway sale prices.

A nominal value has been added to the stumpage prices for the site value of privately owned timber lands, averaging $1 per acre. This nominal site value has been applied because, up to the present time, the greater value has been the timber inventory. Site values will, in the opinion of the Taxation Branch, become more important with completion of logging, particularly in sustained-yield operations. Those privately owned timber lands which are subject to royalty at time of cut have their assessed values reduced for the Crown reservation. The reduction in the assessed values is based on average royalties as determined from confidential information supplied by the B.C. Loggers' Association covering the Vancouver log market, and from the Prince Rupert Forest District stumpage and royalty accounts. In the Interior, royalties vary only in relation to species, as logs are not graded, thus the degree of fluctuation is lessened.

3. Outside the Vancouver Forest District, 60 per cent of the Forest Branch stumpage prices on each species in each forest district, subject to reduction for partial or full royalty as reserved, is applied.

The following table indicates acreage, volumes of timber, and assessed values on all privately owned timber land for 1945 to 1955, inclusive:—

TABLE 117

TOTAL PRIVATELY OWNED TIMBER-LAND ASSESSMENTS IN BRITISH COLUMBIA, 1945 TO 1956 (INCLUSIVE OF ALIENATED ESQUIMALT AND NANAIMO BELT LANDS).

Year	Acres Logged	Acres Timber	Total Acres	Volume on Ledgers (M F.B.M.)	Total Assessed Value	Assessed Value per Acre	Assessed Value per Thousand
1945 (Jan. 1)	164,040	427,042	591,082	8,675,841	$15,560,066	$26.32	$1,72
1946	169,456	431,692	601,148	8,625,956	16,012,995	26,64	1.79
1947	179,663	417,237	596,900	8,357,029	16,724,706	28.02	1.93
1948	183,669	390,020	573,689	8,242,690	30,050,221	52.38	3.58
1949	200,734	410,708	611,442	8,606,973	30,901,000	50.54	3.52
1950	215,335	415,368	630,703	8,397,806	29,927,333	47.45	3.49
1951	222,768	459,978	682,746	8,658,992	34,745,227	50.89	3.93
1952	232,667	485,617	718,284	8,869,489	40,588,727	56.51	4.50
1953	228,956	528,560	757,516	10,172,075	42,333,082	55.58	4.09
1954	305,766[1]	496,217	801,983	10,166,561	42,039,292	52.42	4.06
1955	317,531	495,869	813,400	9,654,167	42,912,138	52.76	4.36
1956	267,322	427,372	694,694	8,449,055	42,418,337	61.06	5.02

[1] Large increase due to inclusion as timber land of considerable acreage east of Cascades already logged, or with only part of acreage in commercial timber, but sufficient over-all volume to merit this tax class.

Source: Department of Finance, Surveyor of Taxes Branch, Victoria, B.C.

The greater part of timber-land assessments originate from alienations out of the Esquimalt and Nanaimo Railway Belt. In addition, there are wide variations in volumes per acre in the Coastal and Interior areas.

Table 117 reveals:—

(1) Acreage classified as timber land has increased by over one-third between 1945 and 1956. The increase is due to continuing alienations from the Esquimalt and Nanaimo Railway Belt, as well as inspection of other privately owned lands which revealed timber volumes sufficient to classify them as timber land.

(2) Acreages logged between 1945 and 1956 have averaged less than 16,000 acres annually, and represent an orderly utilization. What appears to be an abnormal rate of liquidation in 1953 is due to the inclusion of a considerable acreage east of the Cascades as timber land for the first time in 1954, which was logged to a considerable extent before that year. Actual logging west of the Cascades outside of the Esquimalt and Nanaimo Railway Belt was stepped up somewhat in 1953 but could not be termed abnor-

mal. A decrease in acreage logged in any subsequent year is due to receipt of better cruises or field inspections which revealed that the remaining timber volume was larger than previously reported.

(3) Privately owned timber land with mature timber increased from 427,000 acres in 1945 to 528,000 acres in 1953 and subsequently declined to 427,000 acres in 1956. Large-scale alienations from the Esquimalt and Nanaimo Railway Belt in 1951 explain the 1953 peak. A considerable acreage alienated in 1954 suffered from fire and wind damage and is included in acreages listed as logged rather than timbered.

(4) Increases in the assessed values on timber land after 1947 reflect valuations by technically qualified personnel, and the post-war rise in privately owned timber-land actual values. The decrease in the Esquimalt and Nanaimo Railway sale prices in 1952 and 1953 was followed by increasing prices in 1954. Assessed values on timber land, both per acre and per thousand, are highest in the Esquimalt and Nanaimo Railway Belt and decrease to approximately one-half of that value in the area west of the Cascades outside the Esquimalt and Nanaimo Railway Belt, reflecting the less desirable logging chances on Crown grants in the Queen Charlotte Islands and other Coastal areas. Timber-land assessed values per acre and per thousand are lowest in the Interior, due to sparser volumes per acre and a higher degree of logging than on typical parcels on the Coast.

The following tables are complementary to Table 117 and give the information collected therein in more detailed form:—

TABLE 118

PRIVATELY OWNED TIMBER LAND WEST OF THE CASCADES (EXCLUDING THE ESQUIMALT AND NANAIMO BELT) AND EAST OF THE CASCADES, 1945–56.

Year	Acres Logged	Acres Timber	Total Acres	Volume on Ledgers (M F.B.M.)	Total Assessed Value	Assessed Value per Acre	Assessed Value per Thousand
West of the Cascades							
1945	1,405	84,247	85,652	1,915,540	$2,043,718	$23.86	$1.02
1946	2,486	85,540	88,026	1,882,876	2,363,991	26.85	1.21
1947	2,993	81,376	84,369	1,911,370	2,513,275	29.79	1.27
1948	2,877	78,414	81,291	1,765,864	4,359,117	53.62	2.42
1949	3,497	82,722	86,219	1,823,278	4,715,554	54.69	2.54
1950	4,970	89,694	94,664	1,908,368	4,254,349	44.94	2.18
1951	6,009	89,851	95,860	1,885,884	4,342,158	45.30	2.25
1952	9,380	93,733	103,113	1,906,071	5,712,361	55.40	2.94
1953	7,058	106,662	113,720	2,181,919	6,448,561	56.71	2.90
1954	12,917	106,798	119,715	2,091,581	5,340,302	44.61	2.50
1955	15,897	107,139	122,623	2,051,166	5,771,824	47.07	2.75
1956	12,950	92,247	105,197	1,714,221	6,391,997	60.76	3.73
East of the Cascades							
1945	21,536	70,005	91,541	505,114	562,060	6.14	0.93
1946	23,125	67,136	90,261	505,114	558,486	6.19	0.93
1947	26,591	63,030	89,621	505,114	551,996	6.16	0.92
1948	24,485	61,276	86,761	546,095	648,681	7.48	1.03
1949	30,625	54,941	85,566	539,726	633,258	7.40	1.01
1950	33,552	47,730	81,282	511,791	636,393	7.83	1.08
1951	31,333	49,941	81,274	516,278	633,519	7.79	1.07
1952	29,418	52,121	81,539	486,762	721,580	8.85	1.31
1953	27,692	84,546	112,238	706,330	995,084	8.86	1.25
1954	69,416	67,180	136,596	774,998	1,093,961	8.01	1.23
1955	81,543	84,216	165,759	652,955	1,246,700	7.52	1.66
1956	64,606	62,475	127,081	590,058	1,172,632	9.23	1.99

Source: Department of Finance, Surveyor of Taxes Branch, Victoria, B.C.

TABLE 119

PRIVATELY OWNED TIMBER LAND WITHIN THE ESQUIMALT AND NANAIMO BELT, 1945 TO 1956[1]

Year	Acres Logged	Acres Timber	Total on Ledger (Acres)	Total Volume (M F.B.M.)	Total Assessed Value	Assessed Value per Acre	Assessed Value per Thousand
1945	141,099	272,790	413,889	6,255,200	$12,954,288	$31.29	$2.00
1946	143,845	279,016	422,861	6,238,000	13,090,518	30.96	2.03
1947	150,079	272,831	422,910	5,940,500	13,659,435	32.30	2.23
1948	155,307	250,330	405,637	5,930,700	25,042,423	61.74	4.15
1949	166,612	273,045	439,657	6,244,000	25,552,088	58.12	4.02
1950	176,813	277,944	454,757	5,977,600	25,036,591	55.05	4.11
1951	185,426	320,186	505,612	6,256,800	29,769,550	58.88	4.68
1952	193,869	339,763	533,632	6,476,700	34,154,786	64.00	5.19
1953	194,206	337,352	531,558	7,283,800	34,889,437	65.64	4.72
1954	223,433	322,239	545,672	7,300,000	35,605,029	65.25	4.80
1955	220,504	304,514	525,018	6,950,100	35,893,614	68.37	5.16
1956	189,766	272,650	462,416	6,144,700	34,853,708	75.37	5.67

[1] Timber land sold by the Esquimalt & Nanaimo Railway Company.
Source: Department of Finance, Surveyor of Taxes Branch, Victoria, B.C.

TIMBER-LAND PROPERTY TAXES

The following table reveals collections or levies of property taxes on timber land. Such levies under the "Taxation Act" increased from $267,332 in 1945–46 to $681,503 in 1955–56. The increase resulted from greater timbered acreage, larger timber volumes reported thereon, and higher market values. The greater part of this reported timber-land tax increase of over 150 per cent is in reality due to greater assessed values.

TABLE 120

PROPERTY TAX COLLECTIONS ON CROWN-GRANTED TIMBER LAND, 1945–46 TO 1955–56

Fiscal Year	Taxation Act (1½ per Cent on Timber Land)	Public Schools Act[1]	Total
1945–46	$267,332	$55,212	$322,544
1946–47	258,450	62,006	320,456
1947–48	253,345	229,686	483,031
1948–49	453,980	275,437	729,417
1949–50	445,633	332,607	778,240
1950–51	440,213	362,363	802,576
1951–52	484,165	395,693	879,858
1952–53	588,822	497,230	1,086,052
1953–54	612,865	518,841	1,131,706
1954–55	621,527	501,656	1,123,183
1955–56	681,503	516,759	1,198,262

[1] Levies: No collection breakdown available, but collections do exceed 99.5 per cent of annual levy.

The increase in school tax levies from $55,212 to $516,759, amounting to an increase of 800 per cent, between 1945 and 1956 occurred because:—

Timber land was largely excluded from the small rural school districts that existed previously to 1946. The school property tax rate on timber land outside of a school district, or in a school district where the schools were closed, was one-fifth of 1 per cent in 1945–46 and 1946–47.

However, in the large school districts, as recommended by the Cameron Report, virtually all timber land was included within school districts, commencing in 1946, and subject to a rural school mill rate averaging 13 mills. The increase in school taxes levied on timber land from $62,000 in 1946–47 to $229,686 in 1947–48 resulted. The further increase in 1948–49 and thereafter was due to more realistic assessed values on timber land and increased timber volumes assessed. School mill rates between 1948 and 1954 were held at 8 mills for operating expenses plus 50 per cent of local capital costs.

In addition to the above property taxes, timber land is liable to a levy under the "Water Act," wherever such lands are included within an Improvement District for the purposes of constructing and maintaining hospitals (B.C.S. 1953 (Second Session), chapter 38). No hospital property taxes had been levied on timber land up to the end of 1954. In 1955, however, School District No. 72, which had been gazetted as the Campbell River Hospital District, had a property levy for hospital purposes of $28,271 (1.43 mills), of which $2,543, is on timber land. It should be explained that the Federal and Provincial Governments each contribute one-third of the total cost of a local hospital and the other one-third is raised either from municipal or rural ratepayers in the district. There are several hospital districts in the Interior at present, encompassing the total area of a school district, namely, Nelson, Castlegar, and Quesnel. Similar hospital districts can be anticipated on the Coast in the future possibly to include much privately owned timber land, for example, on Saltspring Island.

Total property taxes on timber land (exclusive of Esquimalt and Nanaimo Railway Belt Land Tax) have increased from $322,544 in 1945–46 to $1,198,262 in 1955–56. The over-all increase has been about 270 per cent for reasons already outlined.

Economic Effects of Higher Property Taxes on Timber Land

In 1953–54 the tax burden on all timber land, including areas logged, was $1.40 per acre. The tax on timber land in the Interior and west of the Cascades, other than in the Esquimalt and Nanaimo Railway Belt, because of lower assessed value per acre, would be well below $1.40 per acre, while in the Esquimalt and Nanaimo Railway Belt it would average

above that tax per acre.* The average tax on acreages with volumes of 20,000 f.b.m. and more per acre, alienated from the Esquimalt and Nanaimo Railway Belt, would be $2.60 per acre.

There has been a large increase in the burden of property taxes on timber land since 1946.

With Federal corporation income taxes approximating 50 per cent of net forest operators' income during the post-war period, the burden of property taxes during a period of profitable operation, because Provincial property taxes are a deductible expense in computing taxable income, is cut approximately in half.

That is, a large operator would have a reduction in his Federal corporation tax of one-half of increased property taxes paid to the Province.

As a result of the new formula with respect to the apportionment of local school costs passed at the 1955 Session of the Legislature, rural school mill rates decreased, on the average, by 2 to 20 per cent in 1955. This resulted in a reduction of the school tax burden on timber land within a range of 1 to 15 per cent in 1955. With the Province paying in excess of 60 per cent of the cost of education from non-property tax revenue sources, depending upon the ability to pay of each local area, and with the Province bearing 75 per cent of local capital costs when the mill rate therefor exceeds 3 mills, the post-war tendency for local school mill rates to rise in successive years will tend to be discouraged.†

While the percentage of the total timber cut from Crown-granted lands decreased from 36.7 per cent in 1945 to 25.8 per cent in 1955, the volume from these tenures increased from 1,130,000 M f.b.m. in 1945 to 1,572,000 M f.b.m. in 1955.

In 1955, therefore, total property taxes of $621,527 were levied on timber land from which 1,572,000 M f.b.m. were cut. This works out at an average property tax burden equalling about 40 cents per 1,000 f.b.m. cut.

WILD-LAND TAX

This tax class, in which the greater part of the largely logged-over lands (outside of tree-farm lands) are included, bears a tax rate of 3 per cent. It is the statutory tax class into which lands fall that are not eligible for any other tax class.

The present "wild land" definition was substantially enacted by the British Columbia Statutes of 1905, chapter 50, with a tax rate of 4 per cent on the assessed value. Rate changes are: 1917 to 1929, 5 per cent (B.C.S. 1917, chapter 66); 1930 to 1955, 3 per cent (B.C.S. 1930, chapter 73).

The relevant parts of the "wild land" definition are:—

* Examples of extreme timber-land parcel property taxes, selected at random, are $3.10 per acre in the Esquimalt and Nanaimo Railway Belt and 31 cents per acre in the Interior.

† Source: Surveyor of Taxes brief, p. 4 *et seq.*

> " 'Wild land' means all land, other than land subdivided into lots of five acres or less in area and shown on a registered subdivision plan, and other than coal land, forest land, timber land, and tree-farm land, on which the value of existing improvements, including improvements done to land, when assessed, is less than two dollars and fifty cents per acre of land situated west of the Cascade Mountains and less than one dollar and twenty-five cents per acre of land situate east of the Cascade Mountains . . ."

These lands are subject to valuation in accordance with section 30 of the " Taxation Act," or at actual value, although in practice, as with other land that is subject to school taxation, 60 per cent of actual value is used for tax valuation.

Lands classified as wild land have inadequate timber inventories to merit a timber-land class; they are second growth or denuded or rocky sites with little or no improvement expenditure thereon. They generally have a low actual value and accordingly have a low assessed value per acre.

The higher tax rate thereon was apparently designed to discourage speculative holding of such land for long-term value appreciation. Alternatively, the higher tax rate would encourage an owner to develop the lands and have it reclassified to obtain a lower tax rate.

In part, the economic theories of Henry George, which materially influenced property taxation laws in British Columbia in the early years of the twentieth century, explain this higher wild-land rate. He spoke of the unearned value increment on land and advocated a capital tax to earmark the increasing value entirely to state revenue. With a clearer appreciation of the nature of these lands, and the lower economic use in many cases which may give an income only once in several generations—for example, when they are devoted to the production of a forest crop—the higher tax rate is not justified. A more reasonable tax burden is afforded owners who devote such lands to sustained forestry and obtain a tree-farm tax classification.

There are presently about 1 million acres of wild land with an average assessed value of approximately $4.30 per acre and an annual tax burden of approximately 19 cents per acre. The annual tax burden has increased by almost 100 per cent since 1945. This is explained by higher market prices, which are reflected in higher assessed values, more accurate appraisals, and their inclusion within large school districts. About 8 per cent of wild-land acreage—inspected by the appraisal staff to 1956—has some mature timber thereon, with an average volume of less than 2½ M per acre and an assessed value per acre of $7.30.

Details of wild-land assessments are found in the following table:—

TABLE 121

WILD-LAND ASSESSMENTS, 1954 TO 1956, INCLUSIVE

Year	Acreage	Assessed Value	Wild-land Tax Levied at 3 per Cent	School Tax Levied	Total Taxes	Tax per Acre
1945	926,733	$2,507,253	$75,063	$14,295	$89,358	9.64¢
1946	950,010	2,588,086	77,752	15,916	93,668	9.86¢
1947	1,018,424	3,015,408	90,169	37,494	127,663	12.54¢
1948	928,376	2,507,253	75,063	26,806	101,869	10.97¢
1949	(1)	2,857,012	85,289	33,047	118,336	.....
1950	(1)	3,018,928	90,269	39,225	129,494	.....
1951	(1)	3,443,234	103,270	46,914	150,184	.....
1952	(1)	3,814,428	114,452	53,249	167,701	.....
1953	915,418	4,384,274	131,544	59,999	191,543	20.92¢
1954	1,031,657	4,400,429	132,030	60,819	192,849	18.69¢
1955	1,239,590	4,897,916	146,956	61,323	208,279	16.8¢
1956	1,237,633	4,957,050	148,750	64,298	213,048	17.21¢

[1] Total acreage not presently available.

An adequate inventory of wild land is not yet available. It is estimated that a least 60 per cent of the total wild-land acreage is cut-over land that would find its best use in perpetual forestry. Other lands so classified are private fishing, hunting, or residential sites of a marginal nature, which, because of the nature of terrain, rock outcrops, and such like, would not be satisfactory as forest-sites.

When second-growth immature forests containing less than 8,000 board-feet per acre are found by inspection to be occupying wild-land areas on the Coast, a value is assigned thereto in accordance with the quality of the site and age of the trees. The value of the immature timber is based upon a study of 1950–54 stumpage prices paid by practical forest operators for immature stands on Vancouver Island, which revealed that the typical or average price paid was $1.50 per cord (100 cubic feet). In consequence, 60 per cent of this price, or 90 cents per cord, was taken as the average assessed value.

The number of cords on forest-sites of varying quality and for each tree age-group was determined from the 1947 B.C. Forest Service yield tables.

The cords per acre so determined were multiplied by the average price of 90 cents per cord to determine the value for each site and age class. A reduction was made in the assessed values for the risk of fire, insects, and other incidental destructive agencies, decreasing from 60 per cent of $1.50 on age-group 1 to 5 to 0 per cent for age-groups over 30 years.

On the basis of these computations the immature forest values given were determined. No value is assigned to forests under 6 years, and values range from 10 cents per acre on 6- to 10- year trees to $55 an acre on 45-year trees where there is 100 per cent stocking and site-class is 140 to 170.*

* Source: Surveyor of Taxes brief.

The assessment of site land values of logged-over areas on which a new and immature crop is growing varies in accordance with their quality, accessibility, and topography. Values range from 50 cents an acre on poor sites (80) with very difficult terrain to $5 per acre on good sites (140) with favourable topography and accessibility.

In the Interior no value is assigned to second-growth timber as part of the land-value assessment until such time as it is subject to cut. This is apparently due to the fact that at present there is no active market in the Interior for trees of this size.

This situation will, in time, change and a market demand for second growth below sawmill size and grades will develop regionally in the Interior as it has on the Coast. This future extension of markets is already being anticipated because in some bona fide land sales the value of a second-growth crop has enhanced the price.

FOREST LAND

At the 1953 Fall Session of the Legislature, amendments were made to the " Taxation Act " to provide a 1-per-cent annual tax on the assessed value of timber leases and licences that are not included within a forest management licence.

The pertinent sections of the " Taxation Act " as amended are:—

(*a*) By section 2 " forest land " means any land included in a timber lease or timber licence issued under any Act of the Legislature or the " Lands Act " of Canada, or any regulations thereunder, for which a stumpage, as defined in the " Forest Act," has not been reserved or not made payable to the Crown in the right of the Province, which is so held for the specific purpose of cutting and removing timber therefrom, or as an investment for the accruing value of the timber thereon, and for no other purpose while so held, and which has been classified as forest land for taxation purposes under this Act by the Assessor after he has received from the lessee or licensee all certificates required by or under this Act.

(*b*) Section 32A provides for an annual return on logging in the twelve months ending July 31st in each year and a timber cruise when requested.

(*c*) Section 32B provides for refund or remission of forest-land taxes for the past twelve months when timber leases or licences are included in a forest management licence by March 31st annually.

(*d*) Section 41 establishes a tax rate on forest land of 1 per cent.

Section 24 (*n*) of the " Taxation Act " provides an exemption on timber leases and licences within a forest management licence. Section 113A of the " Public Schools Act " exempts timber leases and licences outside a for-

est management licence from property taxation, with the exception of roads or other improvements built upon them.

The Minister of Finance, in his 1953 policy statement on second reading of the forest-land tax-class amendments, stated:—

"A study was made by my Department in co-operation with that of Lands and Forests on the comparative annual rentals on timber licences and timber leases and annual property taxes on privately owned timber land.

" This study disclosed that the annual property taxes on Crown-granted timber land averaged in excess of $2 per acre in 1952, while the annual rental on timber licences and leases averaged 21.8 cents an acre west of the Cascades and 15 cents an acre east of the Cascades, in terms of typical volumes of 20,000 f.b.m. per acre. All forest tenures outside of forest management licences pay 6 cents an acre forest-protection tax.

" Timber leases and licences also pay a royalty when the forest trees are cut in terms of current royalty rates per thousand board-feet. However, this royalty on timber leases and licences is analogous to the purchase price already paid by the owners of Crown-granted timber land.

"Apart from the purchase price of the timber, it was revealed that annual charges by the Crown on lands with timber thereon was approximately ten times as great in the case of Crown-granted timber land as timber leases and licences.

" Both timber leases and licences and Crown-granted timber land, except those in a forest management licence or tree-farm, may be cut at the option of the holder, or may be held as an inventory for the increasing speculative value of the trees as the supply of mature forest trees decreases. There is no requirement that sustained and perpetual forestry be carried out on such tenures.

" It is patently unfair, therefore, that timber leases and timber licences outside of management licences, which can practise a ' cut-and-get-out ' policy as on privately owned timber land, outside of a tree-farm, are not paying a tax to the Crown that is closer to the burden on Crown-granted timber land.

" The annual rental cannot be increased by Statute until January 1st, 1955. The merits of increasing the royalty rates on timber leases and licences was given consideration. However, in the light of circumstances, it was deemed better to make these leases and licences subject to annual property taxation.

" Commencing with the calendar year 1954, therefore, timber leases and licences, which have not reverted to the Crown on completion of cut, or are not within a management licence, will be classified as forest land and subject to an annual tax of 1 per cent on the assessed value under the ' Taxation Act.' They will be exempt from taxation under the ' Public Schools Act.'

"This annual tax will apply to lands within pulp licences, timber leases, timber berths, and timber licences which are not within forest management licences. Tenures within a forest management licence are exempted because they require sustained and perpetual forest cropping.

"This tax is estimated to yield over $900,000 annually. However, this yield will decline as and when the timber is cut and the land reverts to the Crown, or as and when the timber leases or licences are included in forest management licences.

"This tax will apply only to Crown tenures granted early in this century and on which the cut is not managed in accordance with such forest policies as the Sloan Forest Commission recommended and on which no stumpage is reserved to the Crown.

"Many timber leases and licences are included in forest management licence applications that require some months to process by the Forest Branch before approval or rejection.

"In recognition of this time-lag between a forest management application and possible approval, provision is made for remission or refund of forest-land taxes levied in any twelve-month period preceding March 31st annually, if a forest management licence is granted to timber leases or licences during that twelve-month period.

"The imposition of this tax is in line with the basic policy of this Government that the exploitation of natural resources should provide a minimum equalized yield for general Provincial services while at the same time encouraging essential conservation of those resources."

Assessment on Forest Land

On September 1st, 1953, there were 3,246 timber leases and licences in good standing outside of forest management licences. Satisfactory cruises were received from holders of 3,134 leases and licences. Of these, twenty-eight were entirely within district municipalities and were exempt under section 24 (*a*) of the "Taxation Act." Three thousand one hundred and six leases and licences were assessed on June 1st, 1954. The 112 on which satisfactory cruises were not received by the Taxation Branch, aggregating 84,765 acres, were referred to the Forest Service for inspection, and supplementary assessments are being made as the cruises are received.

With 36,392,000 f.b.m. on 2,446,000 acres, the average volume of standing timber was 14.9 M f.b.m. per acre. Average assessed value per thousand of standing timber was $1.88 and the tax levied was $685,266. Average 1954 forest-land tax was 28 cents per acre or 1.88 cents per thousand of standing timber inventory. Related to a timber cut of 1,111,000 M f.b.m. in 1953 from timber leases and licences, the 1954 forest-land tax levy would be 67 cents per thousand.

Initial annual revenue estimates of $900,000 were based on the amount of timber on the leases and licences as determined from Forest Service

estimates. Forest Service estimates proved 40 per cent greater than the actual volumes revealed by the cruises of holders as submitted. The differential is due, no doubt, to the inclusion of smaller diameters by the Forest Service Inventory Division, which were excluded from the private cruises because not then or now of commercial value for assessment.

The average 1954 valuation of $1.88 per thousand was determined as follows:—

(*a*) The forest-land return form requested a copy of the latest cruise and an indication of actual topography and logging conditions.

(*b*) Average 1954 assessed values per thousand were determined by taking the average stumpage prices (inclusive of royalty) on Crown timber sales in each forest district, deducting therefrom average rates of royalty per thousand and taking 60 per cent of the residual to obtain the average value per thousand for 1954 assessment. For example, the average Forest Service stumpage price on fir in the Vancouver Forest District was $8.43 per thousand. Average royalties of $1.62 per thousand were deducted therefrom, leaving a residual price of $6.81 per thousand. Sixty per cent of that net stumpage is $4.09 per thousand. The 1954 average assessed value on standing fir timber as part of the forest-land value was $4.10 per thousand.

This average assessed value per thousand of timber was adjusted up or down when accessibility, road costs, topography, and other logging characteristics were respectively above or below typical or average logging conditions. Maximum increases for above average logging conditions were 50 cents per thousand, while decreases in average assessed value per thousand ranged up to $1 per thousand. For a few parcels with extreme isolation or very difficult logging conditions, additional reductions in the average assessed value per thousand were made. The value per thousand so determined for each species was applied to the volumes on each lease or licence, and a total value determined which was assigned as the land value of the forest-land parcel.

The following table gives 1955 and 1956 data on acreages, timber volumes, and assessed values on forest land. This table is before any adjustment for signature of Forest Management Licences Nos. 19, 20, and 21. Forest-land assessed values increased in 1955 to $2.09 per thousand (up 11 per cent from 1954) because average Forest Service stumpage prices on timber sales in 1954 exceeded those of 1953.

TABLE 122

1955 AND 1956 FOREST-LAND (TIMBER LEASES AND LICENCES) ACREAGES, VOLUMES, AND ASSESSMENTS[1]

Tenure	Acreages	Volume (M F.B.M.)	Assessed Value	Value per Acre	Value per Thousand
West of Cascades					
Timber licences	1,286,471	23,199,650	$49,260,205	$38.29	$2.14
Timber leases	158,470	3,718,795	10,510,116	66.32	2.83
Timber berths	171,370	1,433,534	3,292,099	19.21	2.30
Pulp licences	106,335	1,636,685	2,223,305	9.08	1.36
Pulp leases	285,268	3,007,452	4,114,900	14.42	1.37
Totals and averages, 1955	2,007,914	32,996,116	$69,400,625	$34.56	$2.10
Totals and averages, 1956	1,535,691	24,073,342	59,592,820	38.80	2.47
East of Cascades					
Timber licences	233,151	1,756,863	$3,140,359	$13.47	$1.76
Timber leases	2,129	41,715	102,202	48.00	2.45
Timber berths	198,788	801,382	1,764,767	8.88	2.20
Pulp licences	----------	----------	----------	-------	-----
Pulp leases	----------	----------	----------	-------	-----
Totals and averages, 1955	434,068	2,599,960	$5,007,328	$11.53	$1.93
Totals and averages, 1956	395,124	2,478,863	5,052,154	12.79	2.03
Grand totals, 1955	2,441,982	35,596,076	$74,407,953	$30.47	$2.09
Grand totals, 1956	1,930,815	26,552,205	64,644,974	33.48	2.43

[1] Showing only totals and averages.

REFUNDS OR REMISSIONS

Of the $685,266 levied in the fiscal year 1954–55 on forest land, $681,000 was collected. Of this sum, $167,814 was refunded to the holders of timber leases or licences when Forest Management Licences Nos. 19 (Tahsis), 20 (Tofino), and 21 (Alberni) were signed before March 31st, 1955. Approximately 24 per cent of the first-year forest-land levy was refunded because of inclusion of parcels within forest management licences.

FOREST-LAND OWNERSHIP

Individual holdings of timber leases and licences as of December 31st, 1956, not included in forest management licences and therefore subject to the forest-land tax are given in the following table:—

TABLE 123

HOLDERS OF FOREST LANDS SUBJECT TO 1 PER CENT TAX, TIMBER LEASES AND LICENCES

Licensee, including subsidiaries (holders of more than 20,000 acres)—	Acreage	Per Cent
MacMillan & Bloedel Ltd.	196,079	9.81
Powell River Co. Ltd.	368,249	18.42
Alaska Pine & Cellulose Ltd.	165,635	8.28
B.C. Forest Products Ltd.	71,704	3.59
Flavelle Cedar (now Canadian Collieries (Dunsmuir) Ltd.)	71,558	3.58
Canadian Forest Products	172,495	8.63
Crown Zellerbach Canada Ltd.	353,423	17.68
Tahsis Co. Ltd.	74,599	1.33
Vanwest Logging Ltd.	30,196	3.73
Cargill Co. of Canada Ltd.	26,576	1.51
Totals	1,530,514	76.56
Other owners (with more than 5,000 acres and less than 20,000 acres)—		
Armstrong Sawmills Ltd.	9,166	
Britannia Mining & Smelting Co. Ltd.	5,446	
Balfour-Guthrie (Canada) Ltd.	10,749	
Bell Pole Co. Ltd.	6,845	
Blackwater Timber Co. Ltd.	6,901	
Canada Trust	17,217	
Canada Trust (Lumby Timber Co.)	9,895	
Crestbrook Timber & Creston Sawmills Ltd.	15,924	
Dart & Patterson	5,120	
Dumaresq Bros. Ltd.	5,062	
Elk River Timber Co. Ltd.	5,664	
Esquimalt Timber Co. Ltd.	6,053	
Gates, Robert Diamond	17,229	
Heinke, W. H.	5,940	
Interior Lumber & Shingle Co. Ltd.	14,096	
Independent Order of Foresters	12,000	
Kileen, Kathryn, and Stack, Marie Kileen	9,480	
Monarch Timber Exporters	11,335	
Penny Spruce Mills	6,375	
Pretty's Timber Co.	13,529	
Princeton Trail Sawmills Ltd.	8,147	
Saskatchewan Federative Co-op.	14,846	
Selkirk Spruce Mills Ltd.	5,523	
Seattle Cedar & Raymond Timber Co.	11,162	
Whonnock Lumber & Pacific Nickel Mines	16,680	
Totals	250,384	12.52
Others (owners with less than 5,000 acres)	218,286	10.92
Grand totals	1,999,184	100.00

Ten corporations hold 75 per cent of the acreages of *assessable* timber leases and licences in amounts in excess of 20,000 acres. Two corporations hold 35.68 per cent of the total *assessable* acreage and eight corporations jointly hold 72 per cent thereof.

This levy raised the average tax and carrying charges on these timber leases and licences by an average of 28 cents per acre, with the increase

being approximately 32 cents per acre on the Coast and 11 cents in the Interior.

It has attained its primary objective of raising the tax burden on timber leases and licences outside of a forest management licence into closer proximity to the tax burden on privately owned timber land.

It has not attained as fully as might have been anticipated its indirect objective of influencing the holders of temporary tenures to place them on sustained yield within the framework of a forest management licence in order to escape the imposition of the tax.

I have given much thought to the incidence of this tax, and I have reached the conclusion that this annual 1-per-cent levy on the artificially created taxation class of " forest land " is, in my opinion, contrary to the principles on which these tenures were established and is a retrograde step in forest management because it penalizes owners who hold their timber in reserve for future use, which is good business management and, in fact, necessary under conditions of Coast forest inventory, which show a shortage of middle-age classes of immature timber. If this timber were not thus held for the future, it would be necessary for the Government to reserve an equivalent additional amount of unalienated timber, and thus reduce the volume available for timber sales. This policy would reduce direct revenue to the Crown in timber-sale stumpage by an amount far greater than the yield of the 1-per-cent tax. The alternative, if neither private owners nor the Crown reserved a sufficient volume of timber, would be the abandonment of the general sustained-yield policy.

I am of the opinion, therefore, that the 1-per-cent temporary tenures tax should be abolished. The contribution to revenue made by these tenures should follow the pattern on which they were established; that is to say, they should pay a low annual rental and stumpage (that is, royalty) at rates related to the values of logs at time of cutting.

It was submitted, in the alternative, during the Inquiry that the 1-per-cent tax is discriminatory and in consequence, if not abolished, should be imposed on leases and licences within as well as without forest management licences. It will be remembered that about 76 per cent of these temporary tenures outside forest management licences are held by companies owning large conversion plants, including pulp or paper mills, whose representatives before me evidenced a clear understanding that their timber holdings are security for the future operation of their plants rather than merely speculative investments for future increases in value of timber. Some of the largest holders have actually applied for forest management licences but have been unable to obtain them—Powell River Company, Crown Zellerbach Canada, and Canadian Forest Products. It appears that these companies are, probably of necessity, husbanding their timber resources in very much the same manner as they would do if they had forest management licences but without the benefit of being excluded from the operation of the tax.

The main reason given for the preferential tax treatment extended to owners of timber licences and timber leases which have been included within a forest management licence area is that these holdings are subject to the requirements of sustained-yield forest management and cannot be liquidated at will, as can licences outside of forest management licences.

That undoubtedly is the intent of the forest management licence system, but when considering aspects of taxation, it must not be forgotten that the forest management licensee, in dedicating his own timber to sustained-yield forestry, gets from the Crown a very large contribution of timber in effect reserved for him to be bought at uncompetitive prices when he needs it. The average Crown contribution of timber to Coast management licences is 62 per cent; in the case of Interior management licences it is 99 per cent.

The situation with respect to the lower taxation of tree-farms, in comparison with other Crown-granted timber and forest lands not dedicated to forestry, is not similar, in that the tree-farmer gets no Government contribution to round out his holdings.

Mr. H. R. MacMillan admitted that placing his company's timber in its two large management licences had not caused a reduction in the company's annual cut, and that the anticipated sacrifice of freedom in logging plans " may not be as bad as it looks." It really amounted to—

> " . . . a change in thinking for everybody in the organization and it was regarded as quite a handicap. It will not be the same handicap, in my opinion, when our converting mills are adjusted to the types of timber. That is, the ability to consume more pulpwood, because so much of the timber that came into the forest management licence from the Crown forest was pulpwood.
>
> " Q.—I'm suggesting to you that handicap of which you speak may be more feared than actual. A.—Oh, no, we don't include fear in our thinking. I would put it another way. I would say it might be that changing the habits isn't as serious as it looks."*

Mr. MacMillan's experience in this regard is not unique and is shared by those other forest management licensees who, if they choose to do so, may be able to continue cutting their temporary tenures included in the licence without reduction due to the fact that the large areas of contributed Crown forest land permits this to be done without exceeding the allowable over-all sustained-yield cut on the whole licensed area. In this sense they are in no worse position than holders of temporary tenures not included in a forest management licence.

With relation to the obligation upon the forest management licensee to carry out a reforestation programme after logging, it is, of course, to his benefit to do so, since such a procedure when successful will provide a second crop for his own use. Major owners of temporary tenures who have refused or do not want management licences have requested that by an extension of

* Transcript, p. 9137.

their present tenures they be allowed to carry out a similar programme of reforestation without any allocation of Crown timber—a subject dealt with when considering tenures generally.

Of the 2,007,814 acres of leases and licences on the Coast, 85 per cent are held by large companies who fully realize the value of this reserve for future supply of their mills, whether it is included in management licences or not.

As I have said, I can see no indications that any of these large companies are holding these tenures within or without forest management licences for an " increasing speculative value."

I am led, on a consideration of the evidence, to the conclusion that the 1-per-cent tax as applied is discriminatory and, if it is going to remain in force, ought to be imposed uniformly upon all leases and licences whether within or without forest management licences.

It is, I think, quite clear from the evidence that of the forest management licences granted since the tax was imposed, all so granted were applied for before the 1953 amendment to the " Taxation Act " became effective. I know of no licensee who stated that he had applied for a forest management licence and had thus changed his position because of the statutory promise to exempt him from the imposition of the tax.

If it could be said that any of the forest management licences were applied for, and granted, upon terms that the licensees' temporary tenures included thereon would be exempt from the 1-per-cent tax, then it seems to me that some sort of a moral obligation would bind the Crown to continue the exemption, but this circumstance does not appear to be an established fact.

In any event, my primary recommendation, and one upon which I put the most stress, is that this 1-per-cent tax be abolished. I share the opinion of the Canadian Institute of Forestry that this tax is detrimental to good forestry.

TREE-FARM LAND

I have dealt with the taxation of tree-farms when considering that type of tenure.* This brings me to a consideration of the next heading.

"ESQUIMALT AND NANAIMO RAILWAY BELT LAND TAX ACT"

In the 1945 Report I deemed it advisable to enter into a detailed examination of the historical events which led to the building of the E. & N. Railway on Vancouver Island and the land grant in aid of its construction. This grant of Crown land from the Province to the Dominion of Canada and hence to the Railway Company was a strip of land 20 miles wide on

* *See* p. 147.

each side of the line and contained in its 3,000 square miles some of the finest timber stands on this continent.

At the 1945 Inquiry it was strenuously contended (and just as strongly resisted) that the Province had the right to impose some form of yield tax on timber cut on lands when alienated by the Company. The right of the Province to charge the Company the fire-protection tax on unalienated land was also debated. At that time, timber land when sold by the Company was subject to a land tax and a fire-protection tax. Unalienated E. & N. land was not subject to taxation, except by consent, whether timber land or not. As these were legal matters, I recommended a reference thereon to the Courts. In due course the Privy Council ruled that the Province could not levy a fire-protection tax on timber land not alienated from the grant, but on the more important question of taxation of timber lands after alienation the Board found in favour of the Province.

As a result of this decision, the "Esquimalt and Nanaimo Belt Land Tax Act" was enacted by chapter 70 of the British Columbia Statutes of 1950, with the following major provisions:—

(1) Lands of the Railway Company, as and when alienated, are liable to assessment and taxation chargeable against the owner in fee-simple (section 3).

(2) The tax on the land alienated is 25 per cent of the actual assessed value at the date of alienation and the assessment includes the value of the timber thereon (sections 5 and 6).

(3) The tax is in addition to any other tax imposed on the land by any other Act (section 8).

(4) If the assessed owner paid the tax in full, within three months of the assessment, a discount of 10 per cent of the total tax is allowed. Alternatively, the assessed owner could pay the tax by annual instalments of not less than one-tenth of the total tax, or in the ratio of the value of the trees cut in any year to the total assessed value of the land, whichever is the greater. In any event, the full tax must be paid within ten years of the levy (section 9).

(5) The Act was to apply only to lands of the Railway Company alienated on or after February 20th, 1946 (section 11).

Administratively this Act has been applied only to timbered lands alienated from the Esquimalt and Nanaimo Railway Belt. Oyster or other leases or small lots that sold for other than forestry purposes are not subject to the tax. A total of 229,150 acres of timbered land were alienated from February 20th, 1946, to December 31st, 1955, with 4,227,407 M f.b.m. thereon. Total selling price was $24,374,652, assessed value $24,376,000, and total tax levied $6,094,000. Actual tax collections up to December 31st, 1955, were approximately $4,470,887. Collections will not approximate the tax levy because approximately 50 per cent of the assessed owners have exercised the 10-per-cent discount option for payment of the tax in full within three months.

Particulars appear on the following table:—

TABLE 124

ESQUIMALT AND NANAIMO RAILWAY BELT TIMBERED LAND SALES SUBJECT TO 25 PER CENT TAX ON ASSESSED VALUE

Calendar Year	Acres Unalienated	Acres Sold (with Timber Thereon)	Volume Alienated (M F.B.M.)	Total E. & N. Selling Price (including Poles)	Assessed Value	Assessed Value per Acre	Assessed Value per Thousand	E. & N. Railway Belt Land Tax 25% of Assessed Value[1]	Collections[2]
1946[3]	664,129	3,530.5	64,224	$155,103	$215,248	$60.97	$3.29	$53,812	.....
1947	657,019	9,108.6	134,918	366,992	477,533	52.43	3.47	119,383	.....
1948	648,438	5,367.0	86,443	331,013	374,173	69.72	4.26	93,543	.....
1949	625,157	27,572.3	468,084	2,387,565	2,293,065	83.16	4.83	573,266	.....
1950	608,388	14,458.9	288,252	1,445,819	1,404,395	97.14	4.82	351,099	$345,220
1951	562,323	64,152.2	1,134,490	6,601,421	6,819,175	106.30	5.95	1,704,794	972,156
1952	532,253	15,099.4	376,170	2,497,876	2,370,917	157.02	6.26	592,729	418,395
1953	521,640	15,665.7	410,895	2,574,404	2,489,525	158.92	6.02	622,381	863,116
1954	497,384	43,060.0	607,149	3,450,941	3,376,160	78.40	5.48	844,040	872,361
1955	444,806	31,136.0	656,782	4,563,518	4,555,840	152.70	7.15	1,138,960	1,000,000[4]
Totals	.....	229,150.6	4,227,407	$24,374,652	$24,376,031	$1,016.76	$51.53	$6,094,007	$4,470,887

[1] Fiscal years ending three months after calendar year indicated.

[2] Discount of 10 per cent for full payment within three months of tax levy exercised by approximately one-half purchasers.

[3] February 20th, 1946, to December 31st, 1955. Acres unalienated based on Company's statement at June 30th, annually. Acres sold are for calendar years and include only parcels with timber thereon. Therefore, acres unalienated not readily reconciled with annual timbered acres sold.

[4] Estimate for fiscal year 1955–56.

Estimates of the volume of timber that remained in the Esquimalt and Nanaimo Railway Belt as of February 20th, 1946, vary between 10 billion and 6 billion, depending on the degree of utilization assumed. Volumes alienated since the effective date of the tax approximates one-third to one-half of the estimated volumes available.

It would appear that the initial estimates of the total revenue collections from this tax of $8,000,000 will prove conservative. The actual tax levied since February 20th, 1946, is approximately $1.40 per thousand, although assessed owners who exercised the discount option have an effective tax burden of $1.26 per thousand.

The assessed values on the timbered lands alienated from the Esquimalt and Nanaimo Railway Grant approximate, fairly closely, the actual sale prices reported by the Railway. An assessed value equal to the actual value is used because this is a one-time tax, and there are no complications in distributing a school tax requisition on dissimilar parcels, as exists with respect to timber-land valuations under the " Taxation Act."

In addition to the 25-per-cent tax on assessed value under this Act, these lands are assessable on alienation and subject to levies under the " Taxation Act " and " Public Schools Act," already discussed.

The views expressed earlier that levies on timber land under the " Taxation Act " and " Public Schools Act " do not appear to have accelerated annual timber cut from privately owned lands appear equally applicable to levies under the " Esquimalt and Nanaimo Railway Belt Land Tax Act."

In order to round out the record, I might add that the Esquimalt and Nanaimo Railway lands remaining unalienated are subject to a Provincial levy of 1½ cents per acre imposed by consent and collected pursuant to the terms of a 1912 Statute entitled " Esquimalt and Nanaimo Railway Company Land Grant Tax Exemption Ratification Act " (S.B.C. 1912, chapter 33).

From 1887 to 1897 no records of sales of timber lands were kept by the Railway Company, but from 1898 to 1913 the sales amounted to about 400,000 acres. Acreage sold and unsold, together with the sums collected from the 1½-cents-per-acre tax on unalienated land from 1953 to 1955 are as follows:—

TABLE 125

ANNUAL TAX COLLECTIONS ON UNALIENATED LANDS LYING WITHIN ESQUIMALT AND NANAIMO LAND GRANT AT 1½ CENTS PER ACRE

("Esquimalt and Nanaimo Railway Company's Land Grant Tax Exemption Ratification Act" (B.C.S. 1912, C. 33))

Year	Acreage Sold	Unalienated Acreage	Annual Tax
1913	———	1,101,725	$16,525.87
1914	14,607	1,087,118	16,306.77
1915	23,864	1,063,254	15,948.81
1916	3,884	1,059,370	15,890.55
1917	1,378	1,057,992	15,869.88
1918	1,962	1,056,030	15,840.45
1919	1,728	1,054,302	15,814.53
1920	11,249	1,043,053	15,643.79
1921	10,551	1,042,502	15,637.53
1922	632	1,041,870	15,268.05
1923	27,241	1,014,629	15,219.43
1924	10,406	1,004,223	15,063.34
1925	14,388	989,835	14,847.52
1926	3,072	986,763	14,801.44
1927	4,723	982,040	14,730.60
1928	15,666	966,374	14,495.61
1929	6,043	960,331	14,404.96
1930	5,295	955,036	14,325.54
1931	3,253	951,783	14,276.75
1932	3,144	948,639	14,229.58
1933	2,172	946,467	14,197.00
1934	6,637	939,830	14,097.45
1935	7,221	932,609	13,989.13
1936	12,352	920,257	13,603.85
1937	23,457	896,800	13,452.00
1938	18,682	878,118	13,171.77
1939	18,996	859,122	12,886.83
1940	35,972	823,150	12,347.25
1941	37,015	786,135	11,792.02
1942	16,363	769,772	11,546.58
1943	14,941	744,831	11,172.46
1944	46,773	698,058	10,470.87
1945	12,745	685,313	10,279.70
1946	21,184	664,129	9,961.94
1947	7,110	657,019	9,855.29
1948	8,581	648,438	9,726.57
1949	23,281	625,157	9,377.35
1950	16,769	608,388	9,125.82
1951	46,065	562,323	8,434.85
1952	30,070	532,253	7,983.80
1953	10,613	521,640	7,824.60
1954	24,256	497,384	7,460.76
1955	31,136	444,806	6,672.09
Totals to 1955	635,477	———	$554,570.98

SCHOOL TAXES

Taxes levied on behalf of local government functions, such as school taxes assessed and rated in accordance with the " Public Schools Act " and the taxation of freehold timber by a levy under the " Water Act " for the purpose of constructing and maintaining hospitals, have been referred to under the specific headings relating to Provincial property taxes.

I think, however, Provincial school levies should be particularized in more detail, and in consequence the following table is reproduced. Increases have been explained in the earlier text.

TABLE 126

PROVINCIAL TAX LEVIES ON BEHALF OF SCHOOL DISTRICTS (ADVANCES AND LEVIES), 1945–46 TO 1955–56

Fiscal Year	On Timber Land	On Wild Land	On Tree-farm Land	Total School Taxes	Total Direct and School Taxes
1945–46	$55,000	$30,000	———	$85,000	$436,000
1946–47	62,000	32,000	———	94,000	439,000
1947–48	230,000	36,000	———	266,000	633,000
1948–49	275,000	30,000	———	305,000	852,000
1949–50	333,000	34,000	———	367,000	905,000
1950–51	362,000	37,000	———	391,000	1,281,000
1951–52	396,000	46,000	———	442,000	2,009,000
1952–53	497,000	59,000	———	556,000	1,683,000
1953–54	519,000	59,000	$4,000	582,000 [1]	2,237,000
1954–55	502,000	61,000	7,000	570,000	3,641,000
1955–56	517,000	60,000	9,000	586,000	4,748,000

[1] Exclusive of school taxes on pulp and paper mills, sawmills, and logging operations of $1,250,000 in 1953–54 for unorganized area and villages (not available for other years). No school tax figures available in municipalities on forest industries.

If the 1-per-cent tax be abolished, then it is my view—and I so recommend—that Provincial levies for school purposes be more widely imposed than now, and in that regard I would suggest that timber leases and licences, whether within or without forest management licence areas, be made subject to a levy for school purposes based upon realistic assessments of value which are just and equitable.

It seems to me also that the vast areas of unalienated land contributed to forest management licensees by the Crown should bear some of the burden of taxation for school purposes. They have in reality become a part of a new form of tenure, and I am satisfied the Taxation Branch of the Finance Department could evolve some method of assessment that would result in a tax impost designed to recover in part at least revenue lost by the abrogation of the 1-per-cent tax.

A number of witnesses, chiefly in the Interior, complained that they, as farmers, ranchers, orchardists, cattle-raisers, and such like, were bearing the

cost of educating the children of loggers who were harvesting timber sales in their district and contributing nothing locally or directly to the cost of the school system.

The complaint is not without foundation and calls for some form of remedial action.

Omission of assessed values on timber sales means that the local share of school taxation must be borne exclusively by privately owned or leased land and all improvements.

I am extremely hesitant to make any recommendation that will increase costs of production, such as the imposition of an additional tax.

Perhaps one method of meeting this situation without a concomitant increase in the tax burden would be to earmark a specific part of Crown timber-sale receipts in each calendar year to a " Timber Sale Education Fund." A uniform percentage of timber-sale stumpage would be earmarked to each school district in the ratio that revenue in the fund comes from a school district area.

It would be necessary to capitalize the amount of stumpage paid into that fund on behalf of a particular school district so that this additional source of local school revenue is reflected in computing Provincial educational grants, which vary inversely with a school district's ability to pay school costs.

Average length of timber sales is about five years. A timber sale education fund of 5 per cent of annual receipts would supply a tax comparable to a 1-per-cent property tax on the typical total inventory (that is, 1 per cent on the cut in each year $\times$ the five years of cut). With annual timber-sale cut of about 2,500,000 M f.b.m. and an average stumpage price of $6 per thousand, total annual stumpage from timber sales is $15,000,000, of which $750,000 would be earmarked to the education fund.

A hypothetical assessed value of the inventory on the timber-sale land would be: $750,000 (1 per cent of each year's cut $\times$ 5 to get total inventory) $\times$ 60 per cent (to convert the actual revenue received to the typical assessed value level) $\times$ 100 (capitalized inventory assessed value) = $45,000,000.

For the Prince George School District, from which 10 per cent of annual timber-sale cut originates, the operation is:—

(1) Increases in assessed values for grant and divisor purposes, $4,500,000—this would decrease Provincial educational grants by $23,000.

(2) The local School Board would receive $75,000 more, which would be deducted before computing the school mill rate applicable to *taxable* assessed values.

(3) The net revenue gain to the district is $52,000. Decrease in the school mill rate of 2 mills on *taxable* values.

(4) As the Province will be accepting a reduction in its timber-sale revenue (5 per cent diverted to the education fund), it is appropriate (as well as to have similar treatment to school districts with or without timber sales) that the hypothetical timber-sale assessed values are used in computing educational grants.

"LOGGING TAX ACT"

This Act imposes an income tax of 10 per cent on net income derived from logging in excess of $25,000. In 1953 the Minister of Finance said, in moving the second reading of the Bill:—

> "This Bill, designed as it is to relieve the small and marginal producer from any further burden of taxation, will result in a more adequate contribution by the industry to revenues of the Province without imposing any undue burden."

When an operator sells logs, the method of computing the tax is fairly free from difficulty. The tax falls on the net profit in excess of $25,000. Complications immediately arise when the taxpayer is carrying on an integrated operation from stump to finished product. Logs in this instance are not sold, and the neat problem is to isolate the share of the profits attributable to the logging operations alone.

In the original Act of 1953 and by an amending Act in 1955 (B.C.S. 1955, chapter 79), formulæ were designed to evolve a method of fairly segregating net income from logging as distinct from income from processing or manufacturing. In general, procedures in this Province are now patterned on the experience Ontario gained in administering its Logging Tax Act.*

The burden of this tax should be considered in relation to its allowance as a deductible expense before computing net taxable income for Federal corporate and personal income tax purposes. This allowable deduction reduces the Federal income tax to an amount which offsets, on the average, about 47 per cent of the logging tax paid to the Province.

Mining profits are subject to a similar tax, and the Provincial Government has made representations to the Canadian Government that the Provincial right to tax income from these two natural resources should be extended to natural gas and the petroleum industries. If this area is open to the Province, and it is in fact occupied by a Provincial income tax act applicable to this wider sphere of activity, the present criticism that the logging tax is discriminatory will cease to have any validity.

I regard this tax on income or profit margin as one essentially different from charges, such as royalty and stumpage or taxes on timber land or

* The British Columbia Act was further amended in 1957 to enact a definition of "income derived from logging operations," which attributes a larger part of combined logging and milling profit of integrated logging and processing firms as rate and $25,000 net logging income exemptions are unchanged.

forest land, because in its incidence it does not increase the operating cost of production nor add to the burden of overhead. In other words, it does not militate against our competitive function in world markets. Where there is no net income exceeding $25,000, no tax is exigible.

An accurate estimate of the revenue from this tax in a normal full year is difficult because Provincial net income statistics are limited and data available from Canada is consolidated. It is anticipated that revenue in 1955–56 will be approximately $1,500,000 to $2,000,000 and in 1956–57 may approximate $3,500,000.

FOREST-PROTECTION TAX

The so-called fire-protection tax is not levied under the provisions of the " Taxation Act," but by section 124 of the " Forest Act," which reads in part as follows:—

> "(1) From the owner of wild land in excess of six hundred and forty acres and from the owner of timber land not included in a forest management licence, there shall be payable and paid to the Crown, on the first day of April in each year, an annual tax at the rate of six cents for each acre; and from the holder of every timber lease, pulp lease, timber licence, pulp licence, timber berth, or resin licence not included in a forest management licence, six cents for each acre comprised in the lease, licence, or berth, payable annually upon the anniversary of the issuance of the lease or licence or upon the annual renewal date of the licence or berth, as the case may be; and from the holder of every forest management licence and from the owner of a tree-farm (in excess of six hundred and forty acres) certified by the Minister, nine cents for each thousand feet, board measure, or five cents for each one hundred cubic feet, of the approved productive capacity of the licence or tree-farm, payable annually upon the anniversary of the issuance of the licence or of the certification of the tree-farm, as the case may be; and all such payments shall be added to the moneys appropriated by the Legislature for forest protection. To the amounts received by the Crown pursuant to this subsection there shall be added an annual appropriation by the Legislature of not less than two million dollars for forest protection."

Taxes have been paid into the Forest Protection Fund in the following amounts for the years designated: 1945–46, $249,000; 1952–53, $385,000; 1953–54, $388,000; 1954–55, $405,000; 1955–56, $478,000.

In the section of this Report dealing generally with protecting the forest from fire I recommended an increase in the annual grant from the Crown to the Forest Protection Fund to the extent and for the reasons assigned in that section.

SUMMARY OF TAXES

Having considered the various Provincial taxes imposed on forest industries in some detail, the following table summarizes the revenue derived from these taxes during the last decade:—

TABLE 127

DIRECT PROVINCIAL REVENUES TO PROVINCE FROM FOREST INDUSTRIES, 1945–46 TO 1955–56

Fiscal Year	Logging Tax Act (10% on Net Income over $25,000)	Forest Land 1% (on Timber Leases and Licences)	Privately Owned Timber Land 1½%	Tree-farm Land 1%	E. & N. Railway Belt Land Tax Act 25%	Wild Land 3%[1]	Forest-protection Tax	Total Direct Revenues
1945–46	.....	.....	$245,000	.....	.....	$81,000	$249,000	$575,000
1946–47	.....	.....	238,000	.....	.....	84,000	291,000	613,000
1947–48	.....	.....	253,000	.....	.....	114,000	277,000	644,000
1948–49	.....	.....	454,000	.....	.....	93,000	355,000	902,000
1949–50	.....	.....	446,000	.....	.....	92,000	322,000	860,000
1950–51	.....	.....	440,000	.....	$336,000	106,000	327,000	1,209,000
1951–52	.....	.....	484,000	.....	964,000	119,000	358,000	1,925,000
1952–53	.....	.....	589,000	.....	410,000	128,000	385,000	1,512,000
1953–54	$46,000	.....	613,000	$3,000	855,000	138,000	388,000	2,043,000[2]
1954–55	915,000	$513,000[3]	622,000	5,000	880,000	137,000	405,000	3,477,000
1955–56	1,855,000	524,000[3]	682,000	8,000	947,000	146,000	478,000	4,640,000

[1] Includes "Esquimalt and Nanaimo Railway Grant Tax Exemption Ratification Act" (B.C.S. 1912, c. 33) (1½ cents per acre annually) for fiscal years 1945–46 to 1949–50. For fiscal years 1950–51 to 1955–56 this revenue included in "Esquimalt and Nanaimo Railway Belt Land Tax Act."

[2] Exclusive of improved land taxes (1 per cent) on pulp and paper mills, sawmills, and logging operations of $695,000 in 1953–54 for unorganized areas and villages and $601,505 in 1955–56 for unorganized areas.

[3] Exclusive of refunds for inclusion in forest management licences.

Source: Taxation Branch, Department of Finance.

Having dealt with general property taxes, I now propose to consider revenues derived from the forest industries imposed and collected pursuant to the provisions of the "Forest Act," and described in short as royalties, stumpage, and fees.

ROYALTIES

When considering various forms of tenure, I had occasion to comment upon those subject or not subject to royalties reserved "to and for the use of Her Majesty." In the present context I am concerned with royalty as a measure of the Crown's interest as well as an item affecting the cost of production.

Both of these facets apparently affected the judgment of the Government in 1914 and led to the enactment in that year of the "Timber Royalty Act" (S.B.C. 1914, chapter 76), superseding the royalty provisions of the then Forest Act.

The Forest Branch Report of 1914 stated:—

"Four matters made the year 1914 remarkable from the point of view of forest administration in this Province. The first was the passage of the 'Timber Royalty Act' which defined, for half a century ahead, the stumpage price of Crown timber. . . . The 'Timber Royalty Act' attracted widespread attention on account of its bold application of the modern legislative theory which calls for the retention by the State of a due share in the unearned increment upon natural resources. By establishing a sliding scale under which the Government is assured of a full proportion of future increases in the selling price of lumber, the Act made it possible for the Government to give stability of tenure to the lumbermen without injury to the public interest. Financial institutions are now able to accept timber licences as permanent investments. There is no doubt but that the added strength which has been given to British Columbia timber titles by this Act was of great effect during the stress of the past few months in maintaining faith in this, the most important, class of Provincial securities and in enabling investors and manufacturers to meet their obligations."

Without going into too much detail, the relevant aspects of this 1914 Act may be summarized as follows:—

For a period of five years commencing January 1st, 1915, and terminating on December 31st, 1920, a royalty was reserved in respect of timber cut on Crown lands and upon lands granted subsequent to March 1st, 1914, a royalty (subject to certain exceptions) as follows:—

(*a*) For a period of five years beginning with January 1st, 1915, a royalty of 85 cents per thousand feet, board measure, upon all timber cut in that portion of the Province west of the Cascade Range and suitable for the manufacture of lumber and shingles, and graded as No. 1 or No. 2 Douglas fir, No. 1 or No. 2 spruce, No. 1 or No. 2 cedar, No. 1 or No. 2 pine, or No. 1 or No. 2 cottonwood, and a royalty of 50 cents per thousand feet, board measure, upon all other timber suitable for the manufacture of lumber and shingles.

(*b*) During the same period of five years a royalty of 50 cents per thousand feet, board measure, upon all timber suitable for the manufacture of lumber and shingles cut in that portion of the Province east of the Cascade Range.

(*c*) During the same period of five years a royalty of 65 cents per thousand feet, board measure, upon all timber suitable for the manufacture of lumber and shingles cut in any portion of the Province in respect whereof provision is not otherwise made in this section of this Act.

The Act then proceeds to provide for increases in royalty, as follows: From January 1st, 1920, to December 31st, 1924, an increase in the foregoing royalties by an amount equivalent to 25 per cent of the increase (if

any) in the average wholesale selling price of lumber free on board point of manufacture over $18.

Increases based on the same formulæ as that governing increases from 1920 to 1924 were provided for as follows: From January 1st, 1925, to December 31st, 1929, 30 per cent; from January 1st, 1930, to December 31st, 1934, 30 per cent; from January 1st, 1935, to December 31st, 1939, 35 per cent; from January 1st, 1940, to December 31st, 1944, 35 per cent; from January 1st, 1945, to December 31st, 1949, 40 per cent; from January 1st, 1950, to December 31st, 1954, 40 per cent.

Section 14 provided:—

> " For each of the foregoing five-year periods for which a sum equivalent to a percentage of any increase in the average wholesale selling price of lumber is to be added to royalty as provided in section 6 of this Act said increase shall be calculated upon the average wholesale selling price free on board at point of manufacture for the first four and a half years of the preceding five-year period."

I mention the 1914 Royalty Act for the purpose of drawing attention to the method then invoked of reserving to the Crown royalties reflecting the increasing values of logs as indicated by the rising prices of finished lumber. It was, however, an escalator which only ran in one direction—up—and apparently without any provision to offset rising costs against increasing prices. No provision seems to have been made for a reduction in royalties on a falling market.

Skipping over the intervening years, during which the 1914 Royalty Act was repealed (in 1924), the present royalties payable since 1948 in respect of timber cut on lands Crown-granted or on Crown lands held in the right of the Province are found imbedded again in the " Forest Act," as follows:—

Section 54, subsection (3): No royalty on timber cut upon granted land acquired prior to April 7th, 1887.

Section 54, subsection (1): Timber from lands acquired on or subsequent to April 7th, 1887, and Crown-granted prior to March 2nd, 1914, is subject to a royalty of:—

(*a*) 50 cents per 1,000 feet, board measure, on timber suitable for the manufacture of lumber and shingles, or 30 cents per 100 cubic feet:
(*b*) 25 cents per cord on shingle-bolts, or 30 cents per 100 cubic feet:
(*c*) ¼ cent per lineal foot on poles and piling:
(*d*) 50 cents per cord on mining-props or lagging, or 55 cents per 100 cubic feet:
(*e*) 1.6 cents each on hewn railway-ties:
(*f*) 25 cents per cord on all other timber, wood, or bark, or 30 cents per 100 cubic feet.

Section 55, subsection (1): For the period from May 1st, 1948, to April 30th, 1949, both dates inclusive, there is reserved to and for the use of Her Majesty upon and in respect of timber cut upon Crown lands, or upon lands held under pre-emption entry and record, or upon lands granted subsequent to March 1st, 1914, royalty as follows:—

(*a*) Timber suitable for the manufacture of lumber and shingles and pulpwood cut upon lands situate west of the Cascade Mountains:—

(i) Upon No. 1 and No. 2 grades of cedar, cypress, fir, spruce, white pine, and cottonwood, as specified in the table in the Schedule, if cut upon lands situate within the Vancouver Forest District, west of the Cascade Mountains, $3 per 1,000 feet, board-measure, and $2 per 1,000 feet, board-measure, respectively, or alternatively $1.70 per 100 cubic feet and $1.10 per 100 cubic feet respectively; and if cut upon land situate within the Prince Rupert Forest District, west of the Cascade Mountains, as established by notice in the Gazette of August 9th, 1923, $2.50 and $1.75 per 1,000 feet, board-measure, respectively, or alternatively $1.40 and $1 per 100 cubic feet respectively:

(ii) Upon No. 1 and No. 2 grades of hemlock, as specified in the table in the Schedule, if cut upon lands situate within the Vancouver Forest District, west of the Cascade Mountains, $2 per 1,000 feet, board-measure, and $1.50 per 1,000 feet, board-measure, respectively, or alternatively $1.10 per 100 cubic feet and 85 cents per 100 cubic feet respectively; and if cut upon lands situate within the Prince Rupert Forest District, west of the Cascade Mountains, as established by notice in the Gazette of August 9th, 1923, $2 and $1.25 per 1,000 feet, board-measure, respectively, or alternatively $1.10 and 70 cents per 100 cubic feet respectively:

(iii) Upon No. 3 grade, as specified in the table in the Schedule, and upon all species not specified in the table in the Schedule, irrespective of grade, $1 per 1,000 feet, board-measure, or alternatively 55 cents per 100 cubic feet:

(*b*) Timber suitable for the manufacture of lumber and shingles cut upon land situate east of the Cascade Mountains:—

(i) Upon white pine, $2 per 1,000 feet, board-measure, or alternatively $1.10 per 100 cubic feet:

(ii) Upon yellow pine and spruce, $1.50 per 1,000 feet, board-measure, or alternatively 85 cents per 100 cubic feet:

(iii) Upon all other species, $1 per 1,000 feet, board-measure, or alternatively 55 cents per 100 cubic feet.

Section 55, subsection (2): Royalty as provided in subsection (1), and at the rates therein set out, shall continue in force after the expiration of the period mentioned in that subsection, until other rates are provided by or under Act of the Legislature.

Section 55, subsection (3): For the period from May 1st, 1948, to April 30th, 1949, both dates inclusive, there is reserved to and for the use of Her Majesty upon and in respect of timber cut upon Crown lands, or upon lands held under pre-emption entry and record, or upon lands granted subsequent to March 1st, 1914, royalty as follows:—

(*a*) Poles, piling, and crib timber, as follows:—

	Per Lineal Ft.
Under 30 feet	½ cent
30 feet and over	1 cent

All poles, piling, and crib timber over 15-inch tops shall be scaled and graded under clause (*a*) or clause (*b*) of subsection (1):

(*b*) Hewn railway-ties, 4 cents each:

(*c*) Hewn mine-ties, shingle and other bolts, 75 cents per cord or alternatively 85 cents per 100 cubic feet:

(*d*) Mining timber, mining-props, caps, lagging, and hop-poles as follows:—

	Per Lineal Ft.
Tops 4 inches and under	1/12 cent
Tops over 4 inches to 8 inches	1/7 cent
Tops over 8 inches to 10 inches	¼ cent
Tops over 10 inches to 15 inches	½ cent

Mining timber over 15-inch tops shall be scaled and graded under clause (*a*) or clause (*b*) of subsection (1):

(*e*) Shingle-shakes, one-seventh of 1 cent each:

(*f*) Fence-posts as follows:—

	Each
8 feet and under	½ cent
Over 8 feet to 12 feet	1 cent
Over 12 feet to 16 feet	1½ cents

(*g*) Car-stakes, one-half of 1 cent each:

(*h*) Christmas trees as follows:—

Lengths	Each
Up to 12 feet	½ cent
Over 12 feet to 16 feet	2 cents
Over 16 feet to 20 feet	8 cents
Over 20 feet to 25 feet	10 cents
Over 25 feet	25 cents

(*i*) Cordwood, 35 cents per cord or alternatively 40 cents per 100 cubic feet:

(*j*) Fuel-logs, 50 cents per 1,000 feet, board-measure, or alternatively 30 cents per 100 cubic feet:

(*k*) Stakes and sticks not exceeding 2 inches diameter at butt end, 10 cents per 1,000 lineal feet:

(*l*) Other wood products not enumerated in subsection (1) or in clauses (*a*) to (*k*) of this subsection, at rates as fixed by the Lieutenant-Governor in Council from time to time.

Section 55, subsection (4): Royalty as provided in subsection (3) and at the rates therein set out shall continue in force after the period men-

tioned in that subsection until other rates are provided by or under Act of the Legislature.

The present rates have remained unchanged since 1948 and thus have been in existence (in 1956) for eight years. In a period of progressive expansion and rising prices the royalty rates have remained stationary.

If the Government accepts my recommendation that the 1-per-cent tax be abolished, the question of royalty revision becomes more impelling. Royalties, in my opinion, should be a more flexible instrument than now in protecting the interest of the Crown in the unearned increment represented by old-growth forests. At the same time it seems to me the escalator should be able to ride down as well as up.

It must be remembered that these royalties are presently payable on old and second-growth timber on land which has been held by private owners for at least fifty years, in the case of licences and leases, or up to forty-five years in the case of land purchased from the Crown. The last licences were issued in 1907 and Crown timber land has not been available for sale since 1896, although, as I pointed out earlier, in practice this prohibition was not effective until 1912, when inspection of lands under application was begun by the Forest Service.

During the long periods that these trees have been standing in private ownership, their owners have contributed annual rentals and forest-protection tax (temporary tenures) or land tax, forest-protection tax, and school tax (Crown-granted land) on land which would otherwise have contributed nothing to public revenue because there was no shortage of Crown timber for sale. Dr. Orchard estimated that the average special timber licence on the Coast has cost its owner in accumulated rentals and protection-tax payments from 1905 to 1955 the sum of $8.024 without interest, or with interest calculated at 5 per cent, the sum of $32,095.* This is equivalent to $2.50 per thousand board-feet for a licence with the average volume of about 13 million board-feet. These costs were anticipated at the time of issue; they were referred to by the Minister in 1912 as "interest." "In return licensees were required to pay only annual interest on the value of the timber reserved for them, which was to be paid for when it should be cut."

No evidence was presented to me as to the adequacy of the present royalty rates. The terms of the licences at time of acquisition provided that the rates should not be fixed, but adjustable in accordance with timber values at the times of cutting.

Developments in timber-disposal policy affecting timber sales and management licences provide for later adjustments in original stumpage rates by means of a formula (explained under my heading "Stumpage"), so it would not be inconsistent to provide a formula for adjustments in royalty

* Exhibit 312.

rates and thus remove at least a part of the uncertainty as to these rates, which is a handicap in economic planning.

Since timber-sale stumpage rates in the aggregate by districts have themselves taken account of changing conditions, affecting values and costs of production and are a very large part of the standing-timber market, the proposed formula should relate to them. I am not proposing that individual royalty rates should be applied to each licence as in timber sales. The principle of blanket rates applicable to all these " temporary " tenures, with the sole territorial distinction of Coast and Interior, has existed from the beginning, and presumably has been recognized in transactions affecting ownership of these tenures.

There is also a difference between estimation of values for what might be termed a retail sale of timber for immediate operation on an application for that particular block, and the application of a wholesale royalty rate to enormous volumes of timber (55 billion board-feet on the Coast), the cutting of any part of which may take place any time within perhaps forty years. The royalty rate will be one of the factors affecting decision as to that time of cutting. Average Crown timber-sale stumpages for any year are merely an aggregate of many " retail " sales and do not add up to a " wholesale " rate, although the volumes involved are very great.

The accumulated carrying costs, to which I have referred, were regarded fifty years ago as " interest " payable to the Crown on the value of timber reserved to the licensees. Nevertheless, the Crown has had the benefit of these sums, and it would be manifestly unfair to disregard them in establishing a royalty rate to-day comparable to stumpage payable on present timber sales which have contributed nothing to the Treasury prior to sale. Many present licence-holders have paid much more than the sum of these accumulations for their timber which, through the fifty years, has passed down a chain of owners. Such transactions were affected by many factors, such as the relative necessities of the then owners; the purpose, whether for immediate cutting or as a reserve to secure future supply for some large conversion plant and the economic conditions at the time of transfer, including the vulnerability of this class of tenure to increases in rates of royalty. Nor can the risks involved in holding vulnerable property for half a century be ignored. Through the years thousands of temporary tenures have reverted to the Crown after years of payments without any cutting or return to the investors.

The objective should be to establish a formula for royalty adjustable in accordance with broad economic fluctuations so as to make the burden comparable, after allowing for the factors I have mentioned, with that of other forms of timber ownership and acquisition of Crown timber.

It is logical that as the years passed, and the annual payments to the Crown accumulated, the percentage relationship of royalty to current stumpage rates should diminish. It represents the unpaid balance of the

original agreement. The royalty rates fifty years ago were doubtless regarded as the full value of the timber cut at that time. This relationship, royalty to stumpage, has also been affected greatly by economic conditions in the lumber markets. The royalty rates have not been flexible and susceptible to depression reductions as in the case of timber sales. If the adjustable principle is accepted the royalty rates should vary both up and down as do timber-sale stumpages, and in comparable manner.

As I have shown, licence royalties were originally intended to be, and were called " payment " for the timber. That is, they are the equivalent of stumpage prices; it is therefore relevant to compare them with current stumpage rates.

The revenue from royalty paid on timber cut on lands subject to lower than the standard rates is not reported separately, but after deducting from the totals the volume cut on such lands and royalty at 50 cents per thousand board-feet on that volume, average rates of about $1.60 per thousand board-feet on the Coast and $1.20 in the Interior are approximately those paid on timber cut on tenures subject to the full standard rates in 1955. Average stumpage rates paid on Crown timber scaled in 1955 were $7.23 on the Coast and $5.80 in the Interior. Royalty rates in 1955 therefore averaged about 22 per cent of current stumpage rates on the Coast and 20 per cent in the Interior.

On a similar basis of calculation the average royalty in 1948 was about 33 per cent of Coast and 22 per cent of Interior average stumpage rates.

Actually these percentages varied according to species and grades, but figures are not available to arrive at these details. The above is sufficient to indicate that royalty rates can be related to stumpage rates, and that the percentage of this relationship has on the Coast decreased through the years.

Royalty is payable on the scaled volumes of logs cut. Once a percentage has been decided upon and the stumpage rates to which that percentage is to be applied ascertained, it would not be difficult to apply this percentage by species on each scale and royalty account which includes logs subject to royalty.

I suggest that the average stumpage rates for every species be calculated by districts by the Forest Service annually, as indeed it is now, and that during the ensuing year royalty be charged at a figure in the reasonable proximity to 20 per cent of those rates, by species, on each scale of royalty-bearing logs originating within each district. This should not apply to those tenures which carry 50-cent royalty. That rate should remain the same until the old-growth timber has been cut.

With the above formula as the basis for negotiation, I recommend that representatives of the timber-owners be invited to discuss with the Forest Service or the Provincial Advisory Council, if one is created, the exact percentage to be adopted and whether it should differ between Coast and

Interior or an individual rate be established for each district, and whether rates should vary by grades, as now, or be uniform for each species as in the case of timber-sale stumpage. There does not seem to be any reason, apparent to me, for difference in assessment of values, or in scaling, in this regard between scaling for royalty or for stumpage.

The above recommendation is intended to apply to all mature timber in tenures subject to " standard " royalty and also the former Dominion timber berths. It is not intended to apply to second-growth timber in private holdings.

The word " royalty " in the present frame of reference more or less limited to the disposal by the Crown of a public natural resource is somewhat debased coinage when weighed in comparison with the rather splendid meanings and connotations associated with its more ancient use as descriptive of a Royal Prerogative of the Sovereign founded deep in history.

In its modern and plebeian application it is used to mean, in essence, part of the price chargeable for Crown timber payable when the timber is cut. It represents in part the unearned increment of old-growth timber reserved to the Crown. In my opinion, once that old growth is liquidated the obligation of the Crown grantee to pay royalty to the Crown is extinguished as the last old-growth tree falls. I would not, however, extend the application of this concept to any tenures subject to the payment of royalties except those under management, for example, in tree-farms, forest management licences, or such other forms of tenure and management as the Forest Service may deem adequate.

STUMPAGE

Without an actual count of individuals or pages of evidence, I would hazard an opinion, based on my recollection, that more witnesses expressed their view-point on stumpage in all its aspects than on any other one subject. I think I can also safely say that no other subject disclosed so many witnesses labouring under so many misconceptions. Knowledgeable and informed witnesses offering valuable criticism and constructive suggestions were, of course, not lacking.

The importance of, and general interest in, this subject may be understood when it is appreciated that in the last decade total stumpage revenues have increased 1,105 per cent, average stumpage prices received per 1,000 f.b.m. are up 235 per cent, and that over two-thirds of all forest revenues are derived from stumpage timber sales. Because of the importance of the subject and the widespread lack of understanding of the fundamentals of timber appraisals, I deem it advisable to deal at some length with this topic.

It seems to me the best way to approach this subject, with its many ramifications, is to examine first the procedures adopted by the Forest Service to arrive at stumpage prices, secondly to record the criticisms, and thirdly to make such recommendations as may appear warranted by the

evidence. The best evidence relative to present procedures is that advanced by the Forest Service itself, and the following comments are based upon or drawn from its informative submission contained in Exhibit 42, prepared by Mr. J. A. K. Reid, of the Stumpage Appraisal Section of the Forest Service Management Division.

The term " stumpage," as used in this context, means the dollar value of the raw timber standing in the forest—the value of the usable wood in the tree before the tree has been touched. Stumpage does not include any part of the cost of extraction.

For many years stumpage has been sold in terms of the product—board-feet of lumber, lineal feet of poles, cords of pulpwood, or cubic feet of sound wood—the buyer hoped to recover from the timber stand. There was an earlier day when the standing trees of the forest were sold at a price per tree. In order to make settlement it was common practice to count the stumps to determine the total sum owing, hence the term " stumpage."

Before considering the details of the stumpage-appraisal methods employed by the Forest Service, it might be worth while to consider, in a general way, the purpose of stumpage appraisals and some of the more commonly accepted methods of its ascertainment.

Appraisals of standing timber may be required for different purposes: as a basis of taxation, for resource or inventory studies, for comparison of different plans of management, or to determine its market value for sale or exchange. The purpose of the appraisal is a governing factor in determining the method of valuation to be used; for example, values of immature stands cannot usually be appraised by the methods used for mature merchantable stands. As appraisals are required by the Forest Service almost exclusively for the valuation of timber being sold on a pay-as-cut basis, they are generally confined to the determination of the current market value of standing timber for immediate cutting.

Various approaches to the elusive problem of market values of timber are in use. One of these is the method by which the stumpage price is fixed at a percentage of the selling price of the product. This approach is unsound because it omits the very important element of cost. Proponents of this approach usually admit the percentage should be varied with the distance of the logging " chance " from the manufacturing centre. This, of course, is an attempt at considering cost but considers only transportation. As more refinements are introduced, the more realistic appraisal is approached whereby the three elements, selling price, operating costs, and margin for profit and risk, are considered. All stumpage-appraisal methods consider these three elements but differ in the method used to calculate the allowance for profit and risk. It may be stated in general terms that the stumpage value is that portion of the selling price remaining after deducting an amount sufficient to cover all anticipated costs and a reasonable margin

for profit and risk. This follows from this premise that the price a prospective purchaser will pay for timber for immediate cutting is influenced or guided by the opportunity to make a profit from the conversion of the standing timber into a marketable product.

In order to make a realistic stumpage appraisal, it is necessary to determine the selling price of the finished product and to estimate, on the basis of the best information available, the total operating costs that may be anticipated in converting the timber, in a reasonably efficient manner, into that finished product. The next step is to determine the minimum reasonable profit margin that would be sufficiently attractive to allow an average operator to venture capital in the operation. The following are the most common methods used in calculating the reasonable margin for profit and risk.

Investment Method of Appraisal

In the investment method the margin for profit and risk is calculated on the basis of the average amount of capital invested in the operation. This profit margin is calculated as an average annual sum which is divided by the estimated average annual volume of production to determine the amount per unit of production. This method is recognized by the Forest Service as the soundest approach to appraising stumpage values, but it is contended sound data are not usually available to permit its widespread application. It is also said to be somewhat restricted because of the time-consuming intricacies of the calculations of the working capital and the average profit-bearing investment. The latter must be calculated separately for every item of equipment and improvement.

The total average profit-bearing investment is the sum of the amounts calculated for the various items or classifications of fixed investments.

The next step is to determine the amount of working capital required for the operation. This is done by considering the average amount of capital invested in production costs throughout the year at each step in the operation and adding an extra 10 per cent or so for contingencies.

The margin for profit and risk is calculated as a percentage of the total of the average profit-bearing investment and the working capital, bearing in mind that the risk attached to investment items which cannot be moved to another operation is greater than that for working capital and mobile equipment which can be recovered if the business fails.

By its nature, the investment method focuses attention on the annual rate of return on the investment as distinct from the overturn and operating ratio methods in which this consideration is somewhat obscure.

Overturn Method of Appraisal

In the overturn method, the margin for profit and risk is calculated on the basis of a percentage of the total operating costs (excluding stumpage).

Thus the total annual profit is dependent on the overturn period or the number of times the working capital in the form of operating costs is turned over each year. If the overturn or average period of use of each dollar of operating costs is three months, and the operating season is nine months, the working capital is used three times per year. On the other hand, if the overturn period is six months and the operating season is only six months, the working capital could only be turned over once a year.

This method has the advantage of simplicity and resembles a rule of thumb in that an approximate value can be quickly and easily calculated if the profit margin percentage is judiciously selected by one who realizes the weaknesses of the system. In selecting the percentage for profit and risk to apply, the overturn period and operating season are of prime importance, and it must be remembered that the percentage of operating costs must be sufficient to permit a reasonable annual return on fixed investments. Compatible results can be obtained by this method when applied to small volumes of timber to be removed by methods which require a relatively small capital investment, particularly where stumpage payments are often deferred until the product is sold.

In comparison with the investment method, the greatest weakness of this method is that no direct comparison of average profit-bearing investment can be made except on the basis of the appraiser's judgment in comparing one case with another, and even then different annual production rates may create a false impression. In cases where improvements requiring additional capital investment are made to reduce current operating costs, the use of the same percentage (of operating costs) for profit and risk would reduce the actual profit margin, thus penalizing increased efficiency.

In comparison with the following Rothery or operating ratio method, the chief difference is that stumpage is not treated as an operating cost in the overturn method. A further deficiency is that the arithmetic of the overturn process is such that all errors or discrepancies in estimates are absorbed in the stumpage.

Rothery Method of Appraisal

In this method the margin for profit and risk is calculated on the basis of a percentage of total operating costs and stumpage. This percentage is called the " profit ratio," and the object is to calculate the stumpage rates for each species so as to give consistent profit ratios, taking into account any real differences in risks for the various species.

The following is an example of the calculation of stumpage value by this method:—

	Species		
	Fir	Cedar	Balsam
(1) Selling price (estimated)	$55.00	$45.00	$40.00
(2) Profit ratio (say 13 per cent)	.13	.13	.13
(3) Discount value	$48.67	$39.82	$35.40
(4) Operating cost (estimated)	$35.00	$35.00	$35.00
(5) *Conversion return*	$20.00	$10.00	$5.00
(6) Indicated stumpage	$13.67	$4.82	$0.40
(7) Profit and risk	$6.33	$5.18	$4.60
(8) Valuation factor (per cent)	.67	.48	.08
(9) Operating ratio (per cent)	.885	.885	.885

Explanation of Factors

(1) Selling price: This is determined on the basis of information supplied, as will be explained later.

(2) Profit ratio (estimated by the appraiser) is the rate of return on the total of operating costs and stumpage that is considered sufficient to allow an opportunity for a reasonable profit from the operation considering the risks involved.

(3) Discount value: This is calculated by discounting the selling price by the profit ratio; that is, in this above example the selling price is divided by 1.13. It is the portion of the selling price remaining after deducting the margin for profit and risk and is therefore the amount available for stumpage and operating costs.

(4) Operating cost is the sum (per unit of measure) of all costs (except stumpage) which may be anticipated in the conversion of the standing timber into the finished product for which the selling price is determined. A reasonable level of operating efficiency is assumed.

(5) Conversion return is the gross margin or difference between the operating cost and the selling price. It is the sum available for stumpage and for profit and risk.

(6) Indicated stumpage is, of course, the portion of the selling price remaining after provision has been made for all anticipated operating costs (except stumpage) and for the margin covering profit and risk. It is calculated by subtracting the operating cost (line 4) from the discount value (line 3).

(7) Profit and risk. This item is the margin for an adequate anticipated return considering the risks involved. It is calculated by subtracting the indicated stumpage (line 6) from the conversion return (line 5). It is also equal to the selling price (line 1) less the discount value (line 3).

(8) Valuation factor is the proportion of the conversion return (or gross margin) that is absorbed by the indicated stumpage rate. Hence it is calculated by dividing the indicated stumpage (line 6) by the conversion return (line 5).

(9) Operating ratio is the proportion of the selling price that is absorbed by the total of operating cost and stumpage, that is, by the discount value. Like the profit ratio, it is a measure of the margin for profit and risk; in fact, the two are mathematically related. For any given profit ratio, the corresponding operating ratio is the reciprocal of one plus the profit ratio, that is, 1.00 divided by 1.13 in the above example.

These may be clearly illustrated as follows:—

Selling Price ($45.00)
Difference ($5.18) Profit and Risk
Discount Value ($39.82)
Operating Cost ($35.00)
Difference ($4.82) Stumpage
Difference ($10.00) Conversion Return
Total ($10.00) Conversion Return

$$\text{Profit Ratio} = \frac{\$5.18}{\$39.82} = .13 \text{ or } 13\%.$$

(That is, margin for profit and risk is 13% of total cost including stumpage.)

$$\text{Valuation Factor} = \frac{\$4.82}{\$10.00} = .48 \text{ or } 48\%.$$

(That is, stumpage absorbs 48% of the conversion return.)

In comparison with the Investment Method this system has the same weaknesses as the Overturn Method. In the above example the operating ratio is .885, which means the total costs including stumpage take 88.5 cents of each selling-price dollar. Therefore, as long as the operating costs and profit ratio are unchanged, any discrepancy in estimating the selling price is reflected in the stumpage rate in the proportion of 88.5 cents for each dollar the selling price is changed. Any error in estimating the operating costs is completely absorbed in the stumpage rate.

This method differs from the Overturn Method chiefly by treating stumpage as an operating cost and calculating the profit margin on the stumpage as well as on the other costs. If the above example were calculated by the Overturn Method, the allowance for profit and risk would probably be the same for all species. At 15 per cent of the operating costs, this would amount to $5.25 for each species, which would result in a negative indicated stumpage of 25 cents for balsam and a higher indicated stumpage of $14.75 for fir.

Forest Service Method of Stumpage Appraisal

The Forest Service method is a modification of the Rothery method described in the preceding section. Under this method both the profit ratio and the valuation factor receive consideration. In its application, the indicated stumpage is first calculated by the method used in the above example, but the final stumpage rate is increased or decreased where necessary so that the resultant valuation factor will not be less than .40 nor exceed .60. Where the valuation factor is between these limits, the stumpage is approved on the basis of the indicated stumpage. In the foregoing example it would be observed that the valuation factor for fir exceeds .60 while that for the balsam is less than .40. The final rate for fir would be set at 60 per cent of the $20 conversion return or $12, and the balsam rate would be set at 40 per cent of the $5 conversion return, or $2. The rate for cedar would be established at $4.80 on the basis of the profit ratio as the valuation factor is within the prescribed limits.

This method is therefore a compromise between the operating ratio method and the rule-of-thumb basis of dividing the conversion return equally between the buyer and seller. It recognizes the general principle of the operating ratio method within normal limits, but experience has proved that temporary peaks and depressions in market conditions can be disastrous to the buyer or extremely unfair to the seller if the operating ratio method is strictly followed at all times. The selling price of the product is not static but is constantly changing with the forces of supply and demand. Under the operating ratio method, from 85 to 90 per cent (depending on the profit ratio) of the changes in selling price is absorbed in the stumpage rate, but under the Forest Service method the stumpage

absorbs only 40 to 60 per cent of the difference. This modifies the effect of extreme fluctuations in selling price on the appraised stumpage rate.

The Forest Service method requires a preliminary calculating of stumpage on the basis of a profit ratio considered adequate by the appraiser. This preliminary calculation is made in the following manner:—

First of all it is necessary to consider what finished products will be used for purposes of the appraisal and to determine an average selling price for these products. That is, it must be decided whether the timber will be converted into logs, poles, ties, dressed lumber, or some other product. In some instances, different species may be assumed to be converted into different products or one species, such as cedar may be partly converted into poles and the rest into logs or dressed lumber. This step is necessary for an intelligent approach to the problem of estimating the operating costs that may be anticipated in the conversion of the timber to the specified products.

The next step is to estimate as precisely as possible the total amount of these operating costs.

Before the final calculations can be made, it is necessary to convert these costs and selling prices to equivalent amounts per unit of log-scale. For example, if the timber is to be scaled in cubic feet and the stumpage rate is to be expressed per C c.f. (100 cubic feet), it is necessary to estimate the total cost of converting one C c.f. of timber into the specified product and to determine the selling price obtained for the product that can be produced from that quantity of timber. Similarly, if the timber is to be scaled in cords, lineal feet, or other measuring unit, figures must be converted to the proper unit.

The other preliminary calculations of the stumpage value are as follows:—

A. Selling price (estimated)		$40.00
B. Profit ratio (estimated at 15 per cent)		.15
C. Discount value	A÷(1.00+B)=40.00÷1.15=	$34.78
D. Operating costs (estimated)		$30.00
E. Conversion return	A−D=40.00−30.00=	$10.00
F. Indicated stumpage	C−D=34.78−30.00=	$4.78
G. Profit and risk	E−F=10.00− 4.78=	$5.22
H. Valuation factor	F÷E= 4.78÷10.00=	.48

For explanation of above terms *see* p. 457.

If the figures in this example were correct and applicable in a given situation, they express in a summary manner most of the important considerations in the appraisal. To begin with, they indicate the appraiser has reason to believe $40 can be obtained for the products that can be procured from one log-scale unit of timber and he estimates it will cost $30 plus stumpage to produce and market these products. This indicates a conversion return of $10 available for stumpage to the owner and for profit and risk to the operator.

The summary also shows that the appraiser considers 15 per cent on total costs including stumpage would be a fair and reasonable allowance for

profit and risk margin for the operator. On this basis the discount value is $34.78, which means that the total costs including stumpage must equal $34.78 to provide for a profit and risk allowance which will amount to 15 per cent of $34.78. Since the selling price of $40 must equal 115 per cent of the total cost including stumpage, the discount value can be calculated as the fraction $^{100}/_{115}$ of the selling price, or simply by dividing the selling price by 1.15 in the case of a profit ratio of .15.

The other items show that these estimates indicate a stumpage value of $4.78 and a margin of $5.22 for profit and risk. This profit and risk of $5.22 is also equal to the difference between the selling price and the discount value ($40.00—$34.78) and represents an indicated net return of $5.22 on each $34.78 of total costs or 15 per cent of $34.78.

The valuation factor is a measure of the proportion of the conversion return that is absorbed by the indicated stumpage. In this case 48 cents of each dollar of conversion return is comprised of stumpage, or it could be stated that the indicated stumpage is 48 per cent of the conversion return.

In these appraisals both the profit ratio and the valuation factor receive independent consideration for each species. This is the method modification mentioned above.

After the indicated stumpage has been calculated in the manner described, the final stumpage is normally increased or decreased where necessary so that the resultant valuation factor will not be less than .40 nor exceed .60; where the valuation factor is between these limits, the stumpage is normally approved on the basis of the indicated stumpage rounded to the nearest 10 cents per C c.f. or per cord.

An example is as follows:—

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	Species			
	Fir and Larch	Spruce	Cedar	White Pine
Selling price per M b.m.	$63.00	$64.00	$58.00	$105.00
Conversion factor	1.50	1.50	1.50	1.65
Selling price per C c.f.	$42.00	$42.67	$38.67	$63.64
Profit ratio	.15	.15	.15	.20
Discount value	$36.52	$37.10	$33.63	$53.03
Operating costs	$30.94	$30.94	$30.94	$30.69
Conversion return	$11.06	$11.73	$7.73	$32.95
Indicated stumpage	$5.58	$6.16	$2.69	$22.34
Profit and risk	$5.48	$5.57	$5.04	$10.61
Valuation factor	.51	.52	.35	.68
			.40	.60
Recommended stumpage	$5.60	$6.20	$3.10	$19.80

In the foregoing example it is observed that the indicated valuation factor for white pine exceeds .60 and that for cedar is less than .40 while those for fir and spruce fall within the prescribed limits. The final rates recom-

mended for white pine and cedar would accordingly be determined at $19.80 and $3.10 by the application of the limiting valuation factors of .60 and .40 respectively.

Before a sound appraisal of a particular tract of timber can be made, it is necessary to have a fairly comprehensive knowledge or description of the area, together with some basic data with respect to the size, quantity, quality, and location of the timber. In short, it is necessary to know exactly what timber is being disposed of, the conditions under which it is to be cut, and the type of operation and equipment best suited for its removal and manufacture. The more detailed and reliable the information provided, the better the opportunity the appraisal officer will have to make a rational appraisal.

The following cruise information is essential in order that a proper appraisal can be made:—

(*a*) Total volumes to be cut, by species and products. This will affect the calculation of depreciation rate for roads, camps, and similar permanent improvements.

(*b*) Average d.b.h. by species for timber to be cut. The size of the timber has a significant effect on costs of cutting and handling.

(*c*) Utilization standards required. This will affect the volume to be cut and the average size of the timber. For example, if trees are to be cut to a 4-inch top diameter, the stumpage rate should be lower than if they are cut to an 8-inch top diameter, but the total stumpage value could be higher as a result of the increase in total volume utilized.

(*d*) Estimated log grades (Coast appraisals only). This will affect the average selling price used.

(*e*) Estimated percentage of defective timber. This will affect the estimated costs, depending on the nature and extent of defect. In some cases additional felling and bucking costs will be involved in bucking out the defect; in others, where partially defective logs are handled in succeeding steps in the operation, the transportation and manufacturing costs will be increased as a result.

(*f*) Classification of area by acres of merchantable timber and other types of cover, with sketch of area showing relative size and shape of patches of timber to be cut and main topographic features. This will permit a reasonably good estimate of roads and improvements required for the most suitable type of operation.

(*g*) Any other factors which will materially affect the operating costs for the particular stand.

In addition to the above, it is often considered desirable to have stand tables prepared for the various types as an aid in describing the distribution of d.b.h. classes and species as well as the average d.b.h. This is particularly true where a form of selection cutting is to be practised.

Silvicultural and Management Requirements

Silvicultural and other forest-management requirements may have a definite effect on the information outlined in the preceding section. For example, where individual trees are to be marked for cutting, the silvicultural method by which the trees are selected will affect the total volume and average d.b.h. of the timber to be cut, or in clear-cutting the reservation of strips or patches, for purposes of fire-breaks or seed sources, may affect the planning of the entire operation as well as the timber volumes to be cut. These in turn will affect the operating costs generally, although, as it will later appear, the evidence is somewhat conflicting as to whether or not tree-marking can be said to add to operating costs.

Restricted annual cuts as may be necessitated by management working plans and sustained-yield cutting budgets may also affect the type of operation and operating costs.

It might, for example, be considered that a particular logging unit could be operated most efficiently at a rate of 10 million board-feet per year. Normally this would form the basis for the appraisal, but if other management considerations necessitated a provision in the contract to restrict the average annual cut to 5 million board-feet, the appraisal would then have to be based on the restricted cut. This will result in increased road-maintenance costs, but a lower investment in camps and a higher profit ratio due to the lower annual production in relation to the total capital investment. All these and similar factors are considered before the appraisal is finally approved.

Having considered the silvicultural and other forest-management requirements for the particular stand, it is necessary for the appraisal officer to decide what size and type of operation would, in his judgment, be most efficient and logically suitable for the area. This must include provision for a method of transporting the forest products and all the steps necessary in the operation from stump to the nearest marketing or manufacturing centre. This proposed operating method forms the basis for estimating the operating costs in the appraisal.

Appraisal Zones

For stumpage-appraisal purposes, the Province is divided into a number of zones based on average practice in the region. The zones and locations of the nearest centres of manufacture or consumption for each product governs, to some extent, the operating costs in the appraisal, particularly with respect to allowances for transportation costs of the forest products.

As a general rule, where the appraisal is based on the selling price of dressed lumber, costs are allowed for processing the timber through the nearest or most convenient mill and loading it on the railroad car at the nearest or most convenient shipping point. In the case of portable rough-

lumber mills, where no planing-mill exists within a reasonable distance, but the volume of timber cut annually in the vicinity is sufficient to warrant the establishment of one, it is assumed for appraisal purposes that a planing-mill is established at the most convenient railroad shipping point.

Determination of Selling Prices

The average selling price of the product is essentially the starting point of an appraisal. Without some reliable indication of the price that can be obtained for the finished product, all the other calculations would be useless.

It is the policy of the Forest Service to use for appraisal selling-price purposes the average price received during the preceding three months' period for the first saleable products produced for which a freely competitive market exists.

On the Coast, by reason of the open log market, this product is logs, and the average selling price of logs is distributed by the Vancouver District Forester's office on the basis of information obtained from the B.C. Loggers' Association.

In the Interior the product selected is dressed lumber, and the selling price is determined by the Victoria Management office on the basis of information voluntarily supplied to Forest Service travelling auditors by planing-mills and other dressed-lumber shippers.

The decision whether to appraise on the basis of logs or dressed lumber is governed largely by the location of the area and the average normal practice in the region. In general, it is the practice in Coastal regions to separate the logging from the manufacturing. Hundreds of operators restrict their operations to logging and sell the logs at going market prices. These log-market prices are subject to the direct effects of supply and demand in addition to the indirect effect of market values for chips, pulp products, lumber, plywood, shingles, or other products. Since logs are usually sorted and used for the products for which they are best suited, no single manufactured product would be an accurate indication of the value of the logs. In addition to the impracticability of appraising on the basis of manufactured products, such a practice would be unfair to the logging operators, the majority of which have no manufacturing plants. For these reasons it is the practice in Coastal regions to appraise on the basis of Coast log-market prices.

Basis for Coast Appraisal Zones

For appraisal purposes the Coastal region has been divided into a number of zones based on the manufacturing plants established and the normal log-marketing practice in the zone.

Estimated operating costs in the appraisal include the cost of transporting the logs to the market points as specified for the zone in which the timber is situated, and the log-market prices distributed by the Vancouver District office are used as the selling prices at the market point.

Log Grades

Log selling prices vary considerably with their grade and the product for which they are suitable. It is therefore essential to reflect the timber quality in the appraised stumpage rate. To this end, the cruiser must provide his estimate of the log-grade percentages which it is reasonable to expect could be obtained from the timber. This estimate is usually based on experience and comparison with other areas from which the production by grades is known.

Although it is not general practice to try to estimate the log grades by product as well as grade (for example, subdivision of No. 1 fir into peeler, standard, etc.), such information is desirable, and it is reasonable to calculate the selling price on this basis when the information is available. Also, it is the practice to use the average price for standard fir logs in regions where it is known that the timber is not suitable for the production of any peeler logs.

Dressed-lumber Prices

It is the practice of the Forest Service to appraise on the basis of dressed-lumber prices throughout the Prince George, Kamloops, and Nelson Forest Districts, and in those portions of the Vancouver and Prince Rupert Forest Districts where the timber is tributary to a common-carrier railroad and the logging and milling are usually carried out by the same company or operator.

Where appraisals are made on this basis, the selling price used is the latest available three months' average market value of dressed lumber as determined by the Forest Service for the applicable zone. This is the weighted average price received by the shipper, f.o.b. the railway car, after deductions for freight charges, brokerage commissions, claims (for failure to meet specifications), and adjustments for duties and exchange on foreign currency; that is, the net price at the mill.

The lumber selling-price zones established for appraisal purposes are based on the average manufacturing practice in the region, the general timber type and species, and the markets competitively available by virtue of the railroad connecting systems and freight rates. To function reasonably well, a zone must be large enough to ensure that a sufficient volume of the predominant species is shipped during each three months' period to prevent undue variation in the average price as a result of abnormal proportions of high-grade or low-grade shipments.

Estimating Operating Costs

In estimating the operating costs, care is taken, it is said, to include all costs from stump to final destination, including supervisory costs, fringe benefits in union rates of pay, holiday pay, and similar items which are not apparent unless thorough methods are used in ascertaining costs from going operations.

Allowance is made for all costs necessary to finish the product to the same extent as that on which the selling price is calculated, and to deliver the product to the point specified. For example, for timber on the Queen Charlotte Islands, the nearest manufacturing centre is considered to be Ocean Falls for pulp-log grade and species and Vancouver for other log grades and species, and it is necessary to make provision for costs of delivering the logs to these points. This includes costs of towing the logs to the local rafting area, sorting, building the Davis rafts, towing to the destinations, breaking down the rafts, and final towing to the plant storage grounds.

Where the appraisal is based on net dressed-lumber prices f.o.b. railway car, provision is made for cost of drying and planing, including the estimated degrade loss in volume due to warping, checking, and splitting when the lumber is drying, and the cost of delivering to and loading on the railway car. Where it is known that the selling price has been calculated on the basis of a certain percentage of kiln-dried lumber shipped from the zone, provision is made in the manufacturing costs for kiln-drying a similar percentage of the timber being appraised.

Just as essential as ensuring that provision is made for all necessary operating costs is the necessity for avoiding duplication of allowances for the same cost under different headings. Careful inquiries are made to ascertain exactly what is included in cost items and contract rates so that the appraisal officer will be certain that costs are not duplicated for items such as maintenance of equipment, workmen's compensation, and depreciation.

Upset Price

If reliable data are used correctly and judiciously in the appraisal, the Forest Service believes resulting indicated stumpage rates should be an accurate measure of the value of the timber for immediate cutting. This does not necessarily mean that in the opinion of the Forest Service it is in the public interest to dispose of the timber at that price. In fact, the appraisal may even indicate to the appraiser that the operation is uneconomic and that, under normal conditions and with an average level of operating efficiency, the costs of converting the timber into a saleable product would exceed the average market value of the product.

As a guide for appraisal officers who are faced with decisions in such cases and for the purpose of consistently uniform practice throughout the Forest Service, a policy is maintained not to dispose of timber below certain minimum stumpage rates unless there are special reasons for doing so. The necessity for immediate salvage operations to recover values which otherwise would soon be dissipated or the silvicultural desirability of removing an existing highly defective crop to promote new productive forest growth would be examples of cases where the Service considers it in the public interest to dispose of the timber below the normal minimum stumpage rates established at the time.

Normally, where stumpage rates in excess of the prescribed minimum are indicated by the appraisal and fall within the limits of 40 to 60 per cent of the conversion return, the upset stumpage rates are set on that basis.

Minimum Stumpage Rates

Normal minimum upset stumpage rates are currently set at the highest rate, calculated by the following three alternative methods:—

(*a*) Forty per cent of the conversion return:

(*b*) Two and one-half times current royalty rates:

(*c*) A percentage of the selling price (per unit of log-scale) used in the appraisal, depending on the region:—

(i) Coast appraisals in the Vancouver Forest District—10 per cent of the log selling price used in the appraisal:

(ii) Coast appraisals in the Prince Rupert Forest District—9 per cent of the log selling price used in the appraisal:

(iii) Appraisals on the basis of the finished-lumber prices—7 per cent of the dressed-lumber price used in the appraisal.

The first alternative—40 per cent of the conversion return—really has little to do with minimum stumpage rates but is rather part of the current British Columbia Forest Service method of calculating the indicated stumpage rate in an appraisal.

The second alternative is related to a comparison with the Crown dues (royalty) an owner of private timber would normally have to pay after holding the land and paying taxes and other carrying charges on it for a considerable number of years.

The third limiting factor—the percentage of the selling price—is a result of two considerations, namely, the percentages of the selling prices that were normally bid in previous years, and the effect which might be produced by the election of sliding-scale stumpage adjustments. It was as a result of the former consideration that the percentage was varied between the two Coastal regions, while the different end products on which the selling prices are calculated accounts for the difference between the percentages applied in the Coast and Interior appraisals.

The sliding-scale stumpage adjustment formula influences the decision in the following manner: The stumpage rate bid in comparison with the average market value (of the product) quoted in the particulars of the sale sets the basic ratio once and for all (as far as the species in question is concerned) during the life of the contract. Thenceforth, revised stumpage rates are recalculated at three-quarters or five-fourths of that basic ratio (times the current market value), depending on whether the current market value is below or above the one quoted in the particulars of sale. Thus, if the bid price is 10 per cent of the selling price at the time of issuance of the sale, subsequent rates (in the event adjustments become due) will be calculated at 7½ or 12½ per cent of the current selling price, depending

on whether it is above or below the original. From this it follows that, if the original stumpage price is at a very low percentage of the selling price, subsequent increases will be very small in the event of rising market prices. For example, if the bid price were equivalent to only 4 per cent of the selling price, the maximum stumpage rate would be only 5 per cent of the current price, with the result that at a selling price of $100 the stumpage would be only $5.

Stumpage Appraisal on Forest Management Licences

Under the provisions of subsection (20) of section 32 of the "Forest Act" (set out in detail in the previous section dealing with management licences generally), the holder of a management licence may elect to pay stumpage by one of two alternative methods in respect to timber cut from Crown lands included in the licence, and not held under other tenure.

The first of these alternative methods provides that for all timber on such areas which is considered merchantable—not less than one-half the rotation age—at the time the management licence is signed, the licensee shall pay the full appraised stumpage rate, as and when the timber is cut, and the appraisal shall be made by the method currently in use by the Forest Service. In this event no allowance would be made in the appraisal for any extra forestry costs as a result of operating under the terms of the management licence. As and when other timber is cut from such areas (that is, timber too young to be considered merchantable when the licence is signed—less than one-half the rotation age), the licensee shall pay 16 per cent of the stumpage rate, inclusive of royalty, appraised by the method currently in use by the Forest Service. This system follows the principle I recommended in 1945, although the rate is higher.

Under the second alternative method, all timber cut from such areas must be paid for at the rate appraised by the Forest Service, but the appraisal must allow as "a logging cost" the extra forestry costs sustained as a result of operating under the terms of the management licence. Most management licensees have elected this method. Presumably this is because they recover some of their costs now, whereas by the first method they would have the same expenditures without any return for perhaps fifty years. I say "some" advisedly because no allowance is made for forestry expenditures on Crown-granted land or on timber licences and leases included in the management licence (a policy which operates to the advantage of the holders of management licences in the Interior, which licences are almost entirely Crown land and timber). Then, too, it must be remembered that the allowance as "a cost of logging" in timber-sale appraisals by the modified Rothery method used by the Forest Service results in recovery by the licensee of only about one-half of the approved forestry expenditures.

Before an appraisal can be finally approved, it is necessary to ascertain which of these alternative methods of appraisal I have mentioned has been elected and to include or exclude the forestry costs accordingly.

The costs of forest management, including protection and silvicultural treatment, on a management licence which are deemed to be just and proper by the Forest Service are commonly referred to as " forestry costs."

The problem of segregating forestry costs from operating costs is a complex matter, and many specific items must be dealt with on their particular merits in consideration of circumstances on the management licence concerned. However, decisions are usually made in accordance with the general principles embodied in the following comments:—

(The fact that certain items are not recognized as forestry costs does not imply that these costs will not be recognized elsewhere in the appraisal, but merely that the items to be included under the term " forestry costs " should be confined to those which would not be incurred if the company were not practising long-term forest management on a sustained-yield basis.)

As a general rule, no allowance will be made in an appraisal for forestry costs that have not actually been incurred by the licensee.

Difficulty has been encountered in attempting to make reasonably accurate predictions of the amount that would be spent for forestry work. In some instances, foresters have outlined rather large programmes, later to find that funds are not made available to them for the purpose of carrying out the work, despite the fact that allowances were made in the appraisal.

Therefore, it is the policy of the Forest Service not to make the allowance until the cost has been incurred by the licensee. Holders of management licences are made aware of this policy and are requested to submit, periodically, statements of the forestry costs they have incurred. It is customary to obtain this information from the company each year and make the allowance for the previous year's expenditures on the timber to be cut the following year.

Forestry costs are generally confined to items which have a fairly long-term forestry aspect and which are not chargeable to a particular small unit of timber being cut; for example, costs of cruising for inventory or working-plan purposes would be classified as a forestry cost, but the cost of cruising timber for immediate cutting under a cutting permit would be considered an operating cost.

Forestry costs do not usually include allowances for methods or practices in general use by companies of similar size that are still operating on a timber sale or liquidation basis; for example, many companies, particularly on the Coast, make a practice of providing fire-protection equipment in excess of requirements under Forest Service regulations and take extra fire-prevention precautions to protect their logging investments and improvements and to comply with insurance requirements; these, therefore, are considered operating costs.

Initial costs of application and advertising are not considered a forestry cost. Companies operating on a liquidation basis are constantly confronted with costs of locating and acquiring timber, contacting owners, statusing lands, applying for timber sales, cruising and advertising costs, and such like. These may be considered a straight cost of staying in business, the difference being that the management licensee has a higher initial cost in acquiring a perpetual supply of raw material. The acquiry of the licence is deemed sufficient compensation for this expense (in comparison with an unsuccessful applicant) without the additional benefit of a refund of all costs through lower stumpage; hence no allowance for these expenses is made in the appraisal.

Inventory and working-plan costs (including initial working plan) are deemed to be forestry cost and are amortized over the period between successive revised working plans, unless the cost is small enough to be treated otherwise.

Fire-protection costs fall into three main classes and are treated accordingly:—

(*a*) Equipment, improvements, and personnel used chiefly in protecting the standing timber from fire or in minimizing the probability of serious damage in the event a fire occurs, for example, permanent weather stations, trails, lookouts, access protection roads not suitable for logging, lookoutmen, patrolmen, fire-tool caches, and similar items. These expenditures for fire prevention are treated as forestry costs.

(*b*) Equipment, improvements, and personnel engaged chiefly in the prevention of fire on the actual operation, which, it is reasonable to suppose, would be provided by the licensee or operator whether or not the operation was being conducted on a management licence, for example, all fire-tools and equipment required by the regulations and, in some cases, additional equipment of a similar nature and purpose. These expenditures are treated as operating costs.

(*c*) Actual fire-fighting costs, anywhere in the management licence area. These expenditures are not allowed as a forestry cost or as an operating cost in the appraisal. The total operating costs used in any stumpage appraisal are the appraisal officer's estimate of the costs which will be encountered; hence provision cannot be made for costs of fighting fire. This is a risk which it is thought the licensee or operator must assume, and as such can only be allowed for in the profit ratio selected. The "Forest Act" sets out the circumstances under which the operator shall have a claim against the Crown for expense incurred in fighting forest fires, a subject dealt with when considering forest protection generally.

The decision with respect to what forestry staff costs are to be included depends on the nature of the work the personnel are doing. Time spent in

such duties as cruising timber for immediate cutting, laying out logging-roads, and other work related to the actual logging operation will be treated as an operating cost, but, for example, time spent on inventory work, pathology, entomology, growth studies, reforestation, and laying out access protection road may be considered forestry costs by the Service.

Costs of special studies related to forestry will be deemed forestry costs if their primary object is to determine the condition and behaviour of forest stands. These will include such subjects as ecology, growth and yield, pathology, entomology, mensuration, and experimentation with various silvicultural systems or practices. On the other hand, studies of production techniques in logging or manufacturing, marketing methods, and similar studies designed to improve the efficiency of the operation will not normally be allowed for in the forestry costs.

Costs of reforestation and aforestation on areas not privately owned will be treated as forestry costs.

It is the stated objective of the Forest Service that cutting in every stand be conducted under what is considered the best silvicultural treatment for the particular stand, whether on a management licence or not. Therefore, as long as it is anticipated that a particular operation will be economically feasible and profitable under the silvicultural treatment proposed, the Service holds that it should stand on its merits without charging part of the cost to forestry. In general, forestry costs do not include allowance for added logging costs attributed to the special silvicultural treatment, but these are reflected in the other estimated operating costs.

Exceptions to the above would be special studies mentioned previously and special cases where timber is intentionally removed at a loss for stand improvement purposes or to combat the spread of insects or disease. The loss sustained in such cases could be included as a forestry cost, provided the loss was not due to a change in market conditions.

Cost of obtaining cutting permits is treated as an operating cost rather than a forestry cost as it is comparable to the cost of obtaining a timber sale.

The method of depreciating logging-roads on management licences may differ from the normal practice used on timber sales. Where an operator constructs a road for a timber sale, the timber tributary to the road is usually removed during a relatively short period, and the road may be depreciated against the available tributary timber. On management licences it will sometimes require a much longer period to remove all the tributary timber. This may require a complete rotation, or, in the case where a sustained-yield unit is intensively managed under a selection cutting system, it is conceivable that the road might be used until a more economic transportation method is devised which would render the road obsolete.

It is the objective of the Forest Service to have the logging-roads on a management licence written off as quickly as possible. Where the licensee undertakes an extensive programme of advance road construction, this

means as quickly as the appraisals will reasonably permit, and it may be necessary to vary the rate from year to year according to market conditions and other factors.

There are several possible methods of treating the costs of logging-roads. The matter is usually discussed with the management licensee to determine which is most suitable for the particular licence in consideration of the accounting practice of the company. In some cases it will be preferable to combine all road costs on a management licence into one total and depreciate it against the total cut from the licence area. In others it may be desirable to segregate main-road costs from branch-road costs and charge the latter to the particular cutting permit areas they serve. Circumstances vary somewhat from one management licence to another. In each case an effort is made to arrive at a mutually satisfactory method, and the licensee is asked to co-operate by keeping records and providing the required road-cost information.

The method of calculating the depreciation of logging-road costs whereby the cost is depreciated against the total volume of tributary timber may be referred to as the liquidation method. This is the method generally used in timber-sale appraisals, in clear-cutting operations, and in cases where the road will be used as a logging-road for the removal of a certain volume of timber (during an initial cutting cycle, for instance), after which another road will be developed.

There are two common systems of calculating the rate of depreciation under this method. By one method the total estimated cost of the road system in the topographic unit is divided by the total estimated volume of timber to be removed to determine the rate per unit. By the second method the amount of money spent on road development is divided by the volume of timber tributary to the roads developed to that point, and as the roads are extended the depreciation rate is progressively recalculated by dividing the undepreciated cost by the new estimate of timber made accessible.

For example, during the first year 3 miles of road might be constructed at a cost of $15,000 and this might provide access to 1,000,000 cubic feet of timber. The rate of depreciation would then be set at $1.50 per hundred cubic feet. During that year 400,000 cubic feet might be removed, with the result that $6,000 is written off, leaving an undepreciated amount of $9,000. During the second year another 3 miles of road might be constructed at a cost of $12,000, providing access to an additional 1,000,000 cubic feet. The total undepreciated cost is then $21,000, and the corresponding volume of timber is 1,600,000 cubic feet. The rate of depreciation for the second year is therefore calculated at $1.31 per hundred cubic feet.

A more flexible method of calculating depreciation on logging-roads on management licences is one whereby the costs are depreciated against the volume of timber that will be removed in an arbitrarily assumed period of

time. The length of the period is varied to suit the circumstances. Where no large-scale programme of advance road-building is involved, the period may be as short as one year, which results in treating road-construction costs as a current operating expense. In other cases a period of ten or twenty years may be required to write off the investment at a reasonable rate consistent with circumstances.

Under a modified version of this method the rate is varied from year to year, depending on market conditions, other operating costs, and the undepreciated cost of logging-roads in relation to the allowable annual cut. In effect, this amounts to charging a minimum depreciation rate when the conversion return is small and increasing the rate of depreciation at more favourable periods in keeping with the Forest Service objective of depreciating the roads as rapidly as practicable.

When using this method, care must be taken that depreciation charges are not deferred to the point where the undepreciated amount is unreasonable in relation to the allowable annual cut.

The minimum rate of depreciation, while any depreciation charges on logging-roads are deferred under the above method, is determined on the basis of the average road-construction costs incurred on timber sales in the region under reasonably similar conditions. To be consistent with Forest Service practice in timber-sale appraisals, this amount must be written off whether or not a minimum stumpage rate is applied.

Minimum stumpage rates for timber cut from management licences are the minimum for timber sales less one-half of the forestry costs for the particular licence.

I do not recall any substantial objections being raised during the Inquiry to the allowance of forestry costs to forest management licensees, but it is my thought that there is a basic weakness in the principle of forestry allowances, reduction of dues on temporary tenures, or any other form of subsidy or preferential treatment in connection with management licences other than the allocation of Crown timber at non-competitive prices to assure the future supply of an industry. It should be recognized by licensees that the public is assisting them to build up a valuable property by allocation of timber at a cost less than they could obtain it in any other way and payable only as and when it is needed. This should in itself, as in the Eastern Provinces, justify reasonable expenditure on forestry practices designed to improve and perpetuate the forest; otherwise it is implied that sustained-yield forestry, even when applied to a forest with an ample supply of mature timber, is not an economic investment. This cannot be admitted.

It is my tentative view that if an industry is not prepared to invest in a management licence to secure its own future, when assisted by allocation of sufficient Crown timber to add to its own holdings without other induce-

ments, with the prospect of building up a permanent forest subject only to nominal annual licence fee and yield tax on second and subsequent harvests, then real interest in that industry's future is lacking and no management licence should be awarded to it. Such a conversion plant should be supplied by purchase of Crown or private timber in competition with other industries as heretofore.

The small amounts of these forestry allowances is shown in Table 17. They indicate that there is no great enthusiasm for expenditure on forestry procedures, even when the Government pays half of the cost. There are also other factors which, I think, deserve consideration: the abolition of such allowances would render unnecessary much work in inspection, compilation, and approval of costs claimed for forestry expenditures as a reduction in stumpage appraisals, help to allay the suspicions of other operators who believe these allowances reduce forest management licence stumpage to a greater degree than they in fact do, and remove inconsistencies between licensees who are spending their " forestry " money in Crown timber and those who have the same costs in managing their private timber.

It seems to me that this matter should be made the subject of further study by the Provincial Advisory Council. If the Council recommends that forestry costs be not allowed in future appraisals and the Government implements the Council's recommendations, then I would suggest as a necessary corollary that if for any reason other than violation of the provisions of the management licence the licence is terminated by Government action before the second growth reaches maturity, and is cut by the licensee, he should be compensated by payment to him of the estimated value of the timber at the date of cancellation of the licence.

Reappraisal

From 1912 to 1951 it was the firm policy of the Forest Service not to reduce the stumpage rates on a timber sale by means of or as a result of a reappraisal, as it was believed such a practice would lead to abuse and misunderstandings. The only means available for a reduction in stumpage rates on a timber sale prior to the introduction of the sliding-scale option involved surrender of the existing contract with a request for an entirely new competitive sale. Such procedure included forfeiture of the security deposit and no consideration for any equity the licensee might have in respect to improvements appurtenant to the area when the new sale was disposed of by public competition.

This policy was incompatible with the requirements for long-term timber sales as proposed in 1949 and 1950. Judging by the manner in which prices of logs and lumber had behaved in the past, there would certainly be some wide fluctuations in prices during the ten- to twenty-year periods involved in these long-term timber sales. The sliding-scale stumpage adjustment formula was therefore devised to permit some upward and down-

ward adjustments in stumpage prices on these long-term sales whenever important changes in market conditions occurred, and at the same time to permit the Department to maintain its long-standing stumpage reappraisal policy. It was not intended that the formula should reflect minor changes in market prices, such as might occur from one month to another, but only to permit adjustments in the event major variations of 20 per cent or more should occur.

The new system use was extended in October, 1951, to include short-term contracts (except those for minor products) on an optional basis according to the preference of the successful bidder at time of award of the sale. At first the option of having stumpage adjustments by sliding scale instead of by reappraisal at two-year intervals applied only to contracts awarded after that date, but in March, 1953, the option was offered to licensees of contracts awarded prior to October, 1951.

Many persons engaged in the forest industry felt the requirements that market prices change by 20 per cent before an adjustment could be made in stumpage rates did not permit the adjustments to be made frequently enough. As a result of their representations, this requirement was reduced to 15 per cent in the case of sales made after September, 1952.

As explained above, the general object of the sliding-scale stumpage method is to have the stumpage rates tied to a market-price index and adjusted from time to time as the index rises or falls. However, the nature of a stumpage appraisal is such that, in the event of a rise in market value of the product, not only is a higher stumpage value indicated, but the proportionate increase in indicated stumpage value is greater than the proportionate rise in market value. The converse holds true when market values decline. An attempt was made to embody this concept in the formula for making stumpage adjustments by increasing or decreasing the percentage of the average market price according to whether the index is above or below the original.

The basis of determining the market-price index or average market value for purposes of sliding-scale stumpage adjustments is as follows:—

In the Interior it is determined in the same manner as the selling price used in stumpage appraisals, namely, the average net price received for each species, during the preceding three months for shipments of dressed lumber from the zone and rounded to the nearest dollar.

On the Coast it is determined as the average price by species for all reported log sales during the preceding three months according to information from the B.C. Loggers' Association and rounded to the nearest dollar.

Before an adjustment in stumpage rates can be made for any species, two conditions must be satisfied:—

(*a*) Three months must have elapsed since the date of the contract or since the last adjustment for that species.

(*b*) The current price index or average market value in use must be at least 15 or 20 per cent (as stated in the contract) above or below the one in effect when the present rate for that species was fixed.

If these two conditions have been fulfilled, an adjustment becomes due and the revised stumpage rate is determined in accordance with the sliding-scale formula. In expressing this formula the term " basic ratio " is used to define the relationship between the stumpage rate bid for a species and the original average market value as quoted in the contract. For instance, in the example below, the basic ratio would be the bid stumpage price of $14.40 divided by the original average market value of $60, and it could be expressed as .24 or 24 per cent. Adjusted stumpage rates would be calculated by whichever of the following three alternatives would be applicable to the particular case, provided the above two conditions are satisfied:—

(1) If the current average market value is higher than that quoted in the contract, the revised rate becomes 1.25 times the basic ratio percentage of the current average market value, and the stumpage rate is adjusted accordingly up or down. In the example below, five-fourths of 24 per cent of the current average market value.

(2) If the current average market value is lower than that quoted in the contract, the revised rate becomes 0.75 times the basic ratio percentage of the current average market value, and the stumpage rate is adjusted accordingly down or up. In the example below, three-quarters of 24 per cent of the current average market value.

(3) But if any adjustment has been made previously and the current average market value is within 10 per cent of that quoted in the contract, the rate reverts to the original rate bid and the next adjustment will be made when the average market value has departed by the required 15 or 20 per cent or more from that quoted in the contract; that is, the Forest Service starts all over again using the original rate bid and the average market value quoted in the contract.

Each species is treated individually for adjustment purposes. Thus a sale covering four species is treated as four separate contracts when it comes to calculating the adjustments for the different species. One or more species might have their stumpage rates adjusted one month and some other species could have its rate adjusted the following month. It is the practice, however, when an adjustment is made for any species to include in the notice of stumpage revision both the current average market values and the current stumpage rates for all species. Stumpage rates for deciduous species and for minor products are not adjusted during the life of the contract.

There is a further provision that in no case shall any stumpage rate be less than two and one-half (2½) times the current royalty rate for the species involved.

To illustrate the effect of sliding-scale stumpage on the rates charged under various market prices, the hypothetical example below is presented. For purposes of this example it is assumed only one species is involved and its average market value at the time particulars of the sale were distributed was $60. As a result of competitive bidding, the bid stumpage rate is set at $14.40. It is also assumed that the contract was issued prior to September, 1952, so that adjustments are made on the basis of a 20-per-cent change in average market value and that, over a considerable period of time, the average market value gradually dropped to $36 then rose to $75 and finally fell to $57.

The following will show the various adjustments that would have been made in the stumpage rates:—

EXAMPLE

Average market value quoted in contract $60.00
Bid stumpage price $14.40

First Adjustment

Current average market value $48.00

Revised stumpage rate becomes—

$$0.75\left(\frac{14.40}{60.00}\times 48.00\right) = .75\times 11.52 = \$8.64$$

This would be rounded to $8.60.

Second Adjustment

Current average market value $38.00

Revised stumpage rate becomes—

$$0.75\left(\frac{14.40}{60.00}\times 38.00\right) = .75\times 9.12 = \$6.84$$

This would be rounded to $6.80.

Third Adjustment

Current average market value $46.00

Revised stumpage rate becomes—

$$0.75\left(\frac{14.40}{60.00}\times 46.00\right) = .75\times 11.04 = \$8.28$$

This would be rounded to $8.30.

Fourth Adjustment

Current average market value $56.00

As this is within 10 per cent of the original average market value of $60 quoted in the contract, revised rate becomes the original rate of $14.40 and next adjustment will be made when the current average market value is 20 per cent above or below the contract base price of $60.

Fifth Adjustment

Current average market value $72.00

Revised rate becomes—

$$1.25\left(\frac{14.40}{60.00}\times 72.00\right) = 1.25\times 17.28 = \$21.60$$

Sixth Adjustment

Current average market value $57.00

Original bid rate of $14.40 would apply as in the case of the fourth adjustment above.

ZONING FOR APPRAISAL

The eight Coast appraisal zones were set up on the basis of existing manufacturing plants and usual log-marketing practice. The general principle is to segregate the logs into the two main classes—those best suited for pulp-manufacture and those suitable for lumber, shingles, and plywood-manufacture—and to appraise each class to the nearest logical manufacturing centre. The Forest Service does not recognize that a specified grade of pulp-class logs is worth more to one pulp plant than to another, or that a specified grade of lumber-class logs is worth less at one sawmill than another. Therefore, the same average selling price for the specified log classifications is used for all zones.

From this extended examination of Forest Service procedures, that I felt bound to embark upon because of the many misconceptions held by many witnesses, it may be seen that stumpage appraisals are not fixed by some shadowy figure in the recesses of a temple of a mysterious cult, but are determined by men of experience using as a guide mathematical formulæ designed to distribute the profits from a natural resource as justly as may be done.

That this branch of the Service has met with criticism is to be expected. Much of it was from smaller operators who were unacquainted with Forest Service procedures, and these can be dismissed with the thought that the officers of the Service could probably minimize their grievances by adopting a somewhat less secretive and more open manner of doing business with them.

Other criticisms cannot be so easily resolved.

Criticisms of Methods of Stumpage Appraisal

Zoning.—Considerable evidence was offered in opposition to the eight Coast stumpage zones. The idea motivating the creation of these zones was the anticipation that stumpage prices appraised on the basis of these areas would encourage the decentralization or disposal of conversion plants. As I pointed out above, the Forest Service to carry out this intention segregated the logs into two main classifications—those best suited for pulp-manufacture and those suitable for lumber, shingles, and plywood-manufacture. Each class was then appraised as if consumed in the nearest logical manufacturing centre. The fact that the areas tributary to the plants on the Northern Coast, such as Ocean Falls and Prince Rupert, contain several times the sustained-yield capacity to support the plants now established did not appear to alter the policy of the Forest Service. In fact, I suppose it strengthened their purpose to maintain the zoning system as a means of attracting conversion plants to unused sources of supply. In experience it

did not work out that way. Not a single conversion plant, large or small, has been built because of the operation of this system. In truth, this zone system of appraisal has had untoward results arising from the basic theory of the Forest Service that a specified grade of log is not worth more at one conversion plant than at another. In other words, if a No. 3 hemlock log was worth $50 a thousand at Vancouver, then the same log, in the opinion of the Forest Service, would be worth $50 a thousand at Prince Rupert, Ocean Falls, Port Alice, Port Alberni, or Powell River. Inasmuch as the Vancouver market is the only reasonably free and competitive market for logs of all kinds on the Coast, the Vancouver log price is used as the foundation of the appraisal structure. However, when estimating logging costs in the various zones, the Forest Service only allows the cost of transportation from the particular timber sale to the nearest conversion plant capable of using the particular type of log appraised. For instance, logs produced from a timber sale on the Skeena River are, in the case of hemlock, balsam, and spruce (the so-called pulping species), appraised with an allowance for transportation only equivalent to the cost of such transportation from the logging area on the Skeena River to the pulp-mill at Prince Rupert, even if sold at Vancouver.

The result is that if a logger operating in a congested area in the Vancouver District and supplying a mill in that area moves up the Coast to an undercut region to secure a new source of supply for his Vancouver consumer, he is assumed to have sold his logs to a mill, say, at Powell River, and, as a result, has to absorb the towing charges from Powell River to Vancouver.

This tends to discourage the extension of logging to areas on the North Coast seriously undercut while maintaining the pressure on the already overburdened regions in the Vancouver District.

Other difficulties, more or less local in effect, are as follows:—

(1) *Port Alice Zone.*—The indicated stumpage for fir is often lower than for hemlock in spite of its higher selling price. This is due to the high cost of transporting the fir and other lumber-class logs to Vancouver in comparison with the short inland water tow to Port Alice for hemlock and other pulp-class logs.

(2) *Tahsis Zone.*—In this zone, although adjacent to the Port Alice Zone, the indicated stumpage for the lumber-class logs is very high due to the short tow to the nearest sawmill.

(3) *Alberni and Cowichan Lake Zones.*—Indicated stumpages usually high in comparison with other Coastal regions due to short distance from the assumed manufacturing centre for all logs.

The eight Coastal zones referred to, designated by the names applied to the general area in which the zones are established, are as follows:—

Zone A—Prince Rupert.—Spruce, hemlock, and balsam, all grades, to Prince Rupert. Cedar, all grades, to Vancouver.

Zone B—Queen Charlotte Islands.—Spruce, hemlock, and balsam, all grades, to Prince Rupert or Ocean Falls. Cedar, all grades, to Vancouver.

Zone C—Ocean Falls.—Spruce, hemlock, and balsam, all grades, to Ocean Falls. Fir and cedar, all grades, to Vancouver.

Zone D—Vancouver (Southern Coast).—All species to Vancouver.

Zone E—Port Alice.—Spruce, hemlock, and balsam, all grades, to Port Alice. Fir and cedar to Vancouver.

Zone F—Kyuquot and Nootka Sounds (Tahsis).—No. 1 hemlock, Nos. 1 and 2 spruce, fir (all grades), and cedar (all grades), to Tahsis. Nos. 2 and 3 hemlock, No. 3 spruce, and balsam to Port Alberni or Port Alice.

Zone G—Alberni.—All species to Port Alberni.

Zone H—Cowichan Lake.—All species to Cowichan Lake.

Illustrative rates for towing from and to selected Coast points are as follows (rates are for tow only and do not include insurance or costs of raft building or breakdown):—

From	To	Rate per M F.B.M.	Min. Vol.
1. Kennedy Lake or Ucluelet	Seattle, Howe Sound, or Vancouver	$5.50	800 M
		5.00	1,000 M
2. Ucluelet	Port Alberni—		
	Flat rafts	1.75	1,000 M
	Bundles	1.35	1,000 M
3. Tofino	Vancouver	6.00	1,000 M
	Victoria	5.50	1,000 M
	Port Alberni	3.50	1,000 M
4. Tahsis	Vancouver	7.50	800 M
	Victoria	7.00	800 M
	Port Alberni	4.25	800 M
Queen Charlottes[1]	Prince Rupert	4.37	
	Ocean Falls	4.37	
	Teakerne Arm, Redonda Island	6.50	
	Powell River	6.90	
	Vancouver	7.47	
	Port Alice	7.47	
Beaver Cove	Ocean Falls	1.90	

[1] Davis rafts of 2,000 M f.b.m., taken to Captains Cove, then 4,000 to 6,000 M f.b.m. are taken in tow to points south.

AN ILLUSTRATION OF THE EFFECT OF STUMPAGE ZONES AND TOWING

This illustrates a case of a logger operating first in the vicinity of, say, Toba Inlet and then moving to near Ocean Falls. The case is imaginary, but the transportation costs are realistic. The example is for hemlock, as fir and cedar are appraised to Vancouver in either case.

In each case assume:—

(*a*) Comparable timber.

(*b*) Vancouver market price, $50 per thousand.

(*c*) Logging costs excluding log transportation and stumpage, $30.

A. Supposing No Stumpage Zones Existed

1. *Operation near Toba Inlet*

Log transportation (booming and towing)		$4.00
Total cost excluding stumpage	$30.00+$4.00=	$34.00
Selling price		50.00
Difference		$16.00

The effect of stumpage appraisal is to charge 40 per cent to 60 per cent of this $16 difference. Let us use 50 per cent in this case.

Stumpage is, therefore, 50 per cent of $16 or $8 per thousand.

Operator's total cost is thus $42 and his margin $8.

2. *Operator Moves to near Ocean Falls, Still Shipping to Vancouver*

Transportation (Oregon-dogged booming plus towing)		$10.00
Total cost excluding stumpage	$30.00+$10.00=	$40.00
Selling price still		50.00
Difference		$10.00

Stumpage becomes $5, or $3 less than at Toba Inlet.

Operator's total cost is $45, and his margin $5, which is $3 less than at Toba Inlet.

Thus:—

(*a*) The Government has not absorbed all the extra transportation cost of $6. It has absorbed half and the operator half.

(*b*) In theory the Government has "lost" $3 stumpage. In fact, it has collected $5 stumpage which it would not collect at all if the timber is not logged.

(*c*) The operator's margin is $3 less, even without a stumpage zone.

B. The Effect of the Stumpage Zone when the Logger Moves to near Ocean Falls, Still Shipping to Vancouver

Instead of an allowance in appraisal of the extra transportation cost of $6 to Vancouver, the appraisal allows only the cost to Ocean Falls, say $2 in this case, but continues to use Vancouver market price.

Actual costs to Vancouver excluding stumpage (as in A 2)		$40.00
Costs allowed by appraisal	$30.00+$2.00=	$32.00
Selling price used in appraisal		50.00
Difference		$18.00

Stumpage becomes 50 per cent of $18 or $9.

Operator's total cost becomes $49, and his margin $1.

Thus the logger has moved to a place where his costs are $6 more, and his stumpage has increased $1.

C. Suppose the Market Price Is $44, Not $50

In this case the foregoing three situations change, as follows:—

(*a*) *No Stumpage Zones*

1. *Toba Inlet.*—Costs excluding stumpage, $34 as before. Stumpage is 50 per cent of $10, or $5, operator's margin $5.

2. *Ocean Falls.*—Costs excluding stumpage, $40 as before. Appraisal shows stumpage 50 per cent of $4, or $2. But minimum stumpage rule of 2½ times royalty applies. At royalty of about $1.40, 2½ times royalty is $3.50. Stumpage becomes $3.50, operator's margin 50 cents.

(*b*) *Stumpage Zone*

Actual cost excluding stumpage is $40, appraisal cost $32, both as before. Stumpage is 50 per cent of $12=$6. Operator's actual cost is then $40 plus $6=$46.

Stumpage would thus be $1 higher than at Toba Inlet, but operator would lose $2 per thousand. Therefore, he does not operate and *no* stumpage is collected.

Two main submissions were advanced in support of the continuance of the present zoning systems:—

(*a*) The charging of towage from place of logging to actual place of sale as a cost in stumpage appraisal would amount to a form of government subsidy:

(*b*) Difficulties of appraisal to different conversion plants.

Dealing with (*a*) it must not be overlooked that the appraisal system used by the Forest Service results in a stumpage price equal, in general terms, to about one-half of the difference between cost of production and the selling price of the logs. Therefore, any item allowed as an added cost reduces the stumpage by about one-half of the amount so added. In consequence, allowing the cost of towing logs from point of production to point of actual consumption would reduce the stumpage by one-half the charge for that service or probably about $5 per thousand. It has been estimated that, after an evaluation of all extra cost factors that are inescapable concomitants of constructing, maintaining, and operating a pulp-mill in more remote areas as contrasted to the sites near settled centres of population, the difference amounts to approximately an additional $8 per ton of pulp production. It is, I think, clear from the evidence that it cannot be said that the abolition of stumpage zones would subsidize to any extent the dispersal of conversion plants.

It would, however, assist the logger and probably might be said to be a subsidy in that sense justifiable as a step toward decentralization of the logging industry, to be followed in time by the dispersion of conversion plants when production and economic conditions warrant that move.

Dr. Orchard, when giving evidence concerning this subject of zones, said, in part, in answer to my questions:—

"Q.—Now, your stumpage appraisal is for instance based upon the towage of logs cut in the Prince Rupert District to a Prince Rupert mill, which tow to that mill, we will say, is going to cost $5 a thousand. A.—Yes.

"Q.—The logs cannot be sold in Prince Rupert, but there is a market in Vancouver, and we will say the towing cost to Vancouver is $15 a thousand, as a simple figure. So we have a differential of $10 a thousand on that basis. Doesn't that discourage loggers, rather than encourage them, from moving into the more remote places, because how can they afford to bring these logs down at a $10 differential against them and market them at a competitive price in the only available market at Vancouver? A.—The theory is that that will induce a mill to establish in Prince Rupert.

"Q.—That may be the theory so far as the conversion plants are concerned. I am talking about the logger, the smaller man who is going into the woods to produce for a conversion plant. That is the type of dispersal I am thinking about, not dispersal of the converting

units, because that may take a long time. I don't know when they will disperse, because they are concentrated now at centres of production where they have power, they have transportation, labour—they have everything. I am talking about dispersal of the producer of the raw material, the man who is going to go into the woods. The logger. So far as he is concerned, wouldn't the differential of $10 towing charge against him be detrimental to his dispersal, and force him to remain in the more highly concentrated areas of the Province where he must compete with many others for anything he can get? A.—Yes, for the immediate present I guess it would, but the argument is that that will induce, eventually, mills to locate in Prince Rupert, then you get both the advantage of the manufacturing, and as soon as the mill is there, the logger will follow. That is looking some little time into the future.

"Q.—Let's look at the next ten or fifteen years. At the rate the pressure is on now on the Lower Coast and the Island, we want to find a place for the smaller man. We want to get him away from the congested areas where the competition is severe. The timber is not there for everybody who wants it. What is there is subject to cut-throat competition. The small men are complaining that the timber in the public working circles is taken up, and some of the best areas, as you have explained here to-day, because of the long-continued pattern which you inherited and didn't set up yourself, have taken out of his reach the areas that now are in forest management licences. He looks around and he finds no place to go. There are, however, areas in the north where he could go should they be made financially attractive to him. Wouldn't the abolition of the stumpage zones be what you would need to create a vacuum for him? In other words, you would put lower stumpage values on those remote areas creating a vacuum there, and even, if you like, raise the stumpage values on the concentrated areas to force them out to where the vacuum exists. Would we not then have a dispersal of our extractive industry even if not our conversion plants? A.—I have pretty well admitted everything you are proposing in what I said a little while ago. If we do away with our stumpage zones, then that Prince Rupert material will sell. Instead of at $10, it will sell for the $5 or $4 or $3, and then they will reach out from Vancouver and go up there and get it, and you will disperse your small operators. . . . That is exactly what is going to happen. . . . (The) $10 towing fee is not a net loss either to company or to revenue. If a mill were built on the West Coast, some part of the apparent $10 advantage would be eaten up in such items as higher costs of manufacture, and higher costs of marketing, of the saleable product. About 50 per cent of any added net profit would be to Dominion corporation income tax. If the money is spent on towing to the East Coast, it is spent *in toto* in British Columbia for labour, material, and services, all of which contribute to

direct revenue, both Provincial and Dominion. In dollars, it would be difficult to arrive at any exact comparison, but it is quite possible that in actual fact revenue would suffer very little if stumpage were to be reduced by some part, say one-half, of the transportation (towing) cost. It would merely be collected in such hidden items as sales tax, income tax, gas tax, and property tax. Revenue might suffer, but not by anything like the total reduction in stumpage. The main problem, therefore, is the merits of concentration of population and manufacturing facilities versus dispersal; and this is a problem of higher Government policy rather than of direct forestry and forest administration."

Upon consideration of the relevant factors involved in this matter, I have reached the conclusion that the abolition of the Coast zoning system is desirable and in the public interest for the reasons I have already given, supplemented by the observations I propose to make in considering minimum stumpage. In one sense they overlap.

I have not overlooked (*b*)—that is, added difficulties of appraisal—but if the Coastal zones are abolished completely and the logs given a justly appraised value measured in terms of cost and end-use value at point of consumption, I do not think the Forest Service will lack the ability nor ingenuity to meet the problems that may arise in this field of administration.

Zones in the Interior were created for a function quite distinct from those on the Coast, and comments concerning the Coast zones have no relation to those in the Interior.

Criticism of Minimum Stumpage

The Forest Service, in establishing the Coast zonal system and minimum stumpage as a basis for appraisal, has been, in effect, using stumpage as a means of attaining a policy objective. In so regarding stumpage in this wider aspect the Service has my full concurrence. It is my view, however, that in using stumpage as an instrument of policy the means adopted created situations inimical and not beneficial to the public interest. For instance, Coast stumpage zones increased centralization and pressures instead of alleviating those conditions as it was thought they would. Similarly, the concept of minimum stumpage had not contributed to good forestry practices.

Minimum stumpage on the Coast is given an arbitrary value, as previously explained, usually at two and one-half times royalty. It operates in two different fields, and the failure to maintain the distinction in principle inherent in this separation of function led to some confusion in the minds of some of the witnesses.

In applying minimum stumpage rates to a stand for all reasonable purposes wholly marginal is a different exercise in appraisal than when considering its effect on a mixed stand composed of high- and low-valued species.

Let us for a moment examine this last-mentioned situation, which is by no means unusual, and assume our stand is made up of good-quality fir and poor-quality cedar. The fir is appraised at its proper value (for example, $15); the cedar, of no real recoverable value, is appraised at the minimum stumpage rate of two and one-half times royalty. The whole stand in consequence carries an appraisal higher than the total sum of actual recoverable values.

The Forest Service, in recognition of this untoward result, has, in the past, experimented with formula designed to remove this anomaly. The idea of averaging the price, after weighting the volumes and species involved, was tried out but without success.

A number of witnesses, including Mr. Gormely, representing the Canadian Institute of Forestry, advanced as a solution the adoption of a method of appraisal whereby the negative stumpage values would be deducted from the positive values. For instance, if cedar was found to have a negative value of $1 per thousand and fir a positive value of $15 per thousand, the minus value for cedar would be charged off against the positive value for fir, making fir $14 per thousand.

Dr. Orchard, when questioned concerning this proposal, said:—

> " You've got a negative value of $1. Now we've got to give him that dollar. I don't like to give them cedar for nothing, so we'll put $1 stumpage on it. Let's charge $1 for the cedar and take $2 off the fir. It would look better and I have no logical argument against that at all. I wouldn't expect any trouble about the $13 price for $15 fir and $1 for cedar."*

Later he said:—

> " There is an element of unfairness in charging two and a half times royalty for stumpage that's worth 50 cents if you are going to take the full value of the other."†

Upon consideration of the extensive body of evidence surrounding this question, it is my opinion and recommendation that the system of charging minimum stumpage in its present form be abolished. It seems to me, however, that some nominal stumpage should be assessed against negative or very low values in mixed stands, and that this figure be charged against the other positive stumpage values.

That leaves for consideration the question of assessing minimum stumpage values against stands wholly marginal but not subject to salvage classification.

These stands may, I think, be roughly divided into two categories:—

(*a*) Those so situated and composed that present values will in all probability increase if held for future cutting:

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* Transcript, pp. 15659–15660.

† Transcript, p. 15661.

(*b*) Those in less accessible areas and likely to suffer a decrease in value if not harvested within a reasonably short time, although not at present decadent to the stage at which salvage rates could be applied.

Dr. Orchard's evidence with respect to stands in category (*a*) was in part as follows:—

" Q.—But what concerned me is, as the Commissioner said, your philosophy in the matter that it was a sale which you didn't want to sell, and you thought you might do better twenty years from now, and hung on to it, and yet you say, well, here's the price, to an operator, here's the price, if you want to log it at that price, why go ahead? (at minimum stumpage). A.—That's the case in what is definitely a marginal sale, where by and large it's a minimum stumpage sale.

" Q.—Well, now, that being the philosophy, why do you bother putting it up at all? A.—Because we are urgently requested and urged to put it up.

" Q.—Hounded for timber? A.—Hounded into putting it up."

With deference and in the absence of any unusual circumstance, I do not see why Dr. Orchard should accede to the demands of those in short supply and continue to sell timber at a minimum stumpage price which, in effect, discounts future values, especially if other sources of supply become economically accessible. On the other hand, if special circumstances do warrant the disposal of such a tract of marginal timber, then it seems to me the price should be actual value of the timber or what might be bid for it on a competitive sale. If it has no present realization value in terms of profit and good reasons dictate its liquidation, then it would seem to follow that felling the stand and not stumpage would be the paramount consideration. In consequence, minimum stumpage should not logically be applied to a sale under those circumstances.

When we turn to consider (*b*), like reasoning would apply. These types of stands, adding little or no net increment and which, if allowed to stand, are losing what little value they may have and with no possible chance of a future increase in later years, should, if possible, be liquidated for what they will bring before becoming so decadent and disease-ridden that only a salvage operation could be considered. I can see no point in charging minimum stumpage for this intermediate class of stand.

I am appreciative of the fact that timber stands do not divide themselves, in actuality, into these two compartments and that infinite gradations will be encountered in the field. My point is simply this: If marginal stands are worth preserving for future increment in volume and value, then they should not be sold. If, on the other hand, reasons thought good and sufficient influence the Forest Service in reaching the decision to sell, then the price should reflect a real and not an artificial and arbitrary value

designed primarily to discourage the would-be purchasers from pressing for a sale of this class of timber.

Stumpage on Crown timber can be a very powerful instrument of public policy. One of the objectives of an enlightened public policy would be to create an area of low pressure in regions now seriously undercut, for example, the Coastal Prince Rupert District. This should drain off some of the pressures now manifest in overcut areas, for example, the Lower Mainland coast and the east coast of Vancouver Island. The abolition of stumpage zones, the adjustment of positive and negative stumpage values, and the abolition of minimum stumpage on marginal stands would assist in the attainment of this objective.

If the Government accepts these recommendations, and if after a reasonable trial period the logging industry has not to an appreciable degree moved into presently undercut areas, then it seems to me that stumpage in general, in these areas and again as an instrument of policy, will have to be made attractive enough to attain the desired end result.

Mr. John Liersch, of the Powell River Company, in considering this subject-matter said in part:—

> " The Coastal forest is being undercut by at least 1 billion feet a year. While the cut in Vancouver Forest District is approaching the present conception of allowable cut for this area, the cut in the Prince Rupert Forest District last year (1955) was only approximately 20 per cent of the allowable. The result is that:—
>
> "(*a*) There is a huge, irretrievable annual loss to the economy of the Province in not utilizing the forest, particularly in the Prince Rupert Forest District, to its fullest capacity:
>
> "(*b*) Stagnant overmature forests are preventing the establishment of dynamic young forests upon which future generations must depend.
>
> " Hemlock, cedar, spruce, and balsam, which make up 86 per cent of old-growth stands, are being seriously undercut.
>
> " Old-growth Douglas fir, a minority species which in years past was the main raw material for the sawmilling industry, is being overcut.
>
> " During recent years, sawmills have made great strides in developing a lumber market for hemlock, our most prevalent species. From a forestry view-point, everything possible should be done to encourage this transition from old-growth fir to hemlock and other species, which are in abundant supply.
>
> " Economic factors, stumpage policies, reliance on fir lumber, and buoyant markets have brought an over-concentration of logging operations in the lower coast. There is a region of excessively high pressure on the forests of the south coast, and a region of low pressure in the north.

" The Crown owns by far the greater percentage of timber on the north coast. Development of this area from the forest-utilization standpoint is therefore dependent largely on Government policies regarding the disposal of timber.

" Present stumpage policies:—

"(1) Discourage loggers from harvesting up-coast timber:

"(2) Discourage conversion plants from establishing up-coast:

"(3) Contribute to the excessive pressure on forests of the Lower Mainland and the east coast of Vancouver Island.

" Where development has occurred on the North Coast, it has been based largely on privately owned timber purchased at prices reflecting real economic values. In sales of private timber, location in relation to markets has been one of the main factors in establishing values over a period of fifty years. The farther from a recognized market capable of using all species and grades of logs, the lower the stumpage value.

" If the North Coast is to be developed, as it should be, the Government, in setting stumpage, should approach, as far as possible, the conditions of a free, competitive market for stumpage so that a natural and realistic range of values can be established between the desirable and undesirable, the near and remote.

" We believe a minimum upset price is necessary to attract loggers to more remote areas. It may be that the first few sales will represent a good bargain for the purchaser. If so, word will soon spread and competition will ensure that stumpage prices will soon approach sound and realistic values, which will permit a larger harvest from the North Coast.

" It has been suggested that cheaper stumpage in these areas would mean a ' loss ' to the Government. Such a ' loss ' is, of course, pure fiction, based on an imaginary idea of values. Generally speaking, the potential of the Prince Rupert Coastal District forests is not being developed because the stumpage price is too high. To suggest that the Government is offering a ' subsidy ' when stumpage prices are lowered to the point where people find it possible to buy timber and sell the logs harvested to available markets is a strange conception.

" The amount of Government revenue involved in the illusory loss or subsidy is trifling compared to the vastly greater revenues which would result from the harvest of another billion feet of timber a year, which must be harvested if we are going to properly manage our forests.

" In addition, there are numerous indirect benefits to the people of the Province as a whole in opening up new regions, building roads, providing more jobs, and expanding industry.

" The fact that an existing up-coast conversion plant would be placed in a seemingly advantageous position because of lower Crown stumpage should not be a matter of great concern. Such plants are

now faced with numerous added costs and operating disadvantages because of isolated location, an important one being the added transportation costs of finished products to Vancouver for transhipment.

"If it is true that certain areas of the lower coast have more logging operators than the forest can support on sustained yield, the Government may:—

"(1) Abandon sustained yield in these areas; or

"(2) Arbitrarily put some operators out of business; or

"(3) Encourage a gradual migration to areas where undercutting is a serious problem.

"Our belief is that, from every point of view, the third choice is the only sound one. We believe that stumpage prices provide an effective tool for an orderly transition, for continued healthy development of the forest industry, and for promoting sound forest management."*

Mr. Walter Koerner, of Alaska Pine and Cellulose Company, said, in his evidence, in part:—

"These (present) lumber-sale policies may have reasons behind them, but I do not think the reasons outweigh the need to develop the undeveloped and more marginal areas and encourage loggers to move to them. Timber-sale policy should be revised to be a constructive tool for this purpose.†

"The Government has shown its willingness to encourage utilization of salvage wood in logging operations, and even, I think, of defective stands such as on the Big Bend of the Columbia River by reducing stumpage and royalty to 25 per cent. I think it is surely equally important to consider some similar approach to stumpage for undeveloped areas. . . .‡

"To me, towing and stumpage values are very much less essential than the deeper problem; that is, the economic waste we have. The towing is to me very, very minor.

"If we don't cut the timber available, the timber we should cut, we don't lose only the stumpage, which is an entire loss whatever the stumpage is, even if it is only 50 cents, it is an entire loss, and so are all the other items—salaries, and wages, and taxes, and the indirect income in property tax and sales tax, and in our logging tax and 1 per cent tax, which I don't want to elaborate on, and the income tax, and full employment. . . .

"So, there I see the root of our problem. Let's expand, not to help one company, not to help one logger, but to make the real approach to this great resource."§

* Exhibit 232D, p. 1 *et seq.*
† Brief, Exhibit 252, p. 32.
‡ Transcript, pp. 12423–12424.
§ Transcript, pp. 12650–12651.

The term "economic waste" used by Mr. Koerner in his evidence in this context and from a forestry point of view is the annual loss suffered by not cutting a forest to its capacity.

Mr. G. L. Draeseke, Secretary of Alaska Pine and Cellulose Company, dealt with this aspect of the matter as follows:—

> "With few exceptions the Prince Rupert District has not supported such plants (conversion plants). Further, conversion plants in the Lower Coast area have been able to utilize logs from the Coastal portion of the Prince Rupert Forest District successfully for many years. At present great areas in this District are not being cut, and we estimate that the Coastal part of the Prince Rupert District is being undercut by at least 800 million board-feet per year and that the Coast as a whole is being undercut by at least 1.4 billion feet per year. This constitutes an enormous waste. At present there is no increment on these forests, and in some, decay is exceeding growth. Therefore, if we cut now, even at lower stumpages, we are creating new economic wealth and not now prejudicing the use of such forests for future industries in the North and West Coast areas. If we assume that industries will be built in the North and West Coast areas in twenty years which can pay higher stumpages than those necessary to induce cutting there now, any policy which prevents such present cutting and transportation of logs to the Lower Coast conversion plants prevents the logging and conversion of about 28 billion feet of timber over that twenty-year period.
>
> "Perhaps some estimate should be made of the economic waste involved. If we assume that a thousand feet of logs is eventually converted to products having an average selling price of $80, this means that $2,200,000,000 which would have flowed into the economy of British Columbia will have been lost. Each year that we do not put these forests to use means the British Columbia economy receives about $112,000,000 less gross income than it should. The indirect return in taxes to the Government is infinitely greater than the reduction in stumpage necessary to assist this expansion. The alleged and so-called 'waste' involved in towing logs from such areas would yield an economic return of 1,300 per cent each year, based on an average towing differential of $6 per thousand.
>
> "We consider the Coast to be an economic unit, and that the creation of artificial barriers to the free movement of logs will cause economic waste and serious consequences to the industry."*

The evidence I have quoted above represents the thinking of the majority of the individual witnesses who testified at the Inquiry, and my recommendations relating to appraisal zones, minimum stumpage, and the use of stumpage, as an instrument of policy to attract the logging industry

* Transcript, pp. 12901–12902.

to the more remote and undercut areas of the Province, is founded upon my acceptance of these submissions as rational and sound.

In closing this subject it is, I think, of interest to note that the proportion of timber sold from timber sales and management licences at minimum stumpage prices seems to be definitely declining, as appears from the following percentage figures selected from the Vancouver Forest District and two Interior forest districts:—

	Vancouver Forest District (Per Cent)	Kamloops and Nelson Forest Districts (Per Cent)
1954	67.0	75.0
1955	35.0	25.0
1956	9.4	4.4

Criticism re Profit Factor

One complaint running throughout the evidence was that the profit factors allowed by the Forest Service in its appraisals were too low.

Mr. J. A. K. Reid, of the Forest Service, specializing in stumpage appraisals, when questioned concerning this subject said:—

"A person who wants to venture capital into a business has a choice of, say, going into the logging business or investing it in bonds or investing it into real estate or some other form. Now basically, the proper thing would be to go back and make an investment appraisal and find out what return is required on the capital invested in the operation. If you could do that, you would find that you would consider the capital investment in the operation would be one of the things, the annual production rate that would influence the rate per unit of production another, and you would have to consider the comparison of the risks that the operator assumes in going into the logging business in comparison with, say, buying bonds and things like that.

"Now, all those factors, I suppose, over the years, have in themselves resulted in adoption of these profit ratios. We in the Forest Service attempt to use, on the average, about 15 per cent, varying it from 12 to 20 per cent. We feel that is a fair allowance. The operators still continue to bid up certain sales over and above our upset prices. In other cases we have operators come in and tell us that our stumpage rates are too high, and we are in a happy medium between those two extremes. There is no way that I know of saying and proving that 15 per cent is correct and it should not be 16 or 17 or 14.

"Q.—If I understand your answer, then it is this: That considering the employment of capital inside our economy to-day that the 15-per-cent profit is considered, then a fair return compared with how it might be employed in another business, am I right? A.—Yes. It simply boils down to the fact that we feel it is adequate. We vary it from one sale to another, and from one time to another, depending on the condition of the selling price, market, for one thing. The

nature of investments in a particular timber sale should also be considered. Some timber sales will have a much higher investment per unit of production than other sales. We have used this range, as I have mentioned, previously, of 12 to 20 per cent, occasionally a little higher, such as for white pine.

"Q.—Is there any simple explanation you can give me as to why, on a highly valued easily marketable product such as white pine, there is a higher profit ratio allowed than on a lower valued product? A.—Well, I suppose you might say that ultimately any commodity that you are selling, the value is set by two factors: One, what the buyer is prepared to pay; and the other is what the seller is prepared to accept. In the case of the white pine, generally speaking, buyers are not prepared to pay the price that would be indicated on the basis of a low profit ratio; as you suggest, it should be a higher value product; therefore, our profit ratio should be lower. That would indicate a stumpage something higher than $22. We find that buyers aren't prepared to pay that price."

The Forest Service, in its appraisals, varies the profit ratios in some general relation to the risks involved in logging in more remote areas. Those currently in use are as follows:—

Lower Coast	.14–.15
Alberni	.16–.17
Texada and Lasqueti Islands	.15–.16
Seymour Inlet	.15–.16
West Coast	.18–.20

When questioned concerning these ratios, Mr. Reid said:—

"Well, to me it appears that the person who (suggested these ratios) believed that there was higher risk in operating on the more remote areas. Possibly more difficult to realize the average selling price that we use, possibly a longer tow, and thereby a greater risk of loss.

"Q.—It is not so much a variation in the profit, then, as it is a variation in the risk, which might in the long run affect the man's profit? A.—Yes.

"Q.—Is that a principal reason for the variations disclosed in the appraisals which you have filed with us and for the variations in your own brief, Exhibit 42? A.—Oh, yes. Risk is the variable factor.

"Q.—So that you take a standard profit, and then you vary it upwards or downwards according to the assumed variation in risk? A.—Yes."

The so-called standard profit factor is, as I understand the evidence, fixed arbitrarily as a reasonable rate for return with some allowance for elements of extra risk affecting costs and profits. Whether this rate of return is commensurate with all the attendant circumstances inherent in any log-

ging venture is solely a matter of judgment. The Forest Service considers it fair; industry in great part does not share this view.

However, a great number seem anxious to undertake the risk at the margin available even when that percentage shrinks on sales above upset price appraisals. It is my own opinion, based on the evidence, that the profit ratios currently in force are not sufficiently high enough to encourage the logging industry to pioneer the more remote risky and less accessible areas of the Province. A higher profit margin for selected areas, for example, on the Northern Coast, should assist in the desirable dispersal of logging operations.

In order that this differential may operate as a real inducement, I would not suggest, for the present, that the profit ratio be raised in overcrowded areas. I think it a reasonable assumption that stumpage values in such highly competitive markets tend to seek their own level. The situation, however, might well be reviewed in four or five years and adjusted in the light of the then prevailing circumstances.

Criticism of Appraisal of Logging Costs

Two major items in the appraisal formula are costs and selling price. On the Coast the selling price of logs can be ascertained to a satisfactory degree of accuracy, and in consequence the chief attack of those dissatisfied with the administration of the appraisal system was directed against cost factors. In the Interior both equations were under fire and call for separate consideration.

When appraising a timber sale in order to arrive at a fair valuation of stumpage enabling an upset price to be fixed, the Forest Service applies what it considers to be the average cost items experienced by average loggers on an average sale of the same general type within the region, subject to whatever plus or minus variations might be thought appropriate to apply to the specific area under consideration. The upset price is fixed as if the sale were to be taken up by a well-known fiction of the law—the reasonable or average man. It may happen that the sale in actual fact is taken up by either an efficient or inefficient operator. The efficient man makes a profit and is satisfied with the cost items in the appraisal. The inefficient man less well equipped with modern machinery or the less careful operator who did not make as thorough a preliminary survey before bidding in the sale as he ought to have done loses money and is critical of the appraisal. I do not for a moment suggest that all criticisms were from inefficient or inadequately equipped operators, far from it. I am merely illustrating the two different approaches that are sometimes made to this problem: the Forest Service, endeavouring to appraise purely objectively as best it can, and, on the other hand, the logger who is of the opinion the sale ought to have been tailored to meet his particular ways and means of logging the show.

Among the questions agitated in this field of discussion was the allowance for road costs. One of the witnesses, who has had a long experience in the industry in this Province, summarized his own views and incidentally those of others on this subject of road allowances as follows, in part:—

"The system of competition where prices are increased eliminates the road costs to the extent the price is bid above the upset price. The Forest Act cites a rule—i.e., the competitive system—that nullifies the claim that they make full provision for costs of roads. The established operator, having large capital investment and faced with drastic moving and re-establishment costs if he loses out, is in many cases forced into uneconomic bids, hoping in some way he may come out intact, perhaps by being in a more secure geographical position on future bids, or by possible increase in markets. In any case where theoretic costs are wiped out by higher bids, he contributes the whole of the road costs, the Government having contributed absolutely nothing either theoretically or in fact for a capital improvement which becomes the property of the Crown. A road is definitely a capital investment and can only be computed in terms of logging costs when the whole of the area contiguous to it has been logged.

"No redress is provided for extra cost of roads, which in many cases are double that estimated by the Forest Department representatives.

"Estimates are subject to human opinions only, which vary considerably, such costs are never revealed in T.S. contracts nor has the bidder any knowledge of the estimates."

It seems to me with respect that this illustrative criticism contains several fallacies. In the first place the fact that a sale is made to a purchaser at a competitive bid price higher than upset price does not eliminate the road-allowance cost factor. The high price paid for the timber may eliminate the operator's profit either wholly or in part, but for the road allowance in the appraisal he would have lost that much more. In other words a road allowance of "X" dollars per thousand of logs moving over the road is still there and is reflected in operating costs and ultimate profit or loss.

I would also respectfully disagree with the witness when he states "a road is definitely a capital investment and can only be computed in terms of logging costs when the whole of the area contiguous to it has been logged."

The cost of constructing a road seems to be regarded by the Forest Service as an operating cost recoverable over a period of years from the product carried over the road. The Forest Service in its appraisal charges the entire cost of the road against the immediate sale. Its policy in this regard, as I understand it, may be illustrated as follows: Let us assume two blocks of timber, A and B; Block A is 4 miles from a booming-ground and Block B a mile farther up the valley. Each block contains approxi-

mately 10 million feet of timber. Road costs are, say, $10,000 a mile, and the road to Block A, costing $40,000, is shown in the appraisal at a cost of $4 per thousand. Block A is logged at a profit and road-construction costs were paid for by the logs that moved over the road which now, as a part of the freehold, is Crown property.

Block B is then put up for sale. Just 1 mile of main access-road construction is required to connect up with the 4 miles on Block A. This 1 mile, costing $10,000, is charged in the appraisal as $1 per thousand on the 10 million feet in Block B. If sold at the upset price, both the Crown and the buyer get a higher profit return than from Block A because of the lesser cost factor involved in the road construction. It follows that the operator who pioneered the area and took the initial risk of building a $40,000 road gets less relative profit than the later operator who buys in Block B. The situation becomes the subject of bitter complaint when a stranger outbids the original operator in Block A and gets the timber on Block B.

I said this in 1945:—

> " Many witnesses expressed dissatisfaction with the present practice whereby Crown timber is sold to the highest bidder. It was thought, and with some justification, that an operator who had opened up a tract of timber and had built an expensive road system into the area should not have to face the possibility of another purchaser coming in and outbidding him for Crown timber contiguous to his operation.
>
> ". . . I have no hesitation in recommending that the operator who has pioneered the area and opened it up should, where practical, have the reward for his effort in having allocated to him at a fair price Crown stumpage on those areas which are contiguous to or advantageously located near his operation."*

The difficulty of implementing this recommendation of ten years ago is the apparent reason the same complaint is voiced to-day as then with, however, more emphasis.

It seems to me that an answer could be found within the present method of selling timber by auction. Without attempting to exhaust the possibilities, I think that a solution might result from the acceptance of my tentative recommendation that timber sales be put up for auction by the Forest Service in furtherance of an over-all plan of management of Crown timber lands whether in or without public working circle areas.

In that way road costs could be more fairly distributed, as they appear to be in forest management licence areas. Let us consider our Block A illustration again and assume that this block is but a small part of a large timbered watershed. The main access road or roads could then be planned for the whole area and the ultimate cost estimated against the volume of

* 1945 Report, p. 162.

timber in the watershed. The cost of the road on a per-thousand-unit basis to Block A would, on this basis of appraisal, be much less when charged off as a portion of a road to be paid for by a great volume of timber than it would when charged as a cost of operation against the relatively small block of timber in Block A alone.

Let us assume that the operator logging A nears the end of the timber on that block and wishes to move into Block B. It seems to me that in bidding for Block B it would be fair to credit the pioneer with a sum equal to the difference in the amount per thousand spent on building the road to Block A ($4 per thousand) and the estimated cost per thousand to build that 4 miles when spread over the entire watershed (say, 50 cents per thousand). This would allow him a credit of $3.50 per thousand on his bid price for Block B timber, or, more simply, the sum of $35,000 could be credited on the stumpage of the first sale for which he built the road.

Another form of preference could be extended to the logger pioneering a new area, and in consequence accepting a higher risk, by increasing the profit and risk ratio for the area included in the first sale. This would be in addition to the generally higher profit ratio I suggested be applied to as yet undeveloped areas as a means of dispersing the logging industry.

The Provincial Advisory Council, with the guidance of experienced foresters, should be able to develop some form or technique of disposing of Crown timber which would effectually extend some reasonable degree of preferred treatment in relation to road costs to men who, as pioneers, are deserving of it.

The complaint that " no redress is provided for extra costs of roads " refers to conditions which were not anticipated, such as excessive rock work, a wide distribution of glacial boulders, and lack of gravel. The Forest Service takes the position that these sort of contingencies are included in the risk allowance, and that the operator bidding in the sale is assumed to be familiar with the conditions that he is likely to encounter.

While it is a case parallel to the concept expressed in the maxim *caveat emptor*, nevertheless a more flexible system of reappraisal could provide the means of alleviating cases of genuine hardship.

It is a widely held complaint that a prospective or successful bidder is refused any information concerning the manner in which the appraisals have been estimated. The Forest Service instructions to Rangers on this subject read as follows:—

> " With regard to stumpage appraisals, to clear up any confusion, this Department is, at all times, willing to discuss the details of any appraisal with parties who are interested in any particular sale. At the same time, however, we do not give out written copies of our appraisals. The interested party is entitled to make any notes he sees fit, but we do not feel that we are obliged to go to the trouble of giv-

ing them written appraisals, nor do we feel that other than interested parties should be shown the appraisal of any particular sale.

"Also, we have sometimes been requested to issue written appraisals at the time of advertising to all interested parties. This we are definitely not prepared to do."*

It is my view that when a department of Government is selling a natural resource owned by the Crown—the people of the Province—a reticence to make a full disclosure to persons having a legitimate interest therein is difficult to understand.

Let us consider that the Government is selling a building for $250,000. A refusal to give full particulars to an intending purchaser of all circumstances affecting the price asked—in writing if requested—would not seem a reasonable attitude for the Government to assume. What difference is there when it is selling timber for that amount or any amount? I can see none. The cost of supplying a bona fide intending purchaser of a timber sale with particulars of the appraisal would be nominal and could be charged to the betterment of public relations.

The final complaint with which I propose to deal under this heading is summarized in the contention that " estimates are subject to human opinions only, which vary considerably. . . . "

That is undeniably true, but it is also a fair assumption that at times errors in judgment militate against the Crown and in favour of the individual. Thus in the balance, over thousands of transactions, the errors cancel themselves out. These things cannot be weighed in too fine a scale nor measured by standards of perfection.

Criticism of Cubic Scale in Stumpage-appraisal Calculation

It was submitted in evidence that the average conversion factor used in the appraisal did not reflect accurately the mill recovery in lumber in board-feet from smaller-sized logs nor did appraisal take into account the extra cost of handling smaller-sized logs. The conversion factor is 6 to 1 on the Coast and 5½ to 1 in the Interior. That is to say, each cubic foot of wood in a Coast log is assumed capable of being converted into 6 board-feet of lumber. The figure in general use is expressed at 167 per thousand board-feet. That conversion factor is accurate enough when the content of a log 32 feet long with a 20-inch top and a taper of 1 inch in 8 feet is assumed translated into cubes.

As the tree departs from this norm in diameter and length (but with the same taper), the differences become manifest, as appears from the following table:—

* Exhibit 71.

TABLE 129

Top Diameter (Inches)	Log Length (Feet)	Cubic Feet to Board-feet	Log Length (Feet)	Cubic Feet to Board-feet	Log Length (Feet)	Cubic Feet to Board-feet
6	24	3.01	32	2.62	40	2.28
8	24	3.97	32	3.53	40	3.14
10	24	4.71	32	4.27	40	3.89
12	24	5.23	32	4.81	40	4.45
14	24	5.61	32	5.26	40	4.88
20	24	6.44	*32*	*6.12*	40	5.83
30	24	7.13	32	6.89	40	6.68
40	24	7.51	32	7.31	40	7.14

It was submitted that the inaccuracies in terms of mill recovery from the use of the average conversion factor (167) seriously affects stumpage appraisals in stands of smaller diameters and that loggers are paying more than they should for this class of stand. This in turn, it is contended, tends to discourage logging in the Northern Coastal areas, in general, composed of smaller trees. It is said that stumpage on trees of smaller diameters, measured in terms of recovery, is relatively higher than on trees of larger sizes, which also, on a unit basis, cost less to log.

Dr. Orchard was questioned extensively on this subject and said in part:—*

"As I remember this presentation, and the gist of it, the Columbia Cellulose submitted that in small logs you don't get per hundred cubic feet the same recovery in board-feet of saleable lumber as you do from a hundred cubic feet from larger logs. We use an average conversion. The gist of what their argument seems to me to be that in order to see what we're doing, and in order that we can argue our case better, or that the Forest Service can justify its stumpage rates, that we use one conversion for small logs, and another conversion for medium-sized logs, and another conversion for large logs. Well, you see how far that could go. If you're going to take that to the ultimate limit, you'll have a conversion factor for every size of log, every inch of log. That's just not practical, there would be too much book-keeping. You'd need a staff of scalers and so on. It would take all the profit out of the lumber anyway.

" We recognize that for a top diameter of 6 inches you'll only get 3 board-feet per cubic foot if you put it through the mill. For 12 inches average you'll get 4.8, and when you get up to 36, you get 7.2, more than twice as much. I think the solution is for us to recognize the fact that if a large proportion of the logs that you're going to get from this stand are small, then it's going to cost more to log them, you're going to get less return when you put it through the mill and sell your prod-

* Transcript, pp. 15145–15150.

uct, and it's not worth as much stumpage. And I claim that we do exactly that now, and I don't think that Columbia Cellulose or any operator in the country will say that we don't. Where we come to our difference of opinion is: Does the Forest Service make enough allowance? The general impression is, and I suppose about 99.9 per cent think, we don't. I've yet to find one-tenth of 1 per cent that think we do.

" Now our averages could be too favourable to public revenue. I'm not denying that. Our resulting stumpage rates could be too favourable to the public revenue at too much expense to industry. But that's something that has got to be thrashed out on every individual sale. Our claim is that the present system does make allowance for all of these things in the present appraisal system, and we think it makes ample allowance.

" Q.—Now do you say that in your appraisal there is sufficient allowance made to take care, with reasonable accuracy, of that apparent disadvantage that results from the application of the conversion factor? A.—I claim that an allowance is made. There's going to be a wide difference of opinion as to whether it's sufficient. But if you take Mr. Reid's brief (Exhibit 42) on appraisals, and go looking down through those formulæ and conversion factors, and conversion return, per cent of profit, and so on, you won't find any of this. Where this gets in is in your cost of logging. Now, if you've got fine big timber on an easy chance, you'll get a hundred cubic feet out for " X " dollars. If you've got this small stuff up on the North Coast that you have just cited, it will probably be one and a half " X " dollars, the cost of logging, and that's where it gets into the appraisal. You won't find any item in that tabular form to cover this. It's in the cost of logging.

" Q.—I'm not sure whether there is in Exhibit 42 specific mention of the fact as to whether there is an allowance made for quality in the appraisal. Now can you advise us? A.—There is. But once again you won't find it set out there, per cent allowance, or a reduction on the basis of quality. That's in both your cost of logging and the sale price of your timber.

" Q.—The position of the Forest Service is then, to boil it down: In so far as the size of log is concerned that is taken account of in logging cost, in so far as quality is concerned that is taken care of in the selling price, both going into the appraisal. A.—Both selling price and logging cost. We're perfectly aware that those things have a very important bearing on the value of stumpage, and in spite of anything that's been said, they are taken into consideration. Now, then, the industry may have some cogent argument as to whether we make enough allowance, but that, I claim—once the principle is admitted—has got to be a matter of negotiation on the individual appraisal."

Later on in the Inquiry,* Dr. Orchard stated that he was prepared to authorize and direct studies to be made to ascertain whether " some better and more equitable conversion factors " could be formulated.

Upon a consideration of the submission on this subject and after giving the evidence of Dr. Orchard its due weight, there is nothing I feel I can usefully add.

GRADING OF PULPWOOD

The Columbia Cellulose Company, among others, submitted that a pulpwood grade should be established. Its contention revolves around, in the main, the two pulping species, hemlock and balsam.

In 1945, when hemlock was not graded, I stated:—†

> " It seems to me that . . . the time has now come when hemlock logs should be graded with concomitant adjustment of royalty rates. The present rate of 60 cents per M appears incommensurate with present and future hemlock production. I would suggest in the revision of royalty rates on hemlock logs that the position of the pulp companies be kept in mind. Royalties should not be fixed at a rate which would prohibit the use of graded hemlock logs for conversion into pulp."

Consequent upon this recommendation, hemlock logs were, in 1946, graded into three classifications, which may be briefly summarized as follows:—

No. 1—logs 16 feet and over in length with a diameter 26 inches and over that will cut out 50 per cent or over of scaled contents in No. 2 clear, B, or better grade of lumber.

No. 2—logs not less than 16 feet in length with a diameter of not less than 20 inches that will cut out usable lumber of a good grade.

No. 3—logs lower than grade No. 2 but suitable for the manufacture of pulp and lumber, and logs containing less than 50 per cent of their gross scale in sound wood.

Hemlock logs of Grade 3 quality can be utilized for lumber, and perhaps plywood, as well as pulp. It was contended that this variety in use of a composite grade commanding different prices raises the over-all price of Grade 3 hemlock and thus increases the stumpage appraisal for stands (and I quote) " usable only for pulpwood."

It seems to me, with deference, that this submission does not give due effect to the following factors:—

(*a*) The evidence of Dr. Orchard, quoted above, that while Crown timber is not sold by grades, quality is, however, taken into account in stumpage appraisals.

(*b*) Very few timber stands are " usable only for pulpwood." If they are of this nature, then the hemlock or balsam must be overmature and decadent and entitled to the salvage rate.

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* Transcript, p. 17078.

† 1945 Report, p. 65.

(*c*) Prior to the introduction of hemlock grades, royalty on pulpwood was fixed at $1 per thousand board-feet, or alternatively at 55 cents per 100 cubic feet or 1 cord (section 57 of the "Forest Act"). Royalty on Grade 3 hemlock, after grading in 1946, was fixed at the existing pulp rate (section 55 of the "Forest Act").

It would seem to me that if pulpwood were excluded from the definition of Grade 3 hemlock and a new grade established for that usage, two results would probably follow: First, and I see no reason to assume otherwise, the new pulp grade would continue to bear the same royalty as now provided for Grade 3 logs, and, secondly, Grade 3, relating solely to its remaining usage—lumber (and probably plywood)—would be subject to a higher royalty, thus increasing the price to sawmills for Grade 3 hemlock.

Pulp-mills which in the future purchase No. 3 hemlock to augment their supply of a pulp-grade hemlock would also pay a higher price than at present. In this context it must not be forgotten that in 1953–54–55, 75 per cent of all hemlock logs scaled in booms on the Coast were graded as No. 3 logs.

For these reasons, I am unable to recommend the introduction of a pulping grade for hemlock as suggested by Columbia Cellulose Company.

The assumption upon which I base this conclusion may, of course, be erroneous and the Government may retain the same royalty basis for Grade 3 hemlock as now exists with a concomitant decrease in royalty for a new hemlock pulp grade. So far as the actual establishment of such a grade is concerned, Dr. Orchard said that the Forest Service "depends to a very marked extent" on the advice of the Advisory Committee on Scaling, and that if such Committee would recommend a pulpwood grade, he "would not anticipate any difficulty whatever in getting it established promptly by the Government."* I propose to leave it at that.

The situation in regard to balsam is somewhat different, and it seems to me to call for some revision. This species is as yet ungraded, except that logs less than 50 per cent sound are classified as cull.

Mr. C. D. Dunham, in presenting the brief on behalf of the Columbia Cellulose Company, said in part:—†

> "In practice, industry booms and sells balsam logs in peeler, saw-log, and pulpwood classifications, and the prices paid vary considerably according to the end use."

It is my view that, after consideration of the evidence, balsam logs be graded on the Coast. I make no recommendation as to how this species should be classified in grades.

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* Transcript, p. 17070.
† Transcript, p. 13340E.

Criticism of Appraisal Methods in Transition Zones

The subject-matter of this complaint relates, at the moment, almost entirely to the situation confronting the Columbia Cellulose Company, but if, as I anticipate, the Prince Rupert District becomes more popular in the future years, the principle involved may have a wider application.

In its presentation that Company stated:—*

> " The line officially dividing the Coast from the Interior passes along the height of land of the Cascade Mountain Range. A large portion of the Forest Management Licence No. 1 is located on the eastern side of this line, therefore is technically classified as being in the Interior.
>
> " Species in the so-called Interior portion of the licence, however, are the same as those in the Coast areas. In those parts of the licence area classified as lying in the Interior, all timber is appraised as though it were manufactured into lumber at Terrace instead of being delivered to Prince Rupert for the manufacture of pulp, as is actually the case. Appraised logging costs include delivery by truck or water to Terrace but do not take into account the cost of transportation to Prince Rupert. The appraisal allows for the cost of manufacture into lumber, and the appraised market price is the Forest Service estimate of the lumber price at Terrace."

Although the stumpage prices are not significantly different from those which would have resulted from a log appraisal at Prince Rupert or Watson Island, a number of reasons were advanced as to why the present practice is unjust and ought to be changed to conform to the realities of the situation.

Dr. Orchard was frank to say that there are " no laws, rules, or regulations laid down as to just exactly how we shall appraise. The method of appraisal is our own free choice and these zone boundaries are our own free choice. . . . "†

I am, with respect, unable to find any justification for appraising pulpwood that, by the terms of the forest management licence issued the Company, is to be delivered to Watson Island, near Prince Rupert and 90 miles from Terrace, upon a fictitious assumption that this material is delivered to Terrace to be converted into finished lumber at that point. Stumpage appraisals for the Interior are complicated enough now without endeavouring by some form of legerdemain to translate a pulp-log, that is in fact converted into pulp, into finished lumber for the sole purpose of appraising its value, in terms of quality, as a pulp-log. If there is any logic in this situation, I am free to confess it escapes me.

That brings me to another widely debated subject—stumpage appraisals in the Interior.

* Transcript, p. 13340K.
† Transcript, p. 15947.

Criticism of Stumpage Appraisals in the Interior

As I mentioned previously, it is the practice of the Forest Service to appraise stumpage in the Interior on the selling price of exported dressed lumber. The selling price used is the net price at the mill, based on a three-month weighted average in selected zones or areas. Estimated costs, both logging and manufacturing, and a margin for risk and profit are deducted from this dressed-lumber price to obtain the appraised or upset stumpage price.

The chief anomalies in Interior appraisals concern the " minor " species, for which it is exceptionally difficult to obtain satisfactory selling-price data. In most areas, lodgepole pine and balsam are involved, but hemlock also constitutes a problem in some regions. These species, even when sound, are generally less favoured by lumber operators, and they can seldom be marketed on their merits. The annual cut of lodgepole pine exceeds 100 million board-feet, making it third in volume in the Interior. Yet, according to invoices of lumber shipments, practically no lodgepole pine lumber is sold. Obviously, it is mixed with and sold as spruce, fir, or some other species. The same thing happens with balsam and hemlock.

Since these species are not marketed on their own, separate selling prices for them cannot be determined, but the price for the major species with which they are associated must be used. This often results in charging the same stumpage rates for these species as for the preferred major species. Where a difference is recognized, it is by a purely arbitrary means.

In some regions this problem becomes more acute as a result of excessive defect in these unwanted species. Each district has experienced some examples of this: in some areas it is the balsam, in others hemlock or cedar, and in others the lodgepole pine may be defective or very small in diameter.

Another anomaly appears when an attempt is made to compare Coast stumpage prices with those prevailing in the Interior. Although Coast rates are in general usually higher than those in the Interior, there are times when log prices may become abnormally depressed in comparison with lumber prices and, as a result, Coast stumpage rates for one or several species may fall below those in the Interior. An example of this occurred in 1953, when hemlock-log prices dropped to less than $30 per thousand board-feet in comparison with 1955 levels around $45 and the peak of $60 reached in 1951. The outcome of this was that the average prices bid for hemlock and some other species were higher in the Interior than corresponding prices on the Coast.

An exception to the general rule is white pine stumpage price, which is normally higher in the Interior. The reason, of course, is the anomalous selling-price structure. The average net price received in the Interior for white pine lumber is about $110, while that for other species, for

example, fir and spruce, is in the neighbourhood of $60 to $70. By contrast, the average log prices on the Coast for white pine are roughly the same or only two or three dollars higher than those for fir.

Representatives of industrial groups in the Interior expressed considerable dissatisfaction with the present system of stumpage appraisals as it affects them. Mr. Hubert King, Q.C., appearing on behalf of the Northern Interior Lumbermen's Association, in summation of his argument and after referring to a considerable body of evidence in support of his contentions, said in part:—*

> ". . . We submit that in the Central and Northern Interior if appraisals are based on the market price of rough lumber, if there is an accurate determination of items of cost, if plain understandable instructions are issued to all engaged in appraisal work, and if the procedures and data used in appraisals are made public, the problem will be largely solved."

Dealing with these submissions in reverse order:—

I have already recommended a less rigid policy be adopted and that full information concerning appraisals be furnished persons with a genuine interest therein.

A manual of instructions has been issued to Forest Service officers in order that methods of appraisals would be standardized as far as possible.

Determination of items of cost is an individual problem, but I am satisfied that the policy of the Forest Service is to make just allowances for all cost factors affecting appraisals, although it is a matter of dispute in the Interior whether silvicultural practices, especially tree-marking, increase costs of logging, and, if so, whether these costs are, or should be, included as factors in stumpage appraisals.

The actual cost of examining a proposed sale, selecting and marking the trees to be cut, is borne by the Forest Service, but the general complaint is that the unit cost of logging the area on a selective basis is higher than logging an unmarked area in terms of road construction, labour costs, and other items not taken into the cost allowance in the appraisal. In consequence it is contended profits are less and that stumpage should be adjusted accordingly.

The evidence is conflicting on this point. Mr. J. S. Stokes, Forester in Charge of the Management Division of the Forest Service, said in part:—*

> " In the spruce-balsam stands of the Interior we have a much more difficult problem of forest management. Under certain conditions a system of selective cutting has been introduced where only the trees marked by the Forest Service may be removed.
>
> "All of these various methods add something to the cost of extraction, and in the case of individual timber sales there is no denying that

* Transcript, p. 18441.

the Government must expect lower returns and the operator, less profit."*

" On a timber sale that is marked for single tree selection, you are going to take out some trees, and you are going to leave some trees. Now the volume that is removed is going to be less than if you took out all the trees from the area. The cost of road construction, etc., has to be borne by the material that is removed. On a marked sale you are removing less; therefore, the unit cost of your roads is going to be slightly higher than if you removed all the trees. That results in increasing your operating costs, and, as a result, your stumpage is lower."†

Dr. Orchard dealt with this subject at some length, and I think I can do no better than quote at least part of his evidence as follows:—‡

"A.—What do you mean by more cost? Let's you and I go out on two logging operations, one beside the other, and the trees that you cut down have got a paint mark on them and mine haven't a paint mark on them. How much more is it going to cost you to fell and haul out a tree with a paint mark on it than one without a paint mark on it?

" Q.—Well, in my way of calculations, it's going to cost me more to bring the paint-marked trees out over the whole sale, because I may have to travel twice as far if I'm only going to cut half the number of trees, so my logging costs would be greater. I would think. So in that case I would say it would cost me more.

"A.—It doesn't follow. Let me propose to you that I travel just as far as you do. It is going to cost you extra to take that marked tree out, what it costs you to haul the weight of the paint. I will be contradicted and we'll hear lots of this before we are through. The people who don't agree with that are going to come and say just what you have been saying, that I have got to go further afield for my logs. I've got to put in my roads, and it's going to cost me more per thousand for the roads, and in actual fact it doesn't cost me more per thousand for my roads, and I don't have to go further afield. We sell a sale that is not marked and has got 10,000 board-feet per acre on it, or 2,000 cubic feet per acre, and we charge " X " dollars per hundred stumpage. Now, here is a marked sale, on which you're permitted to take 2,000 cubic feet per acre, and we charge the same number of dollars per hundred. This man is going to say, ' I'm paying an outrageous price for my stumpage, because I'm taking marked sale.' Providing the physical features are the same, surely to goodness the logging costs are the same. What he means is this: That if you don't mark the sale, then I could take twice as much, and therefore I could

* Transcript, p. 1101.
† Transcript, p. 1131.
‡ Transcript, pp. 1725–1727.

distribute the cost of the roads over twice as much, and therefore my investment per thousand or per load or per hundred would be less and therefore we could charge more stumpage, and he could make more money, but I just come back and say that, 'Well, if there was twice as much timber on this unmarked sale, then you could take twice as much timber and it would cost you a little less.' What's wrong with that argument? Now, they don't say what they mean; what they mean is that there is 18,000 feet there on the acre, and if you would let me take 18,000 feet, why I could take it out at less per thousand, and I quite agree."

I do not feel that I can approach this problem nor its resolution with any degree of confidence. In 1956 there were 363 marked sales covering an area of 78,500 acres. The men who bid on these sales knew, or certainly could have ascertained, what costs were taken into account in the appraisals, and if their logging methods resulted in a higher unit cost on this class of sale than on an unmarked one, and it was not allowed for, then the decision to proceed was their own.

On the other hand, while the matter is not altogether free from doubt in my own mind, it seems to me that, upon the general tenor of the evidence, an appraisal system which makes allowances for the extra costs necessarily occasioned by the difficulties of terrain, distance from markets and centres of labour-supply, and a host of other factors adversely affecting extractive costs should be flexible enough to include in the category of allowable costs those added expenditures experienced, on a unit basis, when logging a marked stand in contrast with the usual unit costs of logging the same volume from a comparable unmarked stand.

I intend to return to the question of tree-marking and its silvicultural aspect when considering other Interior problems.

This brings me to the question upon which much evidence was adduced.

Criticism of Stumpage Appraisals on the Price of Finished Lumber

Representatives of Industry in the Interior, and more particularly operators in the Northern and Central areas of the Province, contended that stumpage prices should not be based on the price of finished lumber, but rather on the price of rough green lumber. The Forest Service, in answer, submitted that dressed lumber is the first truly competitive product in the Interior, and for that reason the price of rough green lumber was not considered a satisfactory criterion of stumpage values. Dr. Orchard, in stating the policy of the Forest Service in this regard, said in part:—

"A.—We don't think that rough green lumber is in actual fact a widely competitive product. There certainly is a sale for green lumber. There is no great trouble in selling rough green lumber, but it is not a preferred product. You are in a smaller market. You are selling at a

disadvantage. Selling rough green lumber has something in the nature of a distress sale. I haven't got the money to put in kilns and planers, so I have to sell my rough green lumber, and while no individual company is operating on the express policy that I have got this man over a barrel and I am going to nick him, nevertheless the general price of rough green lumber, in our opinion, is a depressed price. They don't get what the lumber is actually worth, and the market is not big enough to call a wide-open competitive market. Dressed lumber is. Dressed lumber will sell anywhere in the world, and where you have got one buyer for green lumber, you have got 100 buyers for dressed lumber. There is another factor, based on experience: we don't believe that we can help the green mill one particle by reducing his stumpage rate. As soon as you can make green lumber $1 a thousand cheaper, then your price for green lumber will go down $1. Now I have seen that happen in other things, and I am satisfied and confident that it will happen in green lumber. I am not pointing at any individual planer-mill, that's just the operation of modern business. The middle man gets squeezed, always, and I would confidently expect that to happen in green lumber. If we reduce the stumpage, the small mill that is putting out green lumber won't profit one cent. All we do is hand on a silver platter another dollar, or two dollars, or three dollars to the planing-mill or the wholesaler back on the Prairies or down East. If I had personally a hope, even a hope that by reducing the stumpage for those little mills by $2, they could put it in their pockets, I would be prepared to reduce it $2, let them put it in their pockets. I don't believe for a minute that they would get it. Somebody else would get it who doesn't need it.

"Q.—The only thing that would appear to militate against your view would be the existence of the competitive market, say, in Prince George, where we were told that nineteen, I think it was, planing-mills competed for that lumber. Would not that inevitably result in the greater profit going into the pocket of the small man, small operator? A.—I very much doubt it. Now, first you have got a specialized condition in Prince George. They (the producers of rough green lumber) are tied up with contracts, they are being financed and all the rest. The odd one would dicker and get the top price, but the odd 25 per cent can't influence the general level."*

In the Prince George area there are approximately 450 mills producing and selling rough green lumber in great part to the nineteen planing-mills and remanufacturing and lumber-assembly plants at Prince George. Considerable evidence was led to indicate that a free and open competitive market exists for rough green lumber because of this demand from the planing-mills, and also because a number of lumber-buyers operating in this area purchase rough green lumber from these sawmills and have it custom-

* Transcript, pp. 17818–17821.

milled at Prince George for shipment as dressed lumber. This direct evidence impressed me more than the expressed view-point of the Forest Service, which was not founded on any recent studies but on an opinion and belief based largely, if not wholly, on hearsay information. An open and competitive market for rough green lumber would, from the evidence, also appear actively in operation in the Quesnel, Williams Lake, and Burns Lake areas.

The Northern Interior Lumbermen's Association, predicating its submission on the existence of this free market, said in part:—

> "(1) The proper determination of stumpage value must rest on the price of the product in the first stage of processing.
>
> "(2) The vast majority of payers of stumpage sell rough lumber only and a weighted average selling price of dressed lumber must therefore have little or no meaning to them. The people who are paying the stumpage are the sellers of rough lumber yet their stumpage is based on the price of a product in which they do not deal.
>
> "(3) Since the appraisal procedure in use is based on estimates of costs and upon various assumptions, it would be less complicated and less subject to error if the estimated cost items and assumptions involved were reduced. The further we get up the scale in the processing of the product, the more items there are in the formula that make it more complicated."*

I do not feel justified in recommending for the Northern Interior an immediate switch from the present system of stumpage appraisal to a new method based on rough green lumber sales. I do, however, feel justified in saying that the evidence adduced has cast grave doubt in my mind upon the soundness of present policy of the Forest Service in this regard. In my opinion the Forest Service should undertake an intensive study of this situation. So far it apparently has not done so. If it can be fairly established beyond doubt—and the evidence points that way—that a free competitive market for rough green lumber exists, then it is my view the price for that product should govern stumpage appraisals. In that event there would be eliminated, to a degree, a present inequity described by Dr. Orchard in the following terms:—†

> "Now, if there is any inequity, just talking pure theory now, if there is any inequity, in our system of appraisal in the Interior, it is this: That we do participate, to some extent, in the process of manufacture, and I doubt if we (take me personally), as the owner of a stand of raw timber, have any right to participate in the manufacturing profit. That is another venture altogether, and somebody else puts his money in it, and maybe I have no right to participate there. And our system of appraisal in the Interior, unquestionably, does participate in

* Transcript, p. 18440.
† Transcript, pp. 2724–2725.

the manufacturing profit. That is why we don't follow it through to boxes or box-shook or furniture or siding; we seek to cut ourselves out of it at the very first place that you have got a manufactured product that has a competitive sale."

In the Southern Interior the Forest Service uses the same basis for stumpage appraisals as in the Northern Interior.

Industrial groups included within the Southern Interior Lumbermen's Association and supported by the Celgar Company submitted that an open log market existed in the Interior lake systems, and in consequence the Coast stumpage appraisal method could and should be adopted. The Association later receded from this position when it became apparent that the condition precedent upon which their submission was founded—an open log market—could not be established in evidence. There is no comparable rough green lumber market in the Southern Interior as in the northern section of the Province. Logs are, in general, processed in one mill through to finished and planed lumber.

With the exclusion of an open log market and no free competitive market of any size for rough green lumber, the only remaining basis for stumpage appraisal appears to be finished lumber.

This, however, did not remain unchallenged, and several alternative methods were suggested. Mr. R. B. Walkley, for instance, of the Kootenay Forest Products Company, submitted a well-documented thesis which he offered as a guide to follow in order to work back from the selling price of lumber to the pond price of logs similar to that invoked by the U.S. Forest Service. Whatever systems are employed to reach this objective appear to me to contain some elements of doubtful validity. As I pointed out before, the Forest Service considers the Investment Method the soundest approach to stumpage-value appraisal, provided essential data are available. It seems to me the Forest Service would not encounter any greater difficulties in this regard than it does now, perhaps less. I suggest, therefore, that a comprehensive study be undertaken by the Forest Service to ascertain if it would not be practical to adopt the Investment Method of appraisal to stumpage values in the Southern Interior.

I see no reason why dissimilar systems best suited to separate regions consisting of large areas with a common problem should not be adopted. The principle is already recognized in the basic differences existing now between Coast and Interior stumpage-appraisal methods.

Log Grades in the Interior

The Celgar Company, among its other submissions, said:—

"We recommend the establishment of appropriate log grades for the Southern Interior of the Province and that these grades be utilized in the calculation of stumpage appraisals."

I must confess that I do not clearly appreciate the implications of such a proposal. Timber is not sold by the Crown by grades either on the Coast or in the Interior, and the expressed policy of the Forest Service is, as I have recorded, to take the quality of the stand into consideration in stumpage appraisals. I let Dr. Orchard speak for himself on this subject without further comment. He said:—*

> "Q.—What is your reaction to the suggestion that log grades be established (in the Interior)? A.—We have never thought very seriously of it, but would think seriously of it if we had any urging whatever on the part of the Interior Associations. We are in quite close touch. We meet annually or oftener with committees and representatives of the Southern Interior Association and the Northern Interior Association. The question has never been raised so far as I recall by those Associations. If it were raised by the Associations and the indutry itself, it would receive very serious consideration."

Criticisms of Stumpage Reappraisals and Sliding Scale

It will be recalled that the buyer of a timber sale is put to his election to designate which of the two methods he chooses to adopt—a reappraisal of the sale at two-year intervals or the sliding-scale adjustment which, if conditions warrant, may be applied in quarterly periods.

The reappraisal system is in disfavour with Industry because it only operates to increase the stumpage and never to lower it below the original bid price. In consequence the alleged right of election is more illusory than real. No one normally wishes to invoke a proceeding which can only result in an increased price of his raw material. After consideration of the evidence, I have concluded that the present system of reappraisal should be revised to mean what the term implies—a real reappraisal. This would necessitate a reassessment of values to the same degree as that employed in the original appraisal including and evaluating, for example, among other relevant factors, changes in the average prices of logs or lumber, market trends, and changes in operating costs guided by experience.

The Forest Service is apprehensive that if such a policy were to be adopted, bid prices would reach fantastic heights, pushed up by operators in the anticipation that they could hold the sale until the stumpage was reappraised at a lower price. This danger undoubtedly exists and accounts in part for some of the very high bid prices in the United States because of their methods of reappraisal. It is not, however, in my opinion, an insurmountable difficulty and could, I believe, be alleviated to a very marked degree by contract provisions compelling the successful bidder to cut some substantial percentage of the volume on the sale at the bid price before he would be eligible to apply for reappraisal. This percentage could bear some arbitrary relationship to the differential between upset and bid price.

* Transcript, pp. 17071–17072.

Then, too, it seems to me it could be provided that once a sale is bid beyond a fixed percentage of the upset price, the deposit would have to be increased over the present maximum of $25,000, say, to 20 per cent of the bid price, except as against the original applicant who put up the sale.

It can be argued, on the other hand, that it does not make much difference if prices are bid up. Each bidder knows that if he gets the sale, he has the right to seek a reappraisal at a just price later on.

In any event it is my opinion that if there is the right to a reappraisal, it ought to be real and not, as now, exist in name only.

In forest management licence contracts this concept is recognized as sound. Stumpage is realistically reappraised each year, and I think the Forest Service could extend this principle to competitive sales, provided a safeguard against untoward speculation can be devised. I see no reason why the same period—one year—should not apply to the sale of Crown timber, whether within or without forest management licences.

Reappraisal is only of consequence on a rising market. During the year or two years between appraisals the operator who bids in a sale at a normal price reaps the benefit of ascending market values while his stumpage remains static.

If an operator considers that the market price will decline, he would in all probability elect the sliding-scale method of adjustment, thus, if he is right, benefiting every three months from a reduction in his stumpage according to the formula in use. This sliding-scale adjustment does not apply to forest management licences. I am unable to see any logical reason why it should not do so. Broadly speaking, and as a matter of basic policy, it is, I think, advisable that sales of Crown timber, no matter how formulated, should retain a close relationship to each other and bear much the same obligations and enjoy the same benefits where practicable.

The sliding-scale formula was examined critically during the Inquiry, and it was said that the application of the 5/4 and 3/4 constants to the basic ratio in the formula results in an anomaly when, through competition or otherwise, the bid price exceeds a certain percentage of the average market value quoted in the particulars of the sale. In such event the application of the formula will result in an increase in the stumpage rate greater than the increase in market value of the product in the case of the first upward revision in rates above the bid rates.

The basic ratio at which this occurs can be calculated mathematically at 34 per cent of the average market value when the contract makes provision for stumpage adjustments on the basis of a 15-per-cent change in average market value. That is, if the original stumpage rate bid exceeds 34 per cent of the average market value (in terms of the same unit of measure), the increase in stumpage, as a result of the first upward stumpage adjustment, will exceed the 15-per-cent increase in selling price that has taken place.

This has actually happened in only a few cases, but it points to what could be a serious weakness in the formula in the event future stumpage rates absorb a higher percentage of the selling price.

The Forest Service is seeking means of eliminating this anomaly by the formulation of suitable provisions to insert in future contracts. In the meantime the buyer is warned at the time of award of the sale that the consequences of electing stumpage adjustments by sliding scale may be as indicated. On the other hand, the adjustment as a result of a reduction in the average market value will be substantial.

A second anomaly has been observed in the results obtained by the use of the formula. Ideally, a sliding-scale formula should result in approximately the same stumpage rates for all species of equal average market value on the same sale, regardless of their respective values at the time of award. That is, one might expect that, regardless of what current selling prices for various species on a sale might be, the same stumpage rate would result for each one when its market value reached a certain point, say, $70. This result is not obtained with the application of the present formula because various species in one contract rarely have similar basic ratios. For example, one species might carry an original rate equivalent to 10 per cent of the average market value, while that for another species in the contract might equal 20 per cent of its market value. Under the formula, revised rates for the first would be calculated at 7½, 10, or 12½ per cent of its average market value while the corresponding percentages for the other would be 15, 20, or 25. Under these circumstances the two species would always have different rates calculated for similar market values.

The same type of anomaly has been observed as a result of appraising the same sale at different times on the basis of revised selling-price data. Operating costs change rather slowly and gradually in comparison with the violent fluctuations in selling prices that have been experienced in the last few years. A change of $10 per thousand board-feet in selling price, which is not uncommon over a period of six months or a year, has a very significant effect on the indicated stumpage rate and hence may substantially alter the basic ratio for sliding-scale stumpage purposes. This effect will be reflected in the stumpage rates throughout the life of the contract.

Industrial groups submitted that the appraised price and not the bid price should be used as a factor in the determination of the " basic ratio." The appraised or upset price is considered to be an expression of the actual value of the timber at the time of the sale, and it seems to me there is much to be said in favour of this contention. The adoption of this suggestion might, I suppose, also result in unrealistic bidding and may be subject to other objections not fully explored before me.

I do not feel well enough advised, on a reading of the evidence on this issue, to make any recommendations for a change in the present

sliding-scale formulæ. It is certainly not free from anomalies and in its operation may, under certain circumstances, have untoward results. These, when they appear, may be dealt with as single instances requiring further adjustment on an individual basis. When difficulties are apparent at large, we have the assurance of Dr. Orchard that " as anomalies turn up and as impossibilities develop with changing conditions you may be assured that (the Forest Service) will make every effort to try and take care of them."*

The principle of adjusting stumpage rates in accordance with the rise or fall of market prices is accepted as a sound policy by Industry generally, and I accept the promise of Dr. Orchard to make such administrative changes and adjustments from time to time in the formula adopted as circumstances, either special or general, may in fairness warrant.

Having discussed the general principles applied by the Forest Service in relation to royalties and stumpage and the criticism directed thereto, I now turn to consider another form of forest revenue—rentals.

RENTALS

When considering the differing forms of tenure, the various rentals annexed thereto were recited. As I had occasion to comment before, it is my opinion that charges on tenures of various kinds should be made as reasonably uniform as possible.

With the emergence of pulp and paper manufacture as a major industry, no longer an infant to be coddled in relation to lumber and other forms of manufacture, I consider that rates for rentals or so-called renewal fees for all leases and licences should be the same, with no difference between Coast and Interior. Differences in value due to location or quality of timber can be recognized in rates of royalty. I recommend a flat rate of 15 cents per acre. The rate for temporary tenures dedicated to permanent forestry in forest management licences, and in the renewable tenures which I recommend to enable the owners of temporary tenures outside forest management licences to reforest and hold their land after logging, should be 1 cent per acre as in forest management licences and as I recommended in 1945. The average annual revenue during the last ten years from these rentals has been about $454,000, an average of 17 cents per acre. The effect on the Treasury of the recommended change would be insignificant.

Direct forest revenue included items other than those I have been considering in such detail. Those, with the approximate average yearly revenue in parentheses, are tax on exports ($26,000), grazing fees ($67,000), Dominion timber berths ($20,000), miscellaneous receipts ($54,000), totalling on the average about $157,000 a year.

* Transcript, p. 15678.

The following table shows the Forest Service breakdown of the various headings contributing to direct forest revenue, 1934–35 to 1955–56, inclusive:—

TABLE 130

DIRECT FOREST REVENUE, FISCAL YEARS 1934–35 TO 1955–56, INCLUSIVE

Year	Total Revenue	Royalty	% of Total	Stumpage	% of Total	Licences	% of Total	Leases	% of Total	Tax	% of Total	Grazing	% of Total	Dominion Berths	% of Total	Trespass	% of Total	Miscellaneous	% of Total
1934–35	$2,266,710	$1,123,788	49.58	$315,336	13.91	$658,159	29.04	$72,952	3.22	$41,596	1.83	$11,635	0.51	$32,998	1.46	$7,125	0.31	$3,121	0.14
1935–36	2,841,419	1,708,828	60.14	361,069	12.71	621,301	21.87	69,711	2.45	29,796	1.04	13,659	0.48	26,905	0.95	5,567	0.20	4,583	0.16
1936–37	3,001,055	1,803,456	60.10	436,298	14.54	606,369	20.20	58,893	1.96	42,115	1.40	15,509	0.52	28,020	0.93	5,342	0.18	5,053	0.17
1937–38	3,257,525	1,880,592	57.73	597,974	18.36	580,221	17.81	62,722	1.93	64,246	1.97	24,084	0.74	24,438	0.75	19,262	0.59	3,986	0.12
1938–39	2,982,702	1,578,005	52.90	575,229	19.29	636,176	21.02	67,078	2.58	66,316	2.22	16,916	0.57	27,407	0.91	10,333	0.34	5,242	0.17
1939–40	3,236,731	1,915,551	59.18	707,420	21.86	439,386	13.58	51,535	1.59	54,320	1.68	25,682	0.79	23,154	0.71	14,012	0.43	5,671	0.18
1940–41	3,549,932	2,159,597	60.84	769,362	21.68	434,427	12.23	56,828	1.60	50,713	1.43	35,537	1.00	20,751	0.58	16,281	0.46	6,436	0.18
1941–42	4,057,438	2,453,335	60.46	937,050	23.09	459,154	11.31	48,807	1.23	81,624	2.01	30,514	0.75	22,810	0.56	17,549	0.43	6,595	0.16
1942–43	3,519,892	1,928,760	54.80	1,003,160	28.50	414,815	11.78	50,063	1.42	38,409	1.09	28,981	0.82	22,455	0.64	22,816	0.65	10,433	0.30
1943–44	3,703,703	1,887,496	50.97	1,213,016	32.76	437,172	11.79	48,650	1.31	13,230	0.36	32,213	0.87	19,927	0.54	39,192	1.06	12,807	0.34
1944–45	4,017,653	1,994,920	49.72	1,462,863	36.41	398,772	9.91	51,734	1.28	9,049	0.22	29,203	0.72	21,526	0.53	35,198	0.86	14,389	0.35
1945–46	4,352,179	2,023,238	46.49	1,739,176	39.95	413,738	9.51	53,002	1.22	7,876	0.18	31,602	0.73	21,992	0.50	47,324	1.09	14,231	0.33
1946–47	4,880,233	2,245,971	46.02	2,033,846	41.67	398,459	8.17	50,631	1.04	13,133	0.27	31,056	0.64	21,713	0.44	65,047	1.33	20,377	0.42
1947–48	7,010,039	2,924,074	41.71	3,475,938	49.58	391,782	5.59	48,084	0.69	24,230	0.35	28,195	0.40	21,520	0.31	74,698	1.06	21,519	0.31
1948–49	7,977,676	2,999,897	37.62	4,416,285	55.35	391,069	4.90	53,966	0.68	38,903	0.49	29,318	0.37	21,920	0.27	...	...	26,317	0.32
1949–50	8,331,497	2,596,584	31.17	5,179,149	62.17	384,796	4.62	49,364	0.59	47,604	0.57	26,850	0.32	17,034	0.20	...	...	30,116	0.36
1950–51	10,089,885	2,550,494	25.28	6,948,756	68.87	377,302	3.74	52,892	0.52	20,080	0.20	77,495	0.77	23,592	0.23	...	...	39,073	0.39
1951–52	13,703,715	2,335,499	17.04	10,748,103	78.44	382,846	2.79	44,797	0.33	16,054	0.12	108,272	0.79	17,469	0.12	...	...	50,674	0.37
1952–53	18,016,025	2,100,072	11.66	15,236,793	84.57	374,307	2.08	50,201	0.28	39,971	0.22	125,607	0.70	20,247	0.11	...	...	68,827	0.38
1953–54	17,578,625	2,155,886	12.26	14,788,158	84.13	373,161	2.12	48,306	0.27	25,465	0.14	93,729	0.53	20,382	0.12	...	...	73,537	0.43
1954–55	19,130,835	2,305,576	12.05	16,145,947	84.40	378,510	1.98	72,728	0.38	28,816	0.15	80,290	0.42	19,947	0.10	...	...	99,021	0.52
1955–56	23,867,706	2,270,625	9.51	20,944,328	87.75	361,660	1.52	71,686	0.30	9,054	0.04	77,222	0.32	20,106	0.09	...	...	113,025	0.47
Ten-year average, 1946–47 to 1955–56	$13,058,623	$2,448,467	18.74	$9,991,730	76.51	$381,389	2.92	$54,265	0.42	$26,331	0.20	$67,803	0.52	$20,393	0.16	$13,974	0.11	$54,248	0.42

Source: Forest Accounts Division.

The Taxation Branch of the Finance Department prepared, at my request, a comparison of the net percentage increases from 1945–46 to 1955–56 in forest revenues and other related matters. As a basis for this compilation, the following figures were used:—

TABLE 131

SOURCE OF FOREST REVENUES, 1945–46 AND 1955–56

(Provincial logging tax of $1,855,000 in 1955–56 omitted.)

Department of Forests

Revenue Source	1945–46	1955–56
Fees, royalties, and stumpage—		
Timber sales (stumpage)	$1,739,000	$20,948,000
Timber leases	53,000	92,000
Timber licences	436,000	362,000
Timber royalties	2,080,000	2,290,000
Scaling fees	167,000	623,000
Silvicultural Fund	.....	1,169,000
Cruising charges	.....	8,000
Miscellaneous	47,000	.....
Totals	$4,522,000	$25,492,000

Department of Finance

Revenue Source	1945–46	1955–56
E. & N. Railway Belt land tax	.....	$947,000
Forest-land tax (general)	.....	524,000
Timber-land tax (general)	$245,000	682,000
Timber-land tax (school)	55,000	517,000
Timber-land tax (hospital district)	.....	3,000
Tree-farm tax (general)	.....	8,000
Tree-farm tax (school)	.....	9,000
Tree-farm tax (hospital district)	.....	1,000
Wild-land tax (general)	81,000	146,000
Wild-land tax (school)	30,000	60,000
Wild-land tax (hospital district)	.....	1,000
Forest-protection tax	249,000	478,000
Totals	$660,000	$3,376,000
Total forest revenues	$5,182,000	$28,868,000

Source: Taxation Branch of Finance Department.

There are some differences in the calculation submitted by the Taxation Branch when compared with those prepared by the Accounts Division of the Forest Service, but I do not propose to take the time to resolve these inter-departmental book-keeping problems, which in one case, for example, includes the Scaling Fund while the other excludes it as an addition to revenue. For my present purposes the differences are not of any real significance.

TABLE 132

A COMPARISON OF NET PERCENTAGE INCREASE FROM 1945–46 TO 1955–56 IN CERTAIN FOREST REVENUES, NET VALUE OF FOREST PRODUCTION, PROVINCIAL STUMPAGE, ASSESSED VALUES, AND REVENUE AND TAX PER M F.B.M. OF CUT AND INVENTORY.

	Revenue		Net Percentage Increase
	1945–46	1955–56	
1. All revenue excluding logging tax[1]	$5,182,000	$28,868,000	457%
2. B.C. Forest Service stumpage timber sales and Silvicultural Fund only	1,739,000	22,117,000	1,171
3. All revenue excluding logging tax, stumpage, and Silvicultural Fund	3,443,000	6,751,000	96
4. Taxes (general, school, hospital district, and fire protection) plus timber lease and licence rentals and royalties	3,229,000	5,173,000	60
5. Item 4 excluding royalties	1,149,000	2,883,000	151
6. General, school, hospital district, and fire protection property taxes[2]	660,000	2,429,000	268
7. Net value of forest production[3]	140,000,000	582,000,000	316
8. Harvest from Crown-grants and timber leases and licences[4] (M f.b.m.)	2,218,000	2,506,000	13
9. Harvest, all tenure[4] (M f.b.m.)	3,081,000	6,109,000	98
10. B.C. Forest Service stumpage price per M f.b.m.[4]	2.04	6.83	235
11. Assessed value per M f.b.m.[5]	1.01	2.52	149
12. Taxes, rentals, and royalties (item 4) related to annual harvest (item 8) per M f.b.m.	1.45	2.06	42
13. Timber inventory assessed[6] (M f.b.m.)	8,675,000	45,250,000	422
14. Taxes and rentals (item 5) related to assessable timber inventory (item 8) per M f.b.m.	([7])	0.06	----
15. Taxes related to inventory on—[8]			
Timber land per M f.b.m. of inventory	.05	.15	200
Timber leases and licences per M f.b.m. of inventory	.017	.034	100

[1] This includes (1955–56) Esquimalt and Nanaimo Railway Belt land tax, which is comparable (i.e., in the nature of its origin and intent) to a Provincial royalty or stumpage, although levied as a one-time property tax payable at date of alienation.

[2] Excludes "Esquimalt and Nanaimo Railway Belt Land Tax Act."

[3] Dominion Bureau of Statistics.

[4] Calendar years 1945 and 1955. Additional cut of 214,000 M F.B.M. in 1955 not included because within forest management licences.

[5] Crown-granted timber lands outside Esquimalt and Nanaimo Railway Belt used because comparative with timber sale prices. No significant Crown timber sales in Esquimalt and Nanaimo Railway Belt Grant. The 1945 assessed value of $1.01 per thousand related to 1955 assessed value on Crown-grants, including Esquimalt and Nanaimo Railway Belt sales and timber leases and licences, the net increase per thousand f.b.m. would be 154 per cent.

[6] In 1945, Crown-granted timber-land volumes only. In 1955, Crown-granted timber-land and timber lease and licence volumes.

[7] Not comparable.

[8] 1945 inventory on timber leases and licences estimated at 47,830,000 M f.b.m.

The following observations relate to the salient features of the above table:—

(1) The Provincial logging tax has been omitted because it is a tax on margin, and not a cost of business operation such as property taxes, stumpage, royalties, and rentals.

(2) Referring to items 1 and 2, it is evident that over two-thirds of all forest revenue was obtained from stumpage timber sales in 1955–56, as compared to one-third in 1945–46, and as stumpage is a price paid for a commodity (not a tax), it cannot be regarded as part of tax burden.

(3) Referring to item 3, it is observed that when the purchase price (stumpage) is excluded, revenues such as property and school taxes and other fees indicate an increase during the ten-year period of only 96 per cent. In comparison, the net value of production (value added by manufacture) increased by 316 per cent (item 7), or 220 per cent more than the increase in total revenues (excluding stumpage) from the forest.

(4) When the one-time Esquimalt and Nanaimo Railway Belt land tax of 25 per cent of purchase price is excluded also (item 4), revenues net of "purchase prices" indicate a 60-per-cent increase in the ten-year period.

(5) Direct property taxes (general, school, hospital, and fire protection) have increased by 268 per cent. The increase in net value of production exceeds the growth in direct property taxes by 48 per cent. In comparison:—

(*a*) Total stumpage revenue is up 1,171 per cent.

(*b*) Average stumpage price received per M f.b.m. is up 235 per cent.

(*c*) Average assessed value per M f.b.m. is up only 149 per cent.

(6) It appears that:—

(*a*) Over two-thirds of all forest revenue now comes from stumpage timber sales.

(*b*) Purchase price (stumpage) of standing timber is up 235 per cent. Timber assessed values have logically increased, but to a lesser degree, with only a 149-per-cent increase.

(*c*) Net value of production has increased by a much greater amount than property assessed values or property taxes.

(*d*) Increased assessed values and property tax on timber tenures have not induced a substantial increase in rate of harvest (item 8) therefrom.

(7) Item 15 indicates that direct Provincial property taxes on Timber land and Wild land are up 200 per cent over the last ten-year period. While the percentage magnitude of the increase appears

substantial, the tax burden of 15 cents per M f.b.m. of inventory does not appear excessive. A cumulative ten-year tax at this annual rate (i.e., $1.50 per M f.b.m.) is less than one-third of the increased value of standing timber in the last ten years.

(8) Timber leases and licences paid only rentals and fire-protection fees (as holdings costs) in 1945. This charge is estimated at 1.7 cents per M f.b.m. of inventory at that time. In 1955, with this tenure subject to the 1-per-cent forest-land tax, annual tax and rentals increased by 100 per cent to 3.4 cents per M f.b.m. of current inventory. The rental and tax burden on forest-land inventory has increased by 100 per cent by 1955, but at 3.4 cents per M f.b.m. of inventory is nominal and 400 per cent less than on timber land. The fact that Crown royalties remained static in a period of rapidly rising stumpage values has given the holders of timber leases and licences a very substantial capital gain.

In 1945 the Forest Service was the recipient of revenue from certain revolving funds. The majority of these have since been abolished by the following statutory amendments:—

(*a*) Silviculture Fund (B.C.S. 1956, chapter 20):
(*b*) Forest Protection Fund (B.C.S. 1955, chapter 27):
(*c*) Forest Reserve Account (B.C.S. 1954, chapter 11):
(*d*) Forest Service Boat Account (B.C.S. 1953, chapter 9):
(*e*) Parks Fund (B.C.S. 1953, chapter 9).

The remaining Forest Service revolving funds are the Scaling, Grazing Range Improvement, and the Forest Development Funds. The latter, established in 1948 for the building of forest access roads, has been replaced in practice in the last few years by specific annual appropriations from capital out of income.

The removal of these funds by statutory amendment, progressively over a period of four years, indicates that the Government and Legislature apparently desires, in so far as possible, except in the case of catastrophic expense, that annual expenditures should be based on annual estimates for specific forest-conservation purposes. It was apparently considered desirable that Forest Service expenditures, as far as possible, should be on the same annual appropriation basis as those of other natural-resource departments.

Conversely, the existence of many revolving funds that had credit and debit balances, from year to year, accumulated in many cases from sundry forest revenue receipts, and which did not permit the Treasury Board and Legislature to have an accurate estimate of proposed forest expenditure, was considered as inconsistent with responsible government financial policy.

However, at the same time that these amendments were made, statutory provisions provided minimum amounts that were to be appropriated annually, or were automatically a charge on Consolidated Revenue. Examples are:—

Silviculture Fund.—While this revolving fund was abolished in 1956, an annual statutory appropriation was provided for the same purpose from Consolidated Revenue of not less than 75 cents per 100 cubic feet of the average annual cut of timber east of the Cascades in the preceding five years from Crown timber, other than on management licences. If the five-year average cut increases, the money earmarked for silvicultural purposes in the Interior will also increase.

Forest Protection Fund.—While this Fund was abolished in 1955, statutory provision for an annual vote of not less than $2,000,000 for forest protection was continued. A separate fire-suppression vote was also established, to comprise not less than the annual cost of fire suppression in the preceding ten years. Where annual suppression expenditures exceed the appropriation, they are an automatic charge on Consolidated Revenue. The forest-protection tax, on the other hand, in place of being earmarked to the Forest Protection Fund, is payable directly into Consolidated Revenue.

Forest Reserve Account.—While this Fund was abolished in 1954, the previous statutory annual appropriation of 3 per cent of the gross receipts from timber royalty or tax and stumpage in the last preceding year was continued. The amendment provided that, in the absence of any legislative appropriation, 3 per cent of the gross receipts in the preceding year would be available from Consolidated Revenue.

Forest Service Boat Account.—This revolving fund was abolished in 1953, and any necessary sums required for boat-building are now appropriated annually by the Legislature. Previously, any receipts from the sale, lease, or rental of boats or from the boat building or repair plant went into the revolving fund. It was believed that the revolving fund did not meet the requirements of Treasury control of expenditures.

Park Fund.—Previous to 1953, stumpage and royalty received from the sale of Crown timber in Provincial parks and from Provincial park administration was expendable on parks in addition to annual appropriations. It was considered that stumpage and royalty received from park lands should be brought to revenue under the appropriate revenue heading and any sums required for park purposes should be voted annually by the Legislature. Otherwise the Legislature was not conversant with the specific moneys to be expended in Provincial parks in a particular year.

The introduction of more rigorous legislative control of annual expenditures for specific forestry purposes is a trend that appears advisable to a Government with expanding public expenditures. The Treasury Board becomes more sensitive to specific accounting on behalf of the Legislature as the size of appropriations increases.

The Forest Service submits the following table, showing forest expen

TABLE

FOREST EXPENDITURES, FISCAL YEARS

Year	Total Expenditure	Salaries	% of Total	Temporary Assistance	% of Total	Expense Vote	% of Total	Trade Extension	% of Total
1934–35	$643,123	$203,205	31.60			$75,058	11.67	$53,130	8.26
1935–36	697,798	203,413	29.14			86,250	12.36	50,000	7.17
1936–37	753,476	226,803	30.10	$1,423	0.19	98,041	13.01	50,000	6.64
1937–38	911,376	244,241	26.80	812	0.09	108,849	11.94	50,000	5.49
1938–39	935,358	251,674	26.94	967	0.10	118,494	12.66		
1939–40	1,027,862	261,914	25.48	4,211	0.41	119,802	11.66		
1940–41	1,061,609	262,355	24.71	4,491	0.42	117,775	11.10		
1941–42	1,187,632	257,344	21.67	12,030	1.01	115,933	9.77		
1942–43	1,184,121	262,186	22.14	14,190	1.20	182,644	15.42		
1943–44	1,186,093	278,484	23.47	31,407	2.65	139,744	11.78		
1944–45	1,262,451	325,309	25.77	40,753	3.23	151,545	12.00		
1945–46	1,626,952	379,084	23.30	60,824	3.74	193,498	11.89	Insect-control	
1946–47	2,149,819	508,781	23.67	15,972	0.74	194,131	9.03		
1947–48	2,961,018	604,923	20.44	417	0.01	267,296	9.02	$1,894	0.06
1948–49	4,002,521	1,034,275	25.84			337,401	8.42	24,293	0.61
1949–50	4,764,070	1,054,481	22.14			417,021	8.75		
1950–51	4,770,096	1,049,940	22.01			475,812	9.98		
1951–52	6,749,922	1,228,823	18.22			616,144	9.13		
1952–53	7,745,362	1,965,421	25.37			1,101,203	14.22		
1953–54	7,724,876	2,014,859	26.15			1,019,552	13.22		
1954–55	7,847,531	1,996,730	25.44			822,179	10.48		
1955–56	9,033,336	2,028,587	22.46			897,595	9.94		
Ten-year average, 1946–47 to 1955–56	$5,774,855	$1,348,682	23.35	$1,638	0.03	$614,833	10.65	$2,618	0.05

Year	Grazing Range Improvement Fund	% of Total	Forest Protection Fund	% of Total	Provincial Parks	% of Total	Forest Management	% of Total	Public Relations	% of Total
1934–35	$3,324	0.52	$300,000	46.65						
1935–36	3,818	0.55	300,000	42.99						
1936–37	4,356	0.58	300,000	39.81						
1937–38	4,811	0.53	400,000	43.89						
1938–39	7,308	0.78	440,000	47.04						
1939–40	5,639	0.55	500,000	48.64						
1940–41	8,561	0.81	500,000	47.10	$9,803	0.92				
1941–42	11,846	1.00	500,000	42.10	12,450	1.05				
1942–43	10,171	0.86	500,000	42.23	13,148	1.11				
1943–44	9,660	0.82	500,000	42.15	19,196	1.62				
1944–45	10,738	0.85	500,000	39.61	22,479	1.78				
1945–46	9,734	0.59	650,000	39.96	27,772	1.71				
1946–47	10,534	0.49	1,000,000	46.51	28,813	1.34	$23,990	1.12	$8,928	0.42
1947–48	10,351	0.34	1,250,000	42.22	74,908	2.53	48,416	1.64	18,186	0.61
1948–49	9,398	0.24	1,650,000	41.22	182,594	4.56	60,175	1.50	21,796	0.54
1949–50	14,659	0.31	2,000,000	41.98	462,517	9.71	87,093	1.83	43,772	0.92
1950–51	13,425	0.28	2,000,000	41.93	331,590	6.95	59,853	1.25	57,254	1.20
1951–52	38,747	0.57	3,103,000	45.96	546,102	8.09	107,648	1.60	57,621	0.85
1952–53	54,163	0.70	2,000,000	25.84	874,703	11.29	127,550	1.64	97,855	1.26
1953–54	53,440	0.69	2,089,521	27.12	703,330	9.13	126,107	1.64	50,575	0.66
1954–55	46,304	0.59	2,080,837	26.52	749,921	9.56	151,781	1.93	47,673	0.61
1955–56	32,807	0.36	2,272,297	25.15	705,390	7.81	173,189	1.91	50,440	0.56
Ten-year average, 1946–47 to 1955–56	$28,382	0.49	$1,944,565	33.67	$465,986	8.07	$96,580	1.67	$45,410	0.79

ditures for the fiscal years 1934–35 to 1955–56, inclusive:—

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1934–35 TO 1955–56, INCLUSIVE

Reconnaissance	% of Total	Grants	% of Total	Forest Reserve Acct.	% of Total	Research	% of Total	Reforestation	% of Total	Miscellaneous	% of Total
$1,995	0.31	$3,000	0.47	.....	.....	$1,988	0.30	$1,423	0.22	.....	.....
1,999	0.29	2,000	0.29	$43,927	6.29	2,000	0.29	4,391	0.63	.....	.....
1,889	0.25	2,000	0.27	62,298	8.27	1,993	0.26	4,384	0.58	$289	0.04
4,963	0.55	4,000	0.44	67,669	7.42	13,331	1.46	12,700	1.39	.....	.....
9,078	0.97	4,000	0.42	74,908	8.00	14,000	1.50	14,929	1.59	.....	.....
9,973	0.97	4,000	0.39	65,388	6.36	13,979	1.36	42,956	4.18	.....	.....
9,961	0.94	4,000	0.38	87,812	8.27	13,860	1.30	42,990	4.05	.....	.....
8,624	0.73	4,000	0.34	103,158	8.68	11,487	0.96	150,759	12.69	.....	.....
8,317	0.70	4,000	0.34	103,158	8.71	9,924	0.84	76,383	6.45	.....	.....
6,043	0.51	4,000	0.34	87,972	7.41	10,748	0.91	96,787	8.17	2,052	0.17
6,763	0.54	4,000	0.32	92,182	7.30	10,767	0.85	95,364	7.55	2,551	0.20
15,364	0.94	4,000	0.24	102,612	6.31	12,987	0.80	166,732	10.25	4,346	0.27
.....	.....	2,000	0.09	111,605	5.19	22,809	1.06	169,014	7.86	23,395	1.09
.....	.....	3,000	0.10	191,018	6.46	13,894	0.47	350,531	11.84	40,000	1.35
.....	.....	4,000	0.10	219,191	5.48	25,076	0.63	360,994	9.02	39,165	0.98
.....	.....	4,000	0.08	230,251	4.83	29,716	0.62	365,553	7.68	4,034	0.08
.....	.....	4,000	0.08	279,850	5.87	29,341	0.62	377,543	7.92	.....	.....
.....	.....	5,000	0.07	423,187	6.27	73,105	1.08	392,168	5.81	.....	.....
.....	.....	5,000	0.05	524,036	6.77	81,013	1.05	450,153	5.81	.....	.....
.....	.....	6,000	0.08	498,968	6.48	57,609	0.75	424,255	5.51	.....	.....
.....	.....	6,000	0.08	534,013	6.80	55,964	0.71	409,753	5.22	.....	.....
.....	.....	6,000	0.07	.....	.....	55,977	0.62	338,775	3.75	.....	.....
.....	.....	$4,500	0.08	$301,211	5.22	$44,450	0.77	$363,873	6.30	$10,659	0.18

Engineering Services	% of Total
$286,127	3.65
709,108	7.85
$99,523	1.72

Ranger School	% of Total	Boys' Training Camp	% of Total	Rentals	% of Total	Office Furniture and Equipment	% of Total	Forest Development Fund	% of Total
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
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.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$29,848	1.39	.....	.....	.....	.....	.....	.....	.....	.....
86,182	2.91	.....	.....	.....	.....	.....	.....	.....	.....
34,264	0.86	.....	.....	.....	.....	.....	.....	.....	.....
50,973	1.07	.....	.....	.....	.....	.....	.....	.....	.....
56,488	1.18	.....	.....	.....	.....	.....	.....	$35,000	0.73
53,445	0.79	$59,932	0.89	.....	.....	.....	.....	45,000	0.67
55,385	0.62	121,099	1.56	$56,307	0.73	$46,474	0.60	185,000	2.39
72,718	0.94	125,743	1.63	47,243	0.61	69,073	0.64	365,883	4.75
68,683	0.87	126,172	1.61	60,891	0.78	39,593	0.50	364,910	4.65
68,607	0.76	121,904	1.35	46,065	0.51	42,548	0.47	439,212	4.86
$57,659	1.00	$55,485	0.96	$21,050	0.36	$19,768	0.34	$143,500	2.49

Forest Surveys	% of Total	Fire Suppression	% of Total
.....	.....	.....	.....
$968,890	10.73	$75,945	0.84
$96,889	1.68	$7,594	0.13

The following table, prepared by the Department of Finance and which is self-explanatory, is, I think, of considerable interest. There is a difference of about $500,000 between total expenditures submitted by the Forest Service in the foregoing table and those attributed to that source by the Taxation Branch, but that book-keeping variation does not materially affect the resultant percentages. The 1955–56 revenue total in this compilation includes the logging tax.

TABLE 134

GROSS NATURAL-RESOURCE REVENUE AND EXPENDITURE OF BRITISH COLUMBIA, FISCAL YEARS 1945–46 AND 1952–53 TO 1955–56

(In thousands of dollars.)

	1945–46	1952–53	1953–54	1954–55	1955–56
Revenue by Source					
Agriculture	312	579	561	566	633
Fish and game	476	968	1,142	1,136	1,188
Lands	567	1,151	1,075	955	1,121
Forests	5,097	20,263	21,169	24,300	30,132
Mining	1,030	4,756	4,517	3,609	8,658
Parks	.....	20	21	30	15
Water resources	406	705	757	862	820
Total natural-resource revenue	7,888	28,442	29,242	31,458	42,567
Total Provincial revenue (gross)	46,183	192,770	201,611	215,012	248,765
Natural-resource revenue as a percentage of total Provincial revenue	17.08	14.75	14.50	14.63	17.11
Expenditure by Function					
Agriculture	615	1,581	1,459	1,549	1,589
Chargeable to Government of Canada	51	75	59	56	52
Provincial expenditure	564	1,506	1,400	1,493	1,537
Fish and game	364	900	916	903	959
Chargeable to Government of Canada	.....	2	2	.....	.....
Provincial expenditure	364	898	914	903	959
Lands	380	2,188	2,668	2,286	2,035
Chargeable to Government of Canada	3	261	518	519	373
Provincial expenditure	377	1,927	2,150	1,767	1,662
Forests	2,215	9,570	8,909	9,561	10,076
Chargeable to Government of Canada	.....	624	478	524	517
Provincial expenditure	2,215	8,946	8,431	9,037	9,559
Mining	313	817	1,198	1,179	1,151
Chargeable to Government of Canada	.....	.....	.....	.....	.....
Provincial expenditure	313	817	1,198	1,179	1,151
Parks	28	906	724	787	706
Chargeable to Government of Canada	.....	.....	.....	.....	.....
Provincial expenditure	28	906	724	787	706
Water resources	102	381	415	280	306
Chargeable to Government of Canada	.....	14	29	.....	.....
Provincial expenditure	102	367	386	280	306
Total natural-resource expenditure	4,017	16,343	16,289	16,545	16,822
Chargeable to Government of Canada	54	976	1,086	1,099	942
Provincial expenditure on natural resources	3,963	15,367	15,203	15,446	15,880
Total Provincial expenditure (gross)	38,042	233,318	200,511	206,406	237,571
Natural-resource expenditure as a percentage of total gross Provincial expenditure	10.6	7.0	8.1	8.0	7.1
Percentage paid by Government of Canada related to gross Provincial expenditure	0.1	0.4	0.5	0.5	0.4
Percentage of forest revenues expended on forests	43.5	47.2	42.1	39.3	33.4
Percentage of mining revenues expended on mines	30.4	17.2	26.5	32.7	13.3

Whether an expenditure on the forest resources of this Province of an amount equal to about one-third of forest revenues is adequate is a matter for the Government to determine. I have recommended a substantial increase in the Crown contribution to fire-protection expenditures, and this and the implementation of other recommendations involving added costs will undoubtedly increase this percentage but not, I think, to an unreasonable level.

From the foregoing table it is seen that in 1955–56 moneys expended by the Federal Government on natural resources in this Province amounted to 0.4 per cent of gross Provincial expenditures under this heading.

It is also, I think, desirable to ascertain within approximate limits the amount spent by Canada on the forestry resources of this Province in comparison with moneys received by Canada from our forest industries.

The following table has been compiled for that purpose, in which a conservative estimate of Federal receipts from forest industries has been adopted:—

TABLE 135

AN ESTIMATE OF THE PERCENTAGE OF TOTAL FEDERAL REVENUE RECEIPTS FROM FOREST INDUSTRIES OF BRITISH COLUMBIA EXPENDED BY CANADA ON FORESTRY PURPOSES IN THIS PROVINCE, 1952–53 TO 1954–55.

	Federal Expenditure on Forestry in British Columbia	Total Federal Revenue Receipts from Forest Industries of British Columbia	Percentage of Federal Expenditure of Receipts
1952–53	$945,000	$124,100,000	0.76
1953–54	1,022,000	121,700,000	0.84
1954–55	1,133,000	112,800,000	0.99

The percentages in the foregoing table have been estimated upon the basis outlined in the following table:—

TABLE 136

ESTIMATES OF THE REVENUE OF THE GOVERNMENT OF CANADA IN BRITISH COLUMBIA ATTRIBUTABLE TO THE PRIMARY AND SECONDARY FOREST INDUSTRIES.

(In millions of dollars.)

Direct Taxes	1952–53		1953–54		1954–55	
	Total Revenue[1]	Revenue Attributable to Primary and Secondary Wood-product Industries	Total Revenue[1]	Attributable to Forest Industries	Total Revenue[1]	Attributable to Forest Industries
Personal income tax[2]	126.2	25.7	127.4	26.0	126.9	25.8
Non-resident tax collections[2]	2.1		2.4		2.3	
Corporation income tax[3]	124.9	41.8	100.0	35.7	97.8	33.9[5]
Excess-profits tax	.....	.....	.....	.....	.....	.....
Succession duties[2]	4.5	.9	6.0	1.2	7.6	1.5
Tax on undistributed income[3]	2.0	.7	.5	.2	.9	.3[5]
Total direct taxes	259.7	.....	236.3	.....	235.5	.....
Indirect taxes[4]	176.6	47.0	187.3	50.0	167.3	43.7
Non-tax revenues[4]	23.2	6.2	26.4	7.0	26.7	7.0
Special receipts and credits[4]	6.9	1.8	6.1	1.6	2.4	.6
Total tax revenue	466.4	124.1	456.1	121.7	431.9	112.8
If one-third of total revenue is attributed to the primary and secondary wood-products industries	158.2		152.1		144.0	
Percentage attributed revenue is to total revenue		26.6		26.7		26.1

[1] Sources:—
Taxation Statistics, 1953–1955, Department of National Revenue, Taxation Division.
Public Accounts, Canada, 1953–54 and 1954–55.
Retail Trade Bulletins, Dominion Bureau of Statistics.
Canadian Statistical Review, Dominion Bureau of Statistics.

[2] Seasonally adjusted employment force in British Columbia in 1955 was 451,000. Employment in the logging industry numbered 14,200 and in the wood-manufacturing industry 59,200, or an aggregate of 73,400 or 16.3 per cent of the labour force. Because of the higher level of wages in the wood-manufacturing industry, it was assumed 20 per cent of the personal income in British Columbia is attributable to the forestry primary and secondary industries.

[3] The corporation profits attributable to the forest industries to total corporation profits are:—

1952–53: $\frac{79,283,000}{235,742,000}=33.5\%$ 1953–54: $\frac{81,424,000}{227,383,000}=35.7\%$ 1954–55: $\frac{80,354,000}{231,563,000}=34.7\%$

as per the breakdown supplied by the Federal Government and British Columbia corporation profits as reported in Taxation Statistics, 1953 to 1955.

[4] Composite ratios of personal and corporate forest-industry revenue to total revenue have been applied:—

1952–53—	Attributable	Total
Personal	26.6	132.8
Corporate	42.5	126.9
	69.1	259.7

Ratio=26.6%

1953–54—	Attributable	Total
Personal	27.2	135.8
Corporate	35.9	100.5
	63.1	236.3

Ratio=26.7%

1954–55—	Attributable	Total
Personal	27.3	136.8
Corporate	34.2	98.7
	61.5	235.5

Ratio=26.1%

[5] The ratio of the 1954–55 profits attributable to the forest industries to the total corporation profits is based on an average of the two preceding years, 1952–53 and 1953–54, as the Federal Government breakdown is not yet available for this year.

Expenditures in this Province by Canada are estimated by the Provincial Finance Department as follows:—

TABLE 137

EXPENDITURES OF GOVERNMENT OF CANADA ON FOREST INDUSTRIES (FOREST SURVEYS AND RESEARCH) IN BRITISH COLUMBIA, 1949–55

(In thousands of dollars.)

	Operations Division[1] (National Resources)	Provincial Parks (National Resources)	Forest Products Laboratories[1] (National Resources)	Federal Department of Agriculture, Science Service (Entomology and Pathology)[1]	Total Federal Government Expenditures
1949–50	.....	911	N.A.	N.A.	911
1950–51	.....	.....	163,316	282,314	445,630
1951–52	278,146	.....	168,293	291,798	738,237
1952–53	420,692	.....	180,082	343,834	944,608
1953–54	477,882	.....	192,755	351,173	1,021,810
1954–55	523,652	7,000	200,767	381,865	1,113,284
1955–56 (estimate)	482,500[2]	.....	N.A.	N.A.	.....
1956–57 (estimate)	459,000[2]	.....	N.A.[3]	N.A.	.....

N.A.=Not available.

[1] Federal Government statement of expenditures, letter from Deputy Minister of Department of Northern Affairs and National Resources.

[2] British Columbia estimates of revenue and expenditure.

[3] A new Forest Products Laboratory is now under construction by the Federal Government on the campus of the University, estimated to cost about $1,000,000.

Assuming these estimates are correct, and I must accept that premise as sound in the absence of any evidence to the contrary, it would seem to me that a reinvestment by Canada of less than 1 per cent of the revenue received from our forest industries in the conservation of the forestry resources of this Province is worthy of comment.

In a brief presented to the plenary session of the Federal-Provincial Conference at Ottawa on October 3rd, 1955, by the Honourable W. A. C. Bennett, it is said, at page 7:—

> " The economy of British Columbia, like that of some other Provinces, is almost wholly dependent upon the development of its natural resources. The sale of its natural products in their various forms in the markets of the world is an important contributing factor to the national income of Canada and to the Federal revenues; in fact, by far the major portion of the revenues from the exploitation of Provincial natural resources is paid to the Federal Government. It is therefore in the national interest that these resources, particularly of forestry and agriculture, be conserved and protected.
>
> "Accordingly, British Columbia recommends that this Conference agree in principle that the Federal Government will share equally with the Provinces in the costs of conservation of their basic resources."

I do not consider that I should attempt to say what contribution Canada should make to the Province in this regard. I content myself with the comment that the present expenditures on forestry projects by Canada in this Province, in view of the major contribution our forest industries make to the national economy in the domestic and international markets of the world, is certainly not overly generous.

Before leaving this subject of forest finances, I would like to take a quick look at the larger picture of Provincial revenues in order to put in proper perspective the revenues received from our natural resources—the so-called "public domain"—amounting to a total of $42,567,000 for 1955–56. Forest revenues contributed about $30,000,000 to this total.

The figures in question appear on the following table:—

TABLE 138

PROVINCIAL REVENUES BY PRINCIPAL SOURCES, FISCAL YEARS ENDED MARCH 31ST, 1940, 1946, 1955, AND 1956

(In thousands of dollars.)

	Approximate Collections, 1939–40		Collections, 1945–46		Collections, 1954–55		Collections, 1955–56	
	Value	Per Cent	Value	Per Cent	Value	Per Cent	Value	Per Cent
A. Progressive-rate taxes (personal and corporate income taxes and succession duties)	11,074	33.74	1,998	4.33	.....	.....	.....	.....
B. Dominion lease rental for progressive taxes	.....	.....	12,048	26.09	46,052	23.14	45,393	19.97
C. Sales taxes (gasoline, amusement, liquor and social services taxes)	8,296	25.27	16,393	35.50	97,004	48.75	114,015	50.17
D. Public domain	4,396	13.39	7,828	16.95	31,438	15.80	42,547	18.72
E. Other revenue	9,060	27.60	7,916	17.13	24,496	12.31	25,298	11.14
Total current revenues	32,826	100.00	46,183	100.00	198,990	100.00	227,253 [1]	100.00

[1] Excludes $21,545,000 of revenues shown as offsets to individual expenditure votes (including matching grants of other Governments).

Sources:—
British Columbia Public Accounts, 1939–40.
Detailed revenue analysis for other three fiscal years.

The most striking feature in the foregoing table is the percentage increase in consumer taxes from 25 per cent of the total revenue in 1939–40 to 50 per cent in 1955–56.

Receipts from natural resources have increased during this same period from $4,300,000 to $42,500,000 or about 100 per cent, but the revenue from this source has only increased by about 5 per cent in terms of percentage of total revenues.

As about one-half of Government revenues are now dependent upon consumer levies in the form of sales taxes, it is manifest that if we are to continue to support this present tax structure, gainful employment and the purchasing power of the people of this Province must be maintained at a high level.

I do not wish to imply that the revenue from sales taxes is derived solely from individual purchases of consumer goods. In 1956 the tax on capital expenditures made by Industry generally for new construction and repairs contributed 49.5 per cent to sales-tax collections. Individual, as opposed to industrial, purchases made up the balance of 50.5 per cent.

In this connection it may be noted that in 1956 of the total sum of one billion two hundred and seventy-seven thousand dollars expended by Industry generally on new construction and repairs, the wood-using industries contributed one hundred and forty-six million dollars to that total, or about 12 per cent thereof.

I have, throughout this Report, stressed, and now repeat in this context, that the continued prosperity of our forest industries depends upon our ability to produce goods for export to world markets at competitive prices. It follows that taxes on the raw materials of our forests and on our processes of conversion, which enter into and affect the cost of production, must be maintained at minimal levels. Any other policy, in my opinion, would inevitably inflict grave consequences upon our forest industries and in turn upon Governmental revenues, including the logging-profits tax, now received directly and indirectly from this major segment of our economy.

It is in the public interest that both the direct and indirect benefits accruing to the public purse from the forest industries remain unimpaired by short-term and short-sighted fiscal policies, that would increase basic costs of production, urged upon the Government by those without a clear and objective appreciation of the infinite complexities of this industry and its undeniable dependence on world markets.

SCALING

COAST

This subject lies in an eddy of controversy. It is my intention to treat this matter in much the same order as I have other issues concerning which conflicts of opinion were expressed. First of all, I would determine the Forest Service policy and then the criticisms directed thereto, and to its administration, followed by such recommendations as I consider are warranted by the evidence. In recording the Forest Service policy, I have drawn heavily upon the content of Exhibit 34 presented by Dr. Orchard.

It may seem to the initiated unnecessary for me to descend to fundamentals, but that is where I believe it is best to begin the examination of scaling.

The terms " scale " and " scaling," as used throughout the forest industries and the Forest Service, refer exclusively to the act or process of measuring raw-wood materials in suitable units, and the final results thereof in terms of species, quantity, and grade. Scale and grade are first essentials in the sale and purchase of timber products, and find a wide variety of other uses throughout the industry. Timber is frequently felled, loaded, hauled, towed, or barged at rates per unit based on the scale, and all Government dues on the timber itself are collected on the scale. The sum total of industry's interest, depending on the scale, is measured by the total dollar value of the raw wood product delivered to the mill, and would be several times the Government revenue interest. An accurate and dependable scale, in which all parties concerned will have the utmost confidence, is, therefore, of first importance to all concerned, from labour in the woods, through owner, buyer, and vendor, to the Provincial Government.

The scale in such products as hewn railway-ties and fence-posts may be nothing more than a piece-count and grading by the scaler for merchantability according to specified standards. Fuel-wood, 4-foot pulpwood, and shingle-bolts are scaled by the cord. Poles and piling are scaled in lineal feet and graded, especially poles, according to strict specifications as to top and butt diameters, length, and various other characteristics specified by the buyer. Logs, which constitute vastly the greater bulk of our raw-wood production, traditionally throughout North America, have been scaled in board-feet.

A board-foot is that amount of manufactured lumber in any physical shape that will equal the wood content of a piece of board 1 foot square and 1 inch thick.

Originally the board-foot delivered to the buyer, possibly the product of the saw-pit or the local water-power mill, was just that. With the advent of better and more refined machinery and the introduction of the

planer, the board-foot delivered to the buyer was what was left of the rough, full measure after the planer had finished with it. Planers take off about one-quarter inch. The delivered board-foot of planed lumber, therefore, is 1 foot square and three-quarters of an inch thick (or " quarter scant "), and this is the board-foot of the lumber business in finished lumber. Rough boards are still delivered full inch. Other products are, of course, delivered in any dimensions as ordered.

Stumpage and scale have followed a traditional course of development throughout North America and, likewise, in British Columbia. In the early stages of logging and manufacture, the standing timber, if it did not go with the land, was sold at so much per tree.

Chapter 32 of the Statutes of British Columbia, 1884, "An Act relating to the Cutting of Timber upon Provincial Lands, and for the Purpose of Deriving a Revenue Therefrom," provided for the issuance of timber leases. The licensee or lessee was required to keep " an account in writing of the number of trees felled." "At the expiration of every six months," he was required to furnish a sworn statement, and " forthwith pay in respect of each tree felled the sum of fifteen cents." Incidentally it may be of interest to note that elsewhere in the same Act it was expressly provided that " this Act shall not apply to the cutting of trees known as hemlock."

The actual number of trees removed, to determine the payment due to the owner, was readily and accurately checked by a count of the stumps; hence the origin of the term " stumpage," as I pointed out before, to describe the purchase or sale price of standing timber.

Obviously this was a most inaccurate measure of values exchanged. Both the volume and the quality of the wood of trees of the same species, and of the same age, vary between extremely wide limits, and, in any event, the logger and the mill-man deal in logs rather than in trees. Very soon, therefore, and in the early stages of the industry in British Columbia, the need for a more accurate and more versatile measure was recognized, and in 1895 the British Columbia Board-foot Log Scale was established as the official scale. The new scale was used in the first instance only on the Coast, but the " Timber Royalty Act " of 1914 extended its use as the only legal measurement for transactions in raw wood for the manufacture of lumber, Province-wide, as from the 1st day of January, 1915.

Many board-foot scales have been invented, a mere comparison of which is enough to point up their gross inaccuracies. The following comparison between the Scribner Decimal C, the Doyle (both of which were widely used in British Columbia before the British Columbia scale was introduced), the International (commonly conceded to be the best of the board-foot rules, although also subject to some infirmity), and the British Columbia rule, in the case of a few logs, will illustrate this point.

TABLE 139

Log		Board-feet			
Diameter (Inches)	Length (Feet)	Scribner	Doyle	International	B.C.
10	10	30	22	35	34
10	20	70	44	85	69
10	30	110	66	150	103
20	10	170	160	175	163
20	20	350	320	370	326
20	30	520	480	595	489
30	10	410	422	410	387
30	20	820	844	860	773
30	30	1,230	1,266	1,345	1,160

The British Columbia Log Scale was derived diagrammatically and mathematically, tempered throughout with certain arbitrary assumptions, all of which may be summarized as follows:—

(1) Assume that all the log outside of a cylinder on a diameter equal to the diameter of the small end of the log will be wasted in slabs.

(2) Assume that, in cutting this cylinder into rectangular forms of lumber, there will be a further waste equal to a collar of wood three-quarters of an inch thick around the entire length of the cylinder.

(3) Assume that the mill will saw only 1-inch boards, wasting a ⅜-inch kerf in sawdust.

The result is a mathematical formula, $0476\ (D-1\frac{1}{2})\ ^2L$, from which tables can be prepared which will allegedly show the number of board-feet that the mill will saw out of a log of any given dimensions; that is to say, of any small-end diameter in inches and length in feet.

At the time the rule was devised by the Forest Service in co-operation with an industrial committee, it was realized that in long logs the factor of taper would in itself introduce a large element of error, and another element was added by a rule that provided "in the case of logs over forty feet in length, an allowance on half the length of the log is made in order to compensate for the increase in diameter; this allowance consists of an increase in the mean diameter at the small end of one inch for each additional ten feet in length over forty feet."

Now, let us see how this scale works out in actual practice. It should be admitted as axiomatic that if a logger fells a tree and delivers the bole to the mill, he has delivered some specific and readily measurable quantity of raw wood that should measure the same quantity and be worth the same number of dollars, no matter how it may be delivered, providing only that it is delivered whole or bucked only into lengths that are reasonable, acceptable, and usable for the purposes of the buyer. Take for our example an average tree of normal form and taper, and assume, for easy figuring, a

value of $30 per thousand camp run. The usable bole of the tree taken out of the woods is 80 feet to a 6-inch top. If the stick is delivered in one piece, we have on the British Columbia Log Scale:—

	Scale	Worth
6-inch top, 80 feet	177 f.b.m.	$5.31
Or it might be bucked into two 40-foot logs:—		
6-inch top, 40 feet	39 f.b.m.	
15-inch top, 40 feet	347 f.b.m.	
	386 f.b.m.	11.58
Or it might be delivered in 20-foot lengths:—		
6-inch top, 20 feet	19 f.b.m.	
10-inch top, 20 feet	69 f.b.m.	
15-inch top, 20 feet	174 f.b.m.	
19-inch top, 20 feet	292 f.b.m.	
	554 f.b.m.	16.62
Or it might be cut into 16-foot logs:—		
6-inch top, 16 feet	15 f.b.m.	
9-inch top, 16 feet	43 f.b.m.	
13-inch top, 16 feet	101 f.b.m.	
16-inch top, 16 feet	160 f.b.m.	
20-inch top, 16 feet	261 f.b.m.	
	580 f.b.m.	17.40

For every combination of log lengths a different result is obtained, with really long logs and small tops giving fantastically gross undermeasurements. If the logger brought in another 12 feet in this particular tree, making 92 feet to a 4-inch top, and scaled it as such, the scale for the 92 feet would have been 116 f.b.m., worth $3.48; that is to say, 34 per cent less for the 92-foot stick than he got for the 80-foot stick, and only 19 per cent of what he gets for the 80-foot stick if he bucked it into 20-foot logs.

The British Columbia Board-foot Log Scale will give fairly consistent, even though inaccurate, results when it is applied only to logs approximating within rather narrow limits the same size and length. This was the type of logs that came into the mills from the woods in 1895 when the rule was introduced, and for some years thereafter—the finest of large firs and cedars, with only one destination, the sawmill. Under these conditions the official board-foot scale was reasonably satisfactory, but with radically changed conditions the Forest Service now contends that the scale has outgrown its usefulness, and for a number of reasons. The more important of these submissions by Dr. Orchard are:—*

> " 1. With smaller and longer logs, the scale is grossly inaccurate. Small, long logs already predominate in a substantial part of the industry, and their use is steadily on the increase. At the same time, the log scale has become increasingly the basis for the payment of wages, hauling, towing, insurance, and a long list of activities attendant on the process of harvesting our wood crop. An inaccurate scale that can be

* Exhibit 34, p. 4 *et seq.*

readily manipulated between very wide limits places every step of the harvesting industry—from the sale of stumpage to the delivery of the logs at the jack-ladder, and everyone involved therein—from the owner, through labour and the various services, to a great extent at the mercy of the logger without hope of recourse.

" 2. The board-foot scale never did have any direct application to any business other than that of the sawmill, and when it was introduced there was no other destination for a log. At present over 50 per cent of our total cut of logs is converted into pulp, shingles, and plywood, and unquestionably the proportion of our harvest to be diverted to these new uses, which have no connection with, or interest in, the board-foot, will be increased substantially and permanently within the next few years.

" It was recognized that we must introduce some rational degree of forest management into the woods, and it is impossible to manage a forest on a scale that will give us anywhere from 116 feet to 554 feet—a spread of about 477 per cent for the same small tree, depending on how the logger happens to cut it up and scale it."

His solution of the problem is the cubic-foot scale. He continued:—

" Cubic scale simply measures the cubic content of the log without reference to the use to which it is to be put. It is left to the manufacturer to convert his cubic feet, cubic yards or cubic meters, into terms of lumber, pulp, paper, cellulose, or alcohol.

" Cubic scale is as readily applied as is board-foot scale and, in contrast to the board-foot scale, it gives consistently accurate results and is not susceptible to manipulation (by, e.g., cutting logs into various lengths). The Service believes it is an absolute essential as one of the ' tools ' of forest management. It was this last consideration that influenced the Government to take the first steps to introduce cubic scale in British Columbia. Crown stumpage is now sold only on a basis of cubic scale."

Dr. Orchard concedes that the scale of cubic content leaves a number of things to be desired, of which quality and the variation in the density of various woods are outstanding, but he states these two important factors can be taken care of to a large degree by grading, and that cubic scale in its desirable features seems to be the best compromise. He said it can be applied anywhere that the diameter and length of a stick can be measured —in the woods, in the load, in the water, or on the jack-ladder; it can be applied at modest cost; and it is capable of almost absolutely accurate application wherein the sum of the parts will add up exactly to the scale of the whole; and even in the most practical application set out in the now officially prescribed British Columbia Cubic Scale Rule, it gives remarkably uniform results, no matter how the tree may be bucked. As an exam-

ple of these results, he invited us to examine again the tree used in our earlier review of the board-foot rule with the following result:—

	B.C. Board-foot Scale	B.C. Cubic Scale
4-inch top, 92 feet	116 f.b.m.	115 c.f.
(Note that adding 12 feet to a 4-inch top does not *reduce* the cubic scale.)		
6-inch top, 80 feet	177 f.b.m. (100%)	104 c.f. (100%)
6-inch top, 40 feet	39 f.b.m.	28 c.f.
15-inch top, 40 feet	347 f.b.m.	73 c.f.
	386 f.b.m. (209%)	101 c.f. (97%)
6-inch top, 20 feet	19 f.b.m.	12.4 c.f.
10-inch top, 20 feet	69 f.b.m.	17.7 c.f.
15-inch top, 20 feet	174 f.b.m.	31.9 c.f.
19-inch top, 20 feet	292 f.b.m.	43.7 c.f.
	554 f.b.m. (311%)	105.7 c.f. (102%)
6-inch top, 16 feet	15 f.b.m.	5.1 c.f.
9-inch top, 16 feet	43 f.b.m.	10.9 c.f.
13-inch top, 16 feet	101 f.b.m.	18.5 c.f.
16-inch top, 16 feet	160 f.b.m.	28.6 c.f.
20-inch top, 16 feet	261 f.b.m.	38.5 c.f.
	580 f.b.m. (328%)	101.6 c.f. (97%)

The Smalian formula, which has been adopted as the British Columbia Cubic Scale, determines the volume of the log from measurements of the two end diameters and the length of the log in feet. The end areas are calculated in square feet, averaged, and multiplied by the length to give the volume of the log, or the contents of the two cylinders, calculated on the two end diameters, are added together and divided by 2 to give the volume of the log. Tables are prepared giving the cubic contents of cylinders in cubic feet for various diameters in inches and lengths in feet, from which. once the measurements are made of the log, the contents can be taken direct, added, and divided by 2 for the desired total.

There are two sources of error in this formula. It has been proved long since by the most careful investigations and measurements that the form of a log is not that of a truncated cone. A normal log is in the form of a truncated parabola, which, for all the detail we need, is just a mathematician's way of saying the sides are curved, or bulged. This curve, or bulge, is liable to give slightly too great a volume, but these errors, according to the evidence of Dr. Orchard, are modest, they are compensating, and there is no way in which they can be manipulated readily to the advantage of the buyer or vendor. The errors in the board-foot rule, on the other hand, are undoubtedly gross, covering a range of 328 per cent cited in the quoted example, and are readily taken advantage of by the simple device of cutting logs as long as possible and to the smallest possible top diameter. This bulge is the explanation of the 2- to 3-per-cent difference in the various cubic scales of our sample 80-foot tree.

The second, and more serious, error results from the effects of any detectable swell at the stump cut, and this error, always on the high side, increases sharply as the length of the butt log is increased, to a maximum error in tree lengths. Normally, however, it affects only the butt log, and in any length can be entirely eliminated by projecting the natural taper of the log to the butt and deducting from the butt diameter the inches of the swell. This deduction is, I am advised, incorporated in the official scale rule.

There is no "overrun" in the old accepted sense in the case of the cubic scale, but recovery in merchantable lumber will still vary between fairly wide limits, depending on the size, type, and quality of the logs, and on the efficiency of the mill.

Sections 61 to 79, inclusive, of the "Forest Act" make the Forest Service, on behalf of the Government, solely responsible for the administration of scaling in the Province, and, in addition to various details, direct that no log shall be manufactured, or forest product shipped out of the Province, before it has been scaled; establish the British Columbia Log Scale or the British Columbia Cubic Scale as the only legal scale in the Province; and provide for a staff of Official Scalers to do all official scaling on the Coast, or in any other district of the Province, as the Government may decide.

The Official Scalers and necessary attendant supervisory and clerical staff are Civil Servants. Provision is made in the Act to defray all costs of scaling by this scaling staff through the medium of a fee per unit scaled, which is paid in to a Scaling Fund. The fee is adjusted from time to time to keep income at a level that will pay scaling costs without "profit" to the general revenues of the Province. Over the years the Fund has fluctuated from a substantial deficit to a substantial credit. Deficits have been carried *pro tem.* by the Government and eventually paid by raising the scaling fee. When credits get unnecessarily high, the Fund is adjusted by a downward revision of scaling fees.

Provision is made in the Act to extend the system of official scaling to other parts of the Province, but it has never been used outside the Coast region.

For many years there has been in operation an unofficial Scaling Advisory Committee, composed of Forest Service officials and representatives of both manufacturers and loggers, to assist the Government in the solution of scaling problems pertaining to the official scale on the Coast. The Committee normally meets once a month in Vancouver.

Section 65 of the "Forest Act" is regarded by the Forest Service as its authority for refusing to dispose of Crown timber except on the basis of the cubic-foot scale.

This section reads, in part, as follows:—

"65 (1). Timber shall be scaled either in feet board measure or in cubic feet, as elected by the person for whom the scale is made."

The Forest Service interprets this section to include the Crown as "the person for whom the scale is made." Whether the scale is intended as an instrument of measurement to be selected by the buyer or the seller of Crown timber and whether in this context "person" includes the Crown are matters not altogether free from ambiguity. Section 65 has its genesis in the recommendations contained in the 1945 Report. There was considerable debate at that time whether or not the cubic-foot scale should be introduced in place of the then current f.b.m. scale. I said (in part), after considering the evidence adduced on this issue:—

"The scale of small logs on the basis of the production therefrom in terms of this measurement is manifestly inaccurate and can be regarded only as a convenient symbol upon which to base transactions involving this class of material.

"The cubic foot in a unit of measurement that does, however, give the entire volume of wood material within the tree or log, and does not take into account any waste in manufacturing processes.

"The Deputy Minister of Forests is of the opinion—in which I concur—that the 'Forest Act' should be broadened to permit the use of the cubic-foot scale as well as the board-foot system of measurement.

"As methods of extracting and processing (the so-called) logging-waste are developed in the future it seems reasonable to assume that loggers and manufacturers might find it desirable to base their transactions in this class of material upon the cubic system. The implementation of the recommendation of the Deputy Minister would allow this to be done.

"I do not agree that the adoption of the cubic-foot scale be made mandatory in computing pulp-wood volume. It seems to me the wisest course to pursue at present is to give statutory recognition to the two systems of measurement, leaving it to industry to adopt which of these is found by future experience the more practicable in the circumstances."*

Because I suggested the two scaling systems remain in operation, section 65 (1) was drafted in its present form. It was not my intention to recommend that the Forest Service should arbitrarily, and in this instance without consultation with the Advisory Committee on Scaling, by ministerial directive sell Crown timber solely on the cubic-foot basis. My proposal was meant to convey the thought, perhaps not too clearly expressed, that the election would be that of the purchaser. I do not see now, however, that I can make any recommendations that would, after the operation of the present system of disposing of Crown timber on the cubic-foot scale

* 1945 Report, pp. 172–173.

for about eight years, do any more than attempt to alleviate the difficulties inherent therein.

Industrial witnesses, with a few exceptions, were united in their attack upon compulsory scaling of Crown timber on the cubic-foot basis. There was some variation in the area of criticism. Some witnesses were of the opinion that the cubic-foot scale should be abolished *in toto;* others, not so extreme in their views, considered that the cubic scale should not be applied to bigger-size logs cut from old-growth stands, but should be limited to scaling the smaller-size logs, pulp-logs, salvaged material, and such like.

The opposition to the present dual system of scaling seems to stem from three main considerations. There are other and collateral reasons advanced in support of the opposing forces, but generally it can be said, I think, that the three-pronged attack may be summarized as follows:—

(*a*) The cubic scale in its compulsory aspect is unfair in an economic sense to the logger who sells to sawmills:

(*b*) Dual scales are an unnecessary expense:

(*c*) The present system results in confusion and inconvenience.

With respect to (*a*) it is a fact that according to a long-established practice no booms of standard logs are sold to sawmills on the Coast except on the board-foot scale. The logger, however, is compelled to purchase his Crown timber on a cubic-foot basis. He is buying on one form of measurement and selling on another. The conversion factor is not accurate, except when applied to a very large number of logs, and then the average factor of 167 per thousand may be a reasonably close approximation for statistical purposes, but for log-trading it does not work out fairly. For instance, a scale of 1,000 cubic feet of small logs cannot produce 6,000 board-feet mill tally, and the mill pays on a unit of measurement related to the end product—boards. In a converse sense in ordinary trade transactions in logs, board-feet cannot be accurately converted to cubic feet.

The logger who is fortunate enough to put a boom of large logs together is not penalized in buying on the cubic-foot scale and selling on the board-foot scale because in this instance the logs are capable of being sawn into boards having an end total mill tally within close distance of the assumed conversion factor. In other words, when bidding in a sale of 10,000 cubic feet of Crown timber, he can, if the trees are large, cut and sell 60,000 board-feet of logs from the sale to a sawmill. If he buys 10,000 cubic feet in a sale of small trees, he is unable to log the stand and produce logs that will actually scale out for sawmill purposes at anything like 60,000 board-feet.

If he buys from the Crown on the cubic-foot scale and sells his log production, whether large or small, to a pulp-mill which buys on a cubic-scale basis, the element of unfairness disappears.

Turning to (*b*). Men who all their lives have known nothing but the board-foot scale think of and visualize timber and logs in those terms.

Their records and their company records are based on this unit of measurement. United States statistics and many of our own are built up in that form. Sub-contracts for falling and bucking and so on are let on foot board measurement. Men who work on piece work render their accounts based on a wood scale or boom scale on a f.b.m. basis. Towing charges are on a similar standard. In fact, the whole Industry, except for the pulp companies in some transactions, is geared to and conditioned by the old system. This trade practice has dictated the demand for dual scaling. But this is an additional cost which can be quite substantial, as will appear from the following compilation:—

TABLE 140

	Scaling Fees		Extra Cost for Dual Scale, M F.B.M.
	M F.B.M.	C C.F.	
June 1st, 1950	16c	16¢	----
September 1st, 1950	10c	10¢	----
August 1st, 1951	16c	16¢	----
October 1st, 1951	20c	20¢	----
May 1st, 1952	16c	16¢	----
July 1st, 1953	14c	14¢	----
September 1st, 1953	12c	13¢	----
November 1st, 1954	10c	8¢	3¢
February 1st, 1956	16¢	13¢	5¢

The fluctuations in the scaling fees reflect the moneys to the credit of the Scaling Fund. For instance, in November of 1954 the Fund had a surplus of about $300,000 and the Scaling Fund was reduced. At the same time the system was changed so that the dual scale could be obtained by paying 8 cents per C c.f. plus an additional 3 cents per M f.b.m. instead of the former rates of 12 cents plus 13 cents. This resulted in a reduction in the surplus to about $75,000 or a drop of about $225,000, which indicated that the cost of the service was exceeding the fees charged. I have not any later figures, but I judge that the fees charged as of February 1st, 1956, will deplete the Fund to the point where an increase in fees will be necessary.

Turning to the third heading of contention (*c*), I have touched upon this already in pointing out the difficulties encountered in everyday experience when two units of measurement are in actual use—the one imposed by the Forest Service and the other in common use in commercial transactions, private contracts, and generally by the Industry at large when dealing with the same sort of raw material.

I have given this problem considerable thought but without reaching any firm conclusion. I have considered among other things:—

(*a*) The complete abolition of the board-foot scale as a legal unit of measurement:

(*b*) The complete abolition of the cubic-foot scale and the revision of the present British Columbia Log Scale in order to alleviate, if not remove entirely, those elements in it which render its application in some aspects so grossly inadequate:

(*c*) To permit the purchaser of Crown timber to pay for timber over 10 inches in top diameter on the present log-scale and to pay for smaller logs on the cubic-foot basis:

(*d*) To permit the purchaser of Crown timber who is selling to a sawmill to elect at the time of the sale upon which scale he is to pay stumpage:

(*e*) To suggest that the Government for a stated period, say ten years, absorb the extra cost of the dual scale on a theory somewhat akin to a bank absorbing the adverse differential on the exchange of currency to a coinage acceptable to the bank. By that time another Commissioner may have a better idea of what can be done.

The effluxion of time will indubitably supply the answer as a new generation of loggers and foresters are born into a cubic-foot scale economy. In the meantime I leave the above suggestions for consideration to the Forest Service, the Advisory Committee on Scaling, and the Provincial Advisory Council.

This is essentially a problem for the joint study of the Forest Service and industry working together in an atmosphere of reasonable compromise. I do not doubt that their respective experts can come up with an interim solution in this transition period fair to both. I regret to say the evidence before me does not point to any clear-cut answer, and I must leave it at that.

Quite apart from whatever system of measuring the content of a log is finally agreed upon between the Service and Industry—and I am optimistic enough to think that such a consummation is not mere wishful thinking on my part—the question of administering the scaling system falls into a different category.

I have carefully considered the evidence on this issue and have reached the conclusion that scaling on the Coast should be the function of an independent non-profit bureau organized by Industry and staffed by professional scalers of a calibre acceptable to the Service. Precedent is not lacking for such a recommendation. Scaling is carried on by such an independent organization in Washington and Oregon for example—the Columbia River Scaling Bureau. The Pacific Coast Lumber Inspection Bureau is a parallel concept. The method of establishing such an organization, its scope, duties, obligations, and professional status, together with whatever arrangements may be acceptable to the Government with respect to the present Scaling Fund, its assets and liabilities, I leave to negotiation between the Service and Industry. Should this recommendation be imple-

mented, it is my sincere hope that the present staff of official Scalers be employed by such Bureau or absorbed in other branches of the Service without financial loss to themselves.

The establishment of this recommended system would, of course, materially affect some of my other tentative suggestions which were predicated upon the continuance of the scaling by Official Scalers, such as, for example, the cost of the dual scale being borne by the Government.

INTERIOR SCALING

The system of scaling in the Interior differs drastically from that in force on the Coast. There are no Official Scalers.

In 1945, after an examination of the situation then prevailing, I wrote:—

> " In the Interior scaling is done by scalers authorized by licence or permit to carry on this work, and they are employed and paid by the operator whose logs they scale. In many instances the operator does his own scaling as a licensed or permit scaler.
>
> " In the Interior there is very little timber cut for sale. Millers log their own tracts for their own use. In consequence scaling in the Interior has as its primary and practically sole purpose the protection of the Crown revenue. To leave the computations of the amount owing the Crown in the control of the man who has to pay it, or his employees, does not seem to me to be an efficient system unless effective safeguards are provided to protect the Crown's financial interests.
>
> " The Deputy Minister of Forests when asked by me why the Coast scaling system would not be feasible in the Interior stated that ' there is not a big enough volume of scaling in any one place to maintain the staff at any price that the operator could pay.' The evidence of Interior witnesses supports this view and I accept it as the real explanation of the existence of the present Interior scaling system."*

Notwithstanding the tremendous increase of log production in the Interior over the last decade, the situation has not changed for the better to any appreciable degree.

Inspectors of Scalers have been added to the District Foresters' staffs throughout the Interior during the past ten years, thereby giving the Service considerably better supervision of scaling, and Dr. Orchard believes that the introduction of cubic scale on all timber sales and management licences has simplified the problem of scaling supervision, but, apart from this, there has been little change or improvement during the past ten years, and there is very little prospect that the official scaling system can be extended to the Interior in the foreseeable future. The vast majority of operations are too small to stand the cost of an official scale.

* 1945 Report, p. 166.

Over 95 per cent of the total scale in the Interior is in sawlog material, and while there are no records of independent logging, it is safe to say that more than 95 per cent of this sawlog cut is logged by mill owners or operators by themselves, or by contract, for manufacture in their own mills.

These mills have greatly increased in number in the last ten years, from about 550 in 1944 to close to 2,000, but the average annual cut per mill is well under a million feet a year. In the Interior, unlike the Coast, logs are not collected at central points in decks or booming-grounds. There are in general no big log inventories. They are brought right out of the woods to the mill or the mill is set up at the point of logging; that is, a system of " hot logging " is generally practised. And it is the difficulty of financing an Official Scaler on shows of this type that is the real problem. An Official Scaler would have to be in constant attendance at an operation of this nature, and as each mill cuts, as I have said, on the average less than a million feet a year, the cost of an Official Scaler on a salary of $3,600 per annum would exceed $4 per thousand, which is prohibitive. A few of the larger mills with a much greater annual production could afford these services, but there are not many of them.

Certainly the presently existing circumstance calls for some remedial action because the Crown revenues are not being properly protected.

A series of questions directed by me to Dr. Orchard and his answers are, I think, the most appropriate manner in which to record this aspect of the matter:—

" Q.—Dr. Orchard, do you consider, in your opinion, that the present system of scaling in the Interior is adequate for the protection of the Crown revenue? A.—No. Not fully adequate at all.

" Q.—Then how would you suggest that it should be made adequate. A.—Use Official Scalers wherever the scale of the operation is big enough to warrant it. And 100 per cent cubic scale, and additional supervisory staff. Since 1944 we have made some attempt and, so far as it went, a very good attempt, I think, to train Interior scalers. We would profit by more of that training, and that is another way of saying more supervisors.

" Q.—The first two out of the three are within your capacity now. That is to say, having the scalers attached to the large plants in the Interior, and, secondly, more supervisors for checking scaling at the smaller mills. Cubic scaling may be something else again, but those two out of the three are not too difficult of attainment. Why haven't they been done? A.—We just didn't have the dollars voted to us to do it.

" Q.—We come back to the old story again about the forest revenue being used for other purposes? A.—Yes, and as a taxpayer, and I read the papers and so on, I am 100 per cent in favour of holding

down this modern tendency of Civil Services to grow and cost money, but when I come to apply it to our own staff, you find that if we hold the staff down and there is a great pressure to hold it down, then you just can't expand your services. If we are not going to add any permanent employees to the Forest Service, we can't have any more supervisors of scalers.

"Q.—I can understand that in a general way, but where the Crown revenues are possibly suffering, I won't say they are, but possibly suffering to an extent, wouldn't that more than offset the cost of your extra staff in order to obviate that loss of revenue? A.—I don't think there is any question. We would make their salaries and expenses many times over if we had them. We have got to sell that to a Legislature, and it is difficult to do."*

In 1944 there were two Scaling Supervisors in the Interior and now there are ten whose specific duties are to train, examine, and check scalers in their districts.

Dr. Orchard continued at a later stage of his evidence when questioned by Mr. Brazier, as follows:—

"Q.—Now, looking at your last statement, there, Dr. Orchard, that you would make their salaries and expenses many times over. I got the impression that you were of the opinion that you were losing a great deal of revenue due to the method of scaling in the Interior at the present time? A.—Well, that is something I can't prove, but that is my impression. Now that sounds a little bit as if I were levelling a general charge of thievery at all of the Interior mills, which is the farthest thing in the world from my mind. Part of it is just ignorance of scaling methods, a part of it is our inability to check, part of it is an understanding of what you can do under the law, and that isn't thievery. And there are a vast number, a surprisingly large number, of very small operations in the Interior which add up to a lot of timber. There is plenty of room there, just out of two or three things, rank carelessness, ignorance, inexperience, we will leave deliberate malpractice out of the picture altogether. Just out of unintentional, inexperience, I am sure we are losing a lot of money. Now, how much I just can't say.

"Q.—And do you think that you employ sufficient Official Scalers to look after that situation in the Interior? A.—Not to keep a sharp eye on all of them all the time, but we would spend our money on a few extra supervisors, we would visit them a little oftener, and one thing we'd try to do would be to give them some training. Now I have said that we are giving them some training, but it's pitifully little. I would like to see us in a position to train, give a fairly good course of training to all scalers in the Interior. . . . The fall-down is in the lack of training of the scaler and the lack of supervision on the

* Transcript, p. 719 *et seq.*

part of the Forest Service, and both of those are aggravated by the seasonal lack of employment, steady employment for a scaler as a scaler.

" Q.—Now, do they have to pass any tests or anything before you license them? A.—Everyone of them has passed a licensed scaler exam.

" Q.—And is he required to take any oath? A.—Yes.

" Q.—He is under oath to report correctly? A.—Yes, the oath is in the Act.

" Q.—Is in the Act itself? A.—But the vast majority of those are out on farms to-day and clerking in a store, they're running a service-station, or hot-dog stand, almost anything other than scaling logs.

" Q.—I take it, generally, from your evidence, Dr. Orchard, you're not levelling in your brief any criticism at the Interior industries so far as the scaling problem is concerned? A.—No, I am levelling criticism at the Department and its failure to conduct scaling as we thought it ought to be conducted, and to institute those checks that ought to go with the business of selling $17,000,000 worth of stumpage a year. It's just too big to take any chance."*

The evidence Dr. Orchard and that of many other witnesses supports my conclusion that " the existing circumstance calls for some remedial action."

The following points emerge for consideration:—

(*a*) The appointment of more Supervisors:

(*b*) Better training for licensed scalers, preferably in a school operated by the Forest Service:

(*c*) The organization and operation of a registration bureau for licensed scalers at strategic points—without cost to Industry—perhaps operated by local Boards of Trade. Once this is in operation no permits should be issued to non-licensed scalers unless the registration bureau is unable, on application, to supply a registered licensed scaler:

(*e*) The use of Official Scalers be mandatory in mills large enough to absorb the cost without hardship:

(*f*) The formation of an Interior Scaling Advisory Committee (in the absence of Interior Advisory Boards) to work in co-operation with the Service to ascertain ways and means of improving the present scaling system:

(*g*) The possibility of forming a scaling bureau similar to that suggested for the Coast.

I cannot blue-print in detail what should be done, but the implementation of the more practicable of the points I have suggested for consideration by the Service and Industry should go a considerable way in remedying the present unsatisfactory method of scaling in the Interior.

* Transcript, p. 2764 *et seq.*

ADMINISTRATION

Governments may formulate policies and legislatures may frame and enact laws in accordance with those policies, but even the best policies and the best laws fail to attain the desired result expected of them unless the administrative branch of the Government — the Civil Service — functions efficiently in the execution of its responsibilities imposed thereunder. It is upon the shoulders of these public servants that the daily burden of detail administration in such instances ultimately rests. If they fail or falter in the discharge of their appointed tasks, the degree of their failure determines in large measure the exact extent of the estimation by the public of the soundness of the policy sought to be made effective.

The Forest Service is charged with the grave responsibility of administering the policy of the Government and the relevant forestry laws relating to our most important natural resource. It is a heavier administrative burden than that borne by any other department of Government in this Province.

Other branches of the Government service are primarily concerned with varied functions of our social and economic structure which exists outside and apart from the Government itself, such as the administration of justice, education, agriculture, labour relations, social services, trade and industry, public works and highways, and the imposition and collection of taxes. The Forest Service, on the other hand, is in business. Its primary function is the conservation, management, and sale of our forest resource, a responsibility without parallel in any other department of Government. The Department of Agriculture does not, for example, grow vast quantities of wheat for sale, neither does it manage far-flung cattle-ranches. The Forest Service does, in its own sphere, that very thing.

This, of course, is the direct consequence of the long-continued policy of retaining in the Crown the ownership of our forest lands. The obligation of management has, however, been alleviated to a degree by delegating to Industry the management of Crown lands in forest management licences, but that is only, so far, in terms of area, a palliative programme. The Forest Service, also moving with Industry from a policy of liquidation to one of sustained yield and forest management on Crown lands, has been faced with a tremendous task in the implementation of this new concept. The first shock has been absorbed by the Service, but the after-tremors will be felt for a long time yet.

We are in one sense at the cross-roads. If the Government is to maintain its policy of retaining Crown forest land, then it is faced with the imperative necessity of managing such areas properly, efficiently, and adequately. There can be no escape from such a programme by any responsible Government which is desirous of fulfilling its obligations to the public, now and for future generations.

The only alternative to the acceptance and complete fulfilment of this obligation is to permit private enterprise to acquire ownership of Crown forest lands, to a reasonable degree, upon condition that Industry assumes and fulfils the functions of management. I have considered this aspect of the matter in another part of this Report and refer to it again in this context as an introduction to the necessity of regarding the functions of the Forest Service in a proper perspective.

The evidence clearly establishes that the Forest Service has not the staff of trained men required to manage the Crown forests. The Service generally is understaffed, overworked, and—measured in terms of responsibility—underpaid. Were it not for the devoted and dedicated services of the senior men in the Service, we would be facing to-day a situation even more serious than that with which we are now confronted.

There was, I am happy to record and to concur therewith, an almost unanimity of opinion expressed during the Inquiry that the Forest Service, within the limitations imposed upon it by Government appropriations, was deserving of high praise, but something more tangible than commendation is required if the Service is to fulfil its function. It needs more skilled men and it needs more money.

This is not a new development. Ever since its formation in 1912 the Service has been starved for funds. Both the 1910 Commission and my Report of 1945 dealt with this aspect of our public finances and stressed the necessity for a more realistic allocation of funds commensurate with the value of the forest resource and the necessity for maintaining it as a continuing and expanding source of productive wealth.

I am not unmindful of the difficulties facing a Government in paying higher salaries to one class of Civil Servants than to another. Justification for such a reclassification may, I think, be found in the fact that no other department of Government is exercising the functions of a like character. The evidence before me in 1945, and now, clearly demonstrated that many of the best men in the Service are finding more remunerative employment in industry, and if this trend continues, as it will at the present salary differentials and a general shortage of trained men, the management of our Forest Service will undoubtedly be directed, eventually, by officials with little experience. Such a situation would, in my opinion, be highly undesirable, contrary to the public interest, and with heavy financial loss to the Government.

The loss to industry of experienced men in the past decade is clearly indicated in the following seniority table:—

TABLE 141

STAFF SENIORITY IN YEARS AS AT DECEMBER 31ST, 1956, BRITISH COLUMBIA FOREST SERVICE

Position	Numbers Employed	Seniority in Years																									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	23[1]	28	29	30	30+
Victoria																											
Assistant Chief Forester	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1(31)
Divisional Foresters	9	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	2	1	1	1	1	....	....	....	....	1(32)
Foresters	4	....	....	....	....	....	....	....	1	....	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1(35)
Assistant Foresters	76	12	8	3	1	12	6	8	9	5	2	1	....	....	....	1	1	2	1	....	....	....	....	1	2	....	1(32)
Departmental Comptroller	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Forest Counsel	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Agrologist	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	.....
Assistant Forest Agrologist	3	....	....	....	1	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Forest Protection Officer	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	.....
Forester i/c Ranger School	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	.....
Meteorologist	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
District Staff																											
District Forester	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	1	....	....	....	2(32, 35)
Assistant District Forester	5	....	....	....	....	....	....	....	....	2	....	1	....	....	1	....	1	....	....	....	....	....	....	....	....	....	.....
Foresters	2	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Assistant Foresters	43	2	4	1	7	3	5	15	2	2	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Forest Protection Officers	8	....	....	....	....	....	....	....	....	....	....	2	1	....	2	2	....	....	....	1	....	....	....	....	....	....	.....
Ranger Supervisors	13	....	....	....	....	....	....	1	....	2	4	2	....	....	1	1	1	....	....	....	....	....	....	....	1	....	.....
Inspectors of Licensed Scalers	12	1	....	....	....	....	1	....	....	2	1	1	2	....	....	1	....	....	....	....	1	1	....	1	....	....	.....
Scalers	75	1	....	14	6	6	13	....	1	16	9	2	....	1	....	....	....	....	1	1	2	....	....	....	....	1	1(32)
Scalers, temporary	51	21	27	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Total positions	315	37	39	21	15	21	27	26	14	30	20	9	4	1	4	7	4	7	3	3	5	3	1	3	3	1	7

[1] None with 22, 24, 25, 26, or 27 years' seniority.

If we take for example the seventy-six Assistant Foresters in the Victoria office, it will be seen that thirty-six of these, or about one-half, have had no more than five years' experience in the Service. Of these thirty-six, twenty-three of them have no more than three years' service. Of the seventy-six, only nine of them have had over ten years' service.

Looking at the district staff for a moment, it is apparent that of forty-three Assistant Foresters none has had more than ten years' service and only six have exceeded eight years on the staff. Needless to say, these Assistant Foresters perform responsible tasks and the retention of their services is a basic requirement. Other factors will be apparent to anyone looking at these figures, and I pass on without further comment to an examination of the administrative set-up.

The responsible Minister occupies the dual portfolio of Lands and Forests. The senior administrative officer of the Forest Service is Dr. Orchard, who also occupies the dual position of Deputy Minister of Forests and Chief Forester. A number of witnesses were critical of the fact that the positions of Deputy Minister and Chief Forester were combined in one man and expressed the opinion that these two administrative positions should be separated, but as that is solely a matter of Governmental discretion, I do not consider I should do any more than record the objection and that it was strongly pressed.

There is another feature of Forest Service organization that in my view deserves reconsideration. There are two Assistant Chief Foresters—one in charge of the technical branch and the other limited to the operations branch. It follows in consequence that neither can be expected to have, from the nature of his limited responsibilities, as complete and comprehensive knowledge of the Service and its problems as the Chief Forester, who oversees every branch. On his retirement the difficulty of his replacement is at once manifest. It is my opinion that there should be one Senior Assistant Chief Forester trained and experienced in all branches of Forest Service administration immediately next in authority to the Chief Forester and with the prerogative right of succession to his office, a principle well established in large industrial organizations.

The Forest Service may be classified into two broad divisions—head office administration and field staff. Each of these two divisions can be broken down as follows:—

Head Office Administration comprising—

(*a*) Staff:

Chief Forester.
Departmental Comptroller.
Forest Counsel.
Personnel Officer.
Public Relations and Education Officials.

(*b*) *Technical Planning Branch* in charge of an Assistant Chief Forester comprising—

Surveys and Inventories Division.
Research Division.
Reforestation Division.
Working Plans Division.
Parks and Recreational Division.*

(*c*) *Operations Branch* in charge of an Assistant Chief Forester comprising—

Management Division.
Grazing Division.
Engineering Services Division.
Protection Division.
Ranger School.

The field administration is divided into five forest districts, and each forest district is subdivided into ranger districts. Each forest district is staffed with a District Forester, an Assistant District Forester, Foresters, Assistant Foresters, Rangers, and other complementary personnel.

Distribution of strength for 1956 by forest districts, including head office personnel, is as follows:—

* Placed under separate department, March, 1957.

TABLE 142

DISTRIBUTION OF PERSONNEL, 1956

Personnel	Vancouver	Prince Rupert	Prince George	Kamloops	Nelson	Victoria Headquarters	Total
Continuously Employed							
Chief Forester, Assistant Chief Foresters, and Division Foresters	—	—	—	—	—	14	14
Forest Counsel and Personnel Officer	—	—	—	—	—	2	2
District Foresters and Assistant District Foresters	2	2	2	2	2	—	10
Foresters and Assistant Foresters	11	8	9	11	10	76	125
Agrologists and Assistants	—	—	—	5	2	3	10
Engineers and Assistants	—	—	—	—	—	23	23
Forest Protection Officers	4	1	—	2	1	2	10
Supervisor of Rangers	3	2	3	3	3	—	14
Rangers	27	14	19	24	24	2	110
Supervisor of Scalers and Assistants	11	2	3	3	2	—	21
Scalers, Official	74	1	—	—	—	—	75
Scalers, Official, temporary	49	1	—	1	—	—	51
Comptroller and Audit Assistants	—	—	—	—	—	7	7
Engineering, Mechanical and Radio	4	3	3	3	3	66	82
Technical Forest and Public Relations Assistants	4	4	31	34	9	13	95
Reforestation, Parks, Research, and Survey Assistants	—	—	2	—	—	87	89
Nursery Superintendents	—	—	—	—	—	4	4
Draughtsmen	5	3	4	4	3	33	52
Clerks, Stenographers, and Messengers	99	30	28	31	27	135	350
Superintendent and Foremen, Forest Service Marine Station	—	—	—	—	—	5	5
Mechanics, Carpenters, and Technicians	—	—	1	—	—	40	41
Launch Crewmen	15	5	—	—	—	2	22
Assistant and Acting Rangers	37	24	33	48	36	—	178
Dispatchers	20	5	7	11	8	1	52
Cruisers, Compassmen, and Marking Crewmen	17	24	12	15	12	—	80
Truck and Tractor Operators	—	1	3	—	3	29	36
Foremen	—	—	1	—	—	13	14
Miscellaneous	3	1	5	1	3	35	48
Totals, permanent personnel	385	131	166	198	149	592	1,620
Seasonally Employed							
Assistant and Acting Rangers	18	5	4	1	10	3	41
Patrolmen	4	5	5	4	14	7	39
Lookoutmen	34	16	19	29	39	3	140
Dispatchers and Radio Operators	5	1	4	10	12	3	35
Fire-suppression Crewmen	50	—	—	48	32	—	130
Reforestation — Snag-fallers, Planters, etc.	—	—	—	—	—	161	161
Cruisers and Compassmen	—	—	—	8	—	—	8
Truck and Tractor Operators	4	4	3	6	5	33	55
Student and Survey Assistants	—	—	—	1	—	311	312
Silvicultural Crewmen	—	—	—	5	—	—	5
Foremen	5	1	—	10	6	3	25
Youth Training Programme	—	24	23	20	20	176	263
Miscellaneous	13	20	25	19	12	214	303
Totals, seasonal personnel	133	76	83	161	150	914	1,517
Totals, all personnel	518	207	249	359	298	1,506	3,137

The following table has been compiled from the foregoing distribution of personnel to enumerate District Foresters, Assistant District Foresters, and Rangers, to which I have added the areas of each district, with the following comparative results:—

TABLE 143

Forest District	Forest Districts' Area		Number of District Foresters and Assistant District Foresters	Acres per District Forester	Ranger Districts (Number)	Ranger Districts' Area		Number of Rangers (Excluding Supervisors)	Acres per Ranger
	Square Miles	Acres				Square Miles	Acres		
Vancouver	34,406	22,020,000	2	11,010,000	26	1,323	847,000	27	815,000
Prince Rupert	108,053	69,150,000	2	34,575,000	14	7,718	4,940,000	14	4,940,000
Prince George	137,922	88,270,000	2	44,135,000	17	8,113	5,192,000	19	4,646,000
Kamloops	53,509	34,240,000	2	17,120,000	24	2,230	1,427,000	24	1,427,000
Nelson	30,687	19,640,000	2	9,820,000	22	1,395	893,000	24	818,000
Totals	364,577	233,320,000	10	116,660,000	103	20,779	13,299,000	108	12,646,000
Averages	.....	.....	....	23,332,000	....	.....	.....	....	2,529,000

This sort of comparison does not, I am free to admit, take into sufficient account the differences in production from each district. For example, the work and responsibilities devolving upon each Ranger in the Vancouver District are much more onerous than those attached to that same officer in the Prince Rupert District. This is recognized in the size of the ranger districts in those two forest districts and the number of Rangers employed therein. It is to be noted, however, that the number of District Foresters and Assistant District Foresters is the same in each district.

When it is appreciated that in each of the five districts the Forest Service is solely responsible for the management of the areas included in public working circles as well as for the protection, conservation, regeneration, and sale of Crown timber outside the public working circles, it must be at once manifest that the present staff is inadequate to carry out this obligation to the extent required.

It has long been apparent and now of impelling necessity that the forest and ranger districts be increased in number and decreased in area. This will, of course, necessitate a concomitant increase in both the district and ranger staffs. I made this same recommendation in the 1945 Report.* It is my considered opinion that in view of the added responsibilities of management now assumed by the Service, the Province should be divided into at least ten forest districts instead of five as at present. As I pointed out in an earlier part of this Report, districts have, over the years, gradually increased in size and decreased in number.

Dr. Orchard traced this development in his evidence. He said:—†

"The title 'Forest District' emerges first in 1913. In 1913 we had eleven forest districts, each in charge of a District Forester.

"In 1916—I am going to put into record the names of these—Vancouver, Victoria (which was headquarters for the Island District), Prince Rupert, Hazelton, Fort George, Tête Jaune, Lillooet, Kamloops, Vernon, Nelson, and Cranbrook. In 1916, Tête Jaune District was merged with the Prince George and Kamloops Districts. The Tête Jaune District was a small district up there and it was split, part put into the Kamloops District and part into the Prince George District.

"In 1917 the Hazelton District was merged with the Prince Rupert District.

"In 1918 the Lillooet District was merged with the Kamloops District.

"In 1919 the Island District was merged with the Vancouver District, to make what is now the Vancouver District.

"In 1920 a new district was established in the Cariboo with headquarters at Williams Lake. We then had eight from eleven.

* 1945 Report, p. 124.
† Transcript, p. 2319 *et seq.*

"In 1925 the Vernon, Nelson, and Cranbrook Districts were merged into the Southern Interior Region and we had six.

"In 1930 we got the Dominion lands which were added largely to the Kamloops District.

"In '32 Cariboo District, which was established in '25, was merged with the Kamloops and Prince George Districts, and we then had five. And the only change since 1932, the Okanagan was taken out of the Southern Interior District and transferred to the Kamloops District. I couldn't find the exact date of that, but it is since 1932. That's the district history.

"Q.—So that since 1932, then, you have operated with five? A.—Since 1932 we have operated with five."

The time has now come to reverse the process. The number and exact delineation of the new districts I leave to the Forest Service, neither do I feel qualified to express any opinion as to what ought to be the number and area of the ranger districts. That, too, is a matter for the Service to study in co-operation with Industry and advise the Government upon.

As a matter of comparison, it may be noted, in passing, that, in the United States, Montana and Idaho have in combination fourteen ranger districts and a staff of 148, whereas an approximately equal area in the comparable Nelson Forest District has only five ranger districts and a staff of thirty-five. In the Province of Quebec there are 320 Rangers and 376 Assistant Rangers. I am not quite clear as to scope of their authority.

The assignment of a resident and qualified forester to each public working circle, with the attendant and necessary personnel to ensure its proper supervision, regulation, and management, would, in my opinion, be a very desirable innovation and consonant with the compulsory employment of a registered forester by forest management licensees (unless excepted).

It was stated in evidence* that each forester in the employ of the Service administered and endeavoured to manage twelve times the acreage managed by a forester in industrial employment. Assuming this to be so, the appointment of a resident forester to each public working circle would close this gap by some degree at least.

A consideration of the present administrative structure reveals that it is built around a core of experts centred at Victoria. For that reason it may also be said that my analysis of the responsibilities of the District Foresters and Rangers in terms of area might not be altogether free from criticism on that score. In one sense the Victoria staff of foresters may be said to be assisting, indirectly, the staff in the field. A number of witnesses were critical of this system of remote control, and in relation to appraisals of timber sales and other administrative matters it was thought these should be better left to the determination of the man on the ground rather than by reference for decision to the Victoria office.

* John F. Jacobsen, President, British Columbia Foresters' Association, Transcript, p. 9691.

The issue narrows down to a question of pure policy as to whether there should be a strong centralized control vested in the senior officials at Victoria with directives to the field staffs or whether there should be a decentralized system of administration with field officers vested with wide powers of decision in matters affecting their own forest districts. Governments in this Province have, over the years, adopted and developed the centralized system of control. It may well be that with greater management burdens calling for speedy administrative decisions, some more comprehensive measure of authority should be permitted the appropriate senior field officers. This is, I think, particularly so in the Interior.

Mr. F. J. G. Johnson, in presenting a submission on behalf of the Cariboo Lumbermen's Association, said in part:—*

> "We recommend also wide autonomy and discretionary latitude be allowed the District Foresters, since we feel that in many instances the Chief Forester's staff at Victoria are conditioned to make decisions which, lacking local knowledge, are not always applicable regionally and specifically."

And Mr. L. O. Dahlgren, of the Fraser Lake and District Board of Trade, said in part:—†

> "It is the belief of this Association that the discretion and judgment of local forest officers should be trusted in connection with the details of forest regulation imposed through timber sale contracts and general policy."

These excerpts are selected as typical of many other like suggestions advanced both by Interior and Coast witnesses.

Dr. Orchard, when asked for his views on this phase of administration, said:—‡

> "As we have progressed and got experience, and got more staff, we have consistently passed out to the Rangers, and the fieldmen, and particularly to the District Foresters, more and more power of autonomy to make their own decisions, and there is no question that that will be further developed, but as long as you are going to have a staff responsible to the Minister or the Chief Forester, or any central body, I don't see how you can possibly tell a Ranger or a District Forester, 'Now, here, you make all the decisions.' If you did that, within a forest district you would have one Ranger refusing timber sales on one score and his neighbour issuing timber sales under exactly the same conditions, as between district and district. Those are things that have to be laid down to keep some kind of uniformity."

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* Transcript, p. 13284.
† Transcript, p. 8038.
‡ Transcript, p. 15406.

I am in agreement with Dr. Orchard that each forest district cannot be regarded as a self-governing division divorced from all centralized control. Such a situation would have chaotic results. On the other hand, there should be some reasonable balance between the centripetal and centrifugal forces now operating in the Service with, of course, the residual power of decision in appropriate matters remaining always with the central authority in Victoria. That is, as I understand Dr. Orchard's evidence, the ultimate course the administrative policy will pursue.

As a small step in this direction, I recommend that the District Foresters be empowered to sell Crown stumpage up to the value of $7,000 without reference to Victoria. The present limit is $4,000.

I made mention before of the head office administrative division and the centralization of the technical staffs at Victoria.

The head office staffs, as indicated, are divided into several subdivisions, as follows:—

Working Plans Divisions.—This Division was established in February, 1952 (prior to this time it functioned as a unit of the Management Division), under separate direction of a Divisional Forester with responsibilities pertaining to (1) forest management licences, (2) public working circles, (3) farm wood-lots and demonstration forests, and (4) tree-farm certification. The staff consists of the Forester in Charge, Mr. W. G. Hughes, five Assistant Foresters, and one clerk.

The magnitude and importance of the tasks assigned to this Division may be gauged by a short summation of its functions contained in a directive to Mr. Hughes from Dr. Orchard, reading in part as follows:—

> "The function of the Working Plans Division relative to Management Licences will be to take all applications, analyze them, gather together all pertinent information, and forward this to the Deputy Minister for consideration prior to advertising. If advertising is proceeded with, the Division will follow this through and summarize the protests, if any, for presentation to the Government. In the event of the application being approved, the Division will review the working plan; and after its approval, draft the licence document. Finally, when the Licence has been signed the administration of the area is turned over to the Management Division and the District officers. From this point the Working Plans Division acts in an advisory capacity relative to cutting permits and revision on working plans.
>
> "In the case of Working Circles, the Working Plans Division will endeavour to supplement District activities in delineating Working Circle boundaries and drafting working plans, including the setting up of cutting budgets. For the most part the function of the Division will be to act in an advisory capacity and to train men for assignment to District

staffs as working plan officers administering Management Licences and Working Circles.

"For lack of technical assistance in the districts, the burden of implementing the farm wood-lot legislation has been falling on the Victoria staff. We will endeavour to do as much as we can from the Working Plans Division, but as soon as there is sufficient manpower in the Districts, the Victoria staff will act only in an advisory capacity.

"Certification of forest land as Tree Farms under the Taxation Act is a new responsibility for the Forest Service, and in view of the current shortage of technical personnel in the districts, we will endeavour to handle the requests from the Finance Department with Victoria staff. When routines have been worked out and we gain some experience in these matters the field examinations will undoubtedly be referred to the Districts."*

Management Division.—This Division is under the direction of Mr. J. S. Stokes, and its primary function is the disposal of Crown timber and the administration of all contracts related thereto. This extends to all phases, including acceptance of applications, cruising, appraisal of timber values, drawing up of contracts with various clauses designed to assure proper logging practices, periodic inspections of areas to see that contract conditions are fulfilled, scaling of products cut, and the final disposition of any deposits that may be held at expiry date of the contract.

In the harvesting of Crown timber there are other allied administrative functions, such as the issuing of timber marks, logging-road easements, permits to export, and so on, which in themselves are minor functions but in total amount to a considerable volume of administrative detail.

It seems to me that this Division will eventually, if not now, be mainly concerned with areas included in forest management licences and public working circles.

Once the working plan for a forest management licence has been approved by the Working Plans Division, acting in conjunction with the Management Division in order to ensure that existing timber sales are protected, the Management Division is charged with the responsibility of issuing cutting permits, regulating the allowable cut and appraising stumpage values within the terms of the licence, the working plans, and the relevant provisions of the "Forest Act."

In a parallel exercise of jurisdiction in public working circles and in relation to timber sales generally, the Management Division enforces a degree of regulation of the cut and includes in timber-sale contracts in these areas provisions for sustained-yield management, such as logging methods and proper silvicultural treatment of timber stands, which in the Interior includes selected tree-marking in spruce-balsam forests.

* Exhibit 36, pp. 24–25.

This Division, as I said, appraises stumpage, oversees scaling, and determines values—functions which led to considerable controversy and with which I dealt under separate headings of this Report.

It is my impression that this Division is not aptly named. It is not essentially engaged in "management" as such. That, so far as forest management licences is concerned, is the basic function of the Working Plans Division. The degree of management exercised by the Management Division is a collateral function tied in with its main responsibility of appraising and selling Crown timber, whether in forest management licences, in public working circles, or from unorganized Crown forest land.

Head office officials consist of, in addition to the Forester in Charge, two Foresters, five Assistant Foresters, and a Chief Clerk.

Inventory Division.—In an earlier part of this Report I dealt extensively with the importance of an adequate forest inventory and examined in detail the valuable work done by this Division and its accomplishments in this highly important field. There is nothing to add at this juncture except to record that the head office personnel consists of Mr. H. M. Pogue, the Forester in Charge, together with his staff of one Forester, twenty Assistant Foresters, twelve Foresters-in-training, one Chief Draughtsman, a mechanical Superintendent, and other clerical assistants.

Reforestation Division.—The function of this Division is, as its name indicates, to ensure regeneration by planting or seeding of denuded, logged, burned, and N.S.R. areas wherein natural regeneration has failed. I had occasion in another part of this Report to examine the activities of this Division in some detail. The Forester in Charge is Mr. H. G. MacWilliams, and his Victoria staff consists of three Assistant Foresters and one technical assistant.

Nurseries have been established at Cranbrook, Duncan, Quinsam, and Green Timbers. As I said elsewhere, the need is apparent for a more intensive programme of regeneration with the necessary staff increases. It is worthy of note that for the years 1951 to 1955, inclusive, reforestation crews seasonably employed averaged about 460 men. In 1956 the number employed dropped to 161.

Forest Protection Division.—The responsibilities of this Division extend to fire-weather co-ordination and research, protection planning, including approval of forest management licence fire-protection plans, supervision of all protection seasonal staff and records, administration of protection staffs, project funds, equipment supply, and preparation of estimates and requisitions for protection work.

Head office staff consists of Mr. I. T. Cameron, Forester in Charge. Working with him are two Assistant Foresters, one Protection Officer, two Forest Assistants, and two Foresters-in-training. The meteorological staff consists of one man on loan from the Federal Government. His primary duty—and it is an important one—is to correlate weather information from Forest and private weather stations and the Federal Meteorological

Service, as far as it is relevant, in the assessment of a hazard "build-up." His activities are, in general, limited to the Vancouver Forest District. I have dealt with the subject of fire protection elsewhere and stressed the necessity of greatly increased expenditures upon this branch of the Service.

A good start would be the appointment of a meteorologist for each forest district. Head office staff will require an increase in personnel generally if field expenditures are increased.

Engineering Division.—This Division is made up of five sections and is under the direction of Mr. R. D. Greggor, Forester in Charge. These subdivisions are:—

The Mechanical Section, which is responsible for the supervision of the operation and maintenance of Forest Service mechanical equipment, valued at close to $3,000,000. It also advises on the selection and purchase of required equipment.

The Radio Section is in charge of technically trained personnel and is furnished with the necessary equipment to maintain and operate six Forest Service radio networks.

The Structural Section is responsible for the design and construction of suitable accommodation for Forest Rangers and their equipment. Projects have included the construction of buildings costing up to $300,000 to be used as forest district headquarters.

The Engineering Section has, as its primary function, the locating, designing, and constructing, or supervising the construction, of access or forest-development roads. Whether this responsibility should be transferred to the Highways Department is a matter I left to the Government to decide when I dealt with the road question at large.

The Marine Station is a branch of the Engineering Division and has grown from a small unit to one of considerable size and importance. I was surprised to learn of the scope of its activities. Its main function is the operation of a well-equipped repair station designed especially for the maintenance of the fleet of launches used by the Service, chiefly in Coastal waters. It also repairs small mechanized units, such as fire-pumps and outboard motors. As an indication of the versatility of its staff, this Section, in slack periods, undertakes as a side-line boat-building and the construction of other items. For example, 1954 was a light fire year and not as much repair work in fire-fighting equipment was required. In consequence, the men of the Station directed their attention and efforts to other fields of endeavour and turned out a 32-foot twin-engined high-speed supervisor's launch built to a design produced by the Structural Section, one 26-foot launch for use on Quesnel Lake, four 14-foot outboard cruisers, five 30-foot river-boats, and eighteen skiffs and dinghies. A special feature was the construction of a 45-foot equipment barge capable of carrying a load of 60,000 pounds. This craft was designed by the Structural Section to be used for fire-fighting on Quesnel Lake.

A carpenter or prefabricating shop was added to the Station in 1947, originally to prefabricate lookout buildings. The work of this subsection has since expanded to include various types of sectional buildings constructed to meet the special requirements of the Service and also to manufacture various types of furniture. The 1954 production included six 20- by 24-foot sectional buildings, ten 24- by 32-foot residence buildings for Assistant Rangers in isolated parts of the Province, seven lookout buildings, two truck canopies, fourteen pieces of office furniture, twelve map-rollers, and 179 pump-crates.

I have only touched lightly on this Marine Station section, and its record is even more impressive than the items I have selected for illustrative purposes. In its own field it is making a very creditable contribution to the efficient functioning of the Forest Service.

These five subsections of the Engineering Division are staffed at Victoria, with a diversity of technicians specializing in their own fields of endeavour, totalling about 100 in all, of which about ten are top officials, such as the Chief Engineer, Construction Engineer, Survey Engineer, Design Engineer, Mechanical Superintendent, Radio Superintendent, and so on.

Grazing Division.—The Crown range is administered under the provisions of the "Grazing Act" (R.S.B.C. 1948, chapter 138) and amendments and regulations thereunder. Responsibility for grazing administration is placed on the Forest Service by the relevant sections of the "Forest Act." This has been the case since the "Grazing Act" was passed in 1919. Grazing leases, issued under the provisions of section 82 of the "Land Act" (R.S.B.C. 1948, chapter 175) do not, as such, come under the jurisdiction of the Forest Service, although any timber thereon may be disposed of under the provisions of the "Forest Act" by the Forest Service.

As provided for in section 3 of the "Grazing Act," grazing districts have been constituted, the boundaries of which coincide with those of forest districts. Grazing and forest districts are known by the same names.

Practically all of the Crown range currently in use lies within the Kamloops and Nelson Grazing (Forest) Districts, with the bulk being within the Kamloops District. Only a minor amount of Crown range is in use in the Prince George Grazing (Forest) District, and little or none in the Prince Rupert and Vancouver Districts.

The management and allocation of the Crown range is carried out in close co-operation with the range-users and other agencies interested in wild-land management. The objective of the Forest Service is to obtain maximum live-stock production consistent with the conservation of the range resource and the requirements of other forms of land use.

Responsibility for range management, allocation, and improvement is placed on the District Foresters under general direction from the Chief Forester's office. Routine field work required in connection with enforcement of regulations and grazing-permit conditions and range improvement and other miscellaneous inspections are carried out by the Ranger staff

under direction from the District Forester. Technical grazing personnel are employed in the Chief Forester's and District Foresters' offices to advise and assist in the direction of range administration.

The employment of technically trained range-management personnel in the Service has been increased from one at the beginning of 1945 to eight at the present time. These positions are distributed as follows: Chief Forester's office, Victoria, 1; District Forester's office, Kamloops, 5; District Forester's office, Nelson, 2. All of the present incumbents in the above positions are graduates from the School of Agriculture at the University of British Columbia and are registered agrologists.

In addition to the above, from two to four students from the School of Agriculture are employed on a seasonal basis each year to assist on range surveys and other field work.

Grazing maps and sketch plans are prepared by the general draughting staffs in the district offices.

There is no doubt that the technical aspects of range management require closer attention than is possible with the existing technical staff. However, the problem is not solely a shortage of specialized range-management personnel. The benefits accruing from such features, as improved range inventory, range-management plans, and range condition and trend studies, are largely lost unless backed up by adequate inspections to ensure that approved management plans, seasons of use, and rates of stocking are adhered to by grazing permittees. This phase of range administration does not require highly specialized personnel. It is most efficiently performed by the local Forest Ranger in conjunction with his other duties. Therefore, grazing control, in common with other phases of forest administration, suffers from the inadequate number of the present Ranger staff in grazing areas.

The main range areas lie in the Interior, and I propose to examine the grazing question and related problems when dealing with matters more or less peculiar to the Interior.

Research Division.—The function of this Division is to undertake investigations of all kinds that may be required by the Forest Service in its administration and management of the forest resources of the Province.

The type of study for which this Division is staffed and equipped may be defined as applied research; that is, the application of known principles or procedures to local conditions in which the specific reactions can only be determined by direct experimentation and observation. This is the type of research usually conducted by this Division, although fundamental studies are undertaken in rare instances when such are an essential prerequisite to the solution of a specific problem under investigation, and when other sources for this type of information do not exist or are unavailable. Research for the sake of knowledge itself and without a practical objective cannot be undertaken with the limited staff and facilities presently available.

This Division is under the direction of Mr. R. H. Spilsbury, and his staff at Victoria consists of an Assistant Forester, two Agrologists, together with a Forester-in-training.

Research is, beyond question, one of the most important aspects of forest management. Past efforts of the Service on any sustained basis have been in the Douglas fir belt on the Coast. Studies elsewhere have been sporadic. The expansion of industry into the more remote areas of the Province is a foregone conclusion, and many problems incident thereto will arise for solution through research. The next ten years will demonstrate the need of doubling the present staff during this coming decade.

At the moment, increases in the technical staff are an immediate need. Applied research, to a large degree, consists of routine procedures, such as the recording and compilation of material, all of which can be accomplished adequately by assistants under proper supervision. Assistants, when trained to carry out such routine duties, would relieve the present staff of such work and enable foresters both at head office and regionally to carry out more important duties and research programmes. In order to attract younger men and women, the most persuasive enticement would be permanent positions with reasonable salaries and chances of promotion.

I intend to treat with the subject of research under a separate heading in more detail. At the moment I am merely looking at one segment of a larger picture.

From this short summary of the Forest Service administration and its various head office divisions it is apparent that its organization can be visualized in diagrammatic shape as something akin to the shape of a wheel with the hub at Victoria and with spokes radiating out to the various districts while at the periphery the field staffs function. It is, as I said at the outset, based upon the concept of centralized authority. I do not mean to imply that the Forest Service staff is located in a general sense at Victoria. While control is centralized at that point, the staff is widely spread throughout the Province. A glance at the table of personnel distribution amply demonstrates that fact. Neither am I unmindful, when recommending further staff increases, of the growth in permanent personnel during recent years. The total permanent strength has increased from 1,021 in 1951 to 1,620 in 1956, although temporary or seasonal employment dropped from 1,644 in 1951 to 1,517 in 1956.

Particulars of these staff changes appear in the following table for the years 1951 to 1956, inclusive:—

TABLE 144

DISTRIBUTION OF TOTAL PERSONNEL

	1951	1952	1953	1954	1955	1956
Permanent Staff						
Chief Forester, Assistant Chief Foresters, and Divisional Foresters	11	13	14	14	14	14
Forest Counsel and Personnel Officer	2	2	2	2	2	2
District Foresters and Assistant District Foresters	10	10	10	10	10	10
Foresters and Assistant Foresters	96	112	118	125	115	125
Agrologists and Assistants	9	9	9	8	9	10
Engineers and Assistants	.....	.....	.....	20	21	23
Forest Protection Officers	.....	5	8	9	10	10
Supervisor of Rangers	14	14	17	14	14	14
Rangers	101	93	97	103	107	110
Supervisor of Scalers and Assistants	11	13	12	12	14	21
Scalers, Official	72	48	44	54	55	75
Scalers, Official, temporary	1	27	42	41	69	51
Comptroller and Audit Assistants	5	5	7	7	7	7
Engineering, Mechanical and Radio	31	30	44	29	31	82
Technical Forest and Public Relations Assistants	25	44	40	60	30	95
Reforestation, Parks, Research, and Survey Assistants	29	38	73	74	115	89
Nursery Superintendents	4	4	4	4	4	4
Draughtsmen	35	39	51	50	55	52
Clerks, Stenographers, and Messengers	250	274	290	309	317	350
Superintendent and Foremen, Forest Service Marine Station	4	5	5	5	5	5
Mechanics, Carpenters, and Technicians	25	18	37	38	58	41
Launch Crewmen	12	18	21	21	23	22
Assistant and Acting Rangers	126	130	140	156	169	178
Dispatchers	45	37	46	40	38	52
Cruisers, Compassmen, and Marking Crewmen	19	62	33	40	104	80
Truck and Tractor Operators	22	23	29	31	49	36
Foremen	18	5	17	17	18	14
Miscellaneous	44	65	55	89	72	48
Totals, permanent personnel	1,021	1,133	1,265	1,382	1,535	1,620
Seasonally Employed						
Assistant and Acting Rangers	43	63	59	46	36	41
Patrolmen	53	42	43	35	37	39
Lookoutmen	124	127	127	132	135	140
Dispatchers and Radio Operators	33	53	49	41	41	35
Fire-suppression Crewmen	135	126	123	151	151	130
Reforestation	450	500	500	442	402	161
Cruisers and Compassmen	136	10	18	54	13	8
Truck and Tractor Operators	43	48	61	50	44	55
Student and Survey Assistants	38	274	276	191	161	312
Silvicultural Crewmen	93	52	67	59	20	5
Foremen	32	45	41	18	35	25
Youth Training Crews	.....	.....	235	257	256	263
Miscellaneous	464	434	154	95	185	303
Totals, seasonal personnel	1,644	1,774	1,753	1,571	1,516	1,517
Totals, all personnel	2,665	2,907	3,018	2,953	3,051	3,137

RANGER SCHOOL

In the 1945 Report I recommended the establishment of a Ranger School.*

Between the professional forester, university trained, and the man doing the actual field work there exists the need of trained personnel of the supervisory type. This is particularly applicable where Government forestry is concerned.

The key fieldman is the Forest Ranger, who, under the direction of his District Forester, is the responsible forest officer within his ranger district.

It is essential that this official should have some knowledge of the fundamental principles of forestry in order to carry out, intelligently, policy instructions and technical procedures as directed by the professional forester staff. The Ranger must be well versed in his administrative duties and the various problems involved. The purpose of a Forest Ranger School is to provide appropriate training which is not available at any other school.

The Ranger School opened in January of 1946, and twenty students were selected from the Ranger and Assistant Ranger staff as the first pupils. The teaching staff consisted of the Forester in Charge and an Assistant Forester, both of many years' experience. In 1947 grazing administration was added to the curriculum, and in 1948 a well-attended course for lookoutmen was established.

In 1949 a new building was constructed at the Green Timber Forestry Station to house the school, together with appropriate living-quarters for teachers and pupils.

The main building contains a general office and two staff offices, two classrooms, each capable of seating thirty men, and a workshop classroom suitable for instruction concerning mechanical equipment. A library-room completes this unit.

The living-quarters consist of twenty-seven bedrooms, with full conveniences on each floor. A modern kitchen, dining-room, lounge, and recreation-room completes this unit.

Dr. Orchard, in his evidence, summarizes the manner in which Rangers are selected for tutelage in the Ranger School. I quote:—

> " Q.—How does a man get to be a Ranger, or an Assistant Ranger, in the first place? A.—Anybody with the qualifications of age and education can come in and write the Assistant Ranger examination. Then he is qualified, and when there is a vacancy he gets an appointment as an Assistant Ranger. Every Assistant Ranger who has two years' experience in the Service, and some other classifications of a similar level, are entitled to write an entrance examination to the school. Of those people who pass the examination, the principal of the school, Mr. Pedley at the present time, goes out and interviews very carefully the men in

* 1945 Report, p. 124.

the field, and after he has looked into and got as much information as possible about their physical ability, health, character, integrity, and any other features that have a bearing, including his future intentions as far as employment are concerned, he goes over all those factors very carefully with the District Forester. Then we have a fairly well selected eligible list. But that list is gone over again in a round-table discussion with the Chief Forester and senior officers, and finally out of the Assistant Rangers and comparable staff we have an eligible list of from twenty to thirty men. From that list, district by district, the District Foresters recommend the people they would like to have attend the school.

" Q.—The candidature, then, is a Service candidature? It comes from within the Service? A.—Yes, we don't accept applications from outside the Service at all. The Ranger position is viewed in the Service as promotional. The good Forest Ranger is a special type of man. Not only must he perform a wide variety of duties calling for intelligence and physical ability, but he must perform these in close contact with the public. He must, therefore, have the characteristics that bring the respect of the community in which he lives, tact being by no means the least of these requirements. The function of the Ranger school is to find these men and train them accordingly. From the Ranger School, depending on how good he is, and the opportunities that turn up, and luck and various other things, he can go up in the Service to a position equivalent to these very top officers, Foresters in Charge of a Division. We wouldn't call him a Forester because of technicalities, but he would be a Forest Protection Officer. But he can get as high in rank, and draw as much money, as a graduate forester in charge of one of our divisions or District Forester. There is keen competition in the Assistant Ranger staff for the opportunity to go to the Ranger School.

" Q.—Is it possible for an Assistant Ranger to be promoted to a Ranger unless he holds a certificate from the Ranger School? A.—No, we won't appoint him otherwise, not as a full-fledged Ranger. We will appoint him as an Acting-Ranger under necessity."*

Commencing late in 1949 the course at the school was extended to three terms of three months each. In other words, the course covers a period of nine months, during which time the pupil in training is paid his full wages and other necessary items of expense. The course is not continuous. Ranger pupils resume their duties in the woods from about the middle of April to mid-September. In consequence, eighteen months elapse between each graduation. Thus with a class of twenty, providing all pass, twenty will graduate in eighteen months and forty every three years.

The training is extensive and covers a wide variety of subjects. In order that members of the public who come in contact with the Rangers be made aware of the training these men receive, I think it appropriate to outline the Ranger School curriculum for 1955–56. It is as follows:—

* Transcript, p. 572 *et seq.*

RANGER SCHOOL CURRICULUM, 1955–56

Fire Law and Operation Procedure

(*a*) Part XI, "Forest Act." Operation Manual.
(*b*) O.L.O. regulations and procedure.
(*c*) Permit burning.
(*d*) Slash-disposal requirements.
(*e*) Railway fires. General Order No. 548, Board of Railway Commissioners.
(*f*) Fire-law enforcement.

Preliminary Fire Organization

(*a*) Fire occurrences and risks.
(*b*) Hazard indices. Rating systems.
(*c*) Detection systems. Transportation systems.
(*d*) Distribution: Personnel and equipment.
(*e*) Organization of voluntary personnel.
(*f*) Aerial delivery of supplies and personnel.
(*g*) Radio communication.
(*h*) Fire-prevention programmes.

Fire Suppression

(*a*) Elementary forest pyrology and meteorology.
(*b*) Factors governing fire behaviour.
(*c*) Fire camp and line organization.
(*d*) Fire-fighting tools and equipment.
(*e*) Fire-fighting methods.
(*f*) Uses of water on fires.
(*g*) Problems and examples.
(*h*) Organization and handling of slash burns.

Mechanical Equipment—Operation and Care Of

(*a*) Cars and trucks.
(*b*) Fire-pumps. Outboard engines.
(*c*) Power-saws.

Construction Techniques

(*a*) Trails and forest roads.
(*b*) Telephone line and equipment maintenance.
(*c*) Building maintenance and contracts.

Log-scaling

(*a*) Theory.
(*b*) Practice.

Ranger District Organization

(*a*) Office routine and filing system.
(*b*) Property accounting and records.
(*c*) Business English.
(*d*) Reports and standard forms.
(*e*) Field-work organization.

Public Relations

(*a*) Public relations.
(*b*) Personnel management.
(*c*) Public speaking.
(*d*) Correspondence. Expression of ideas.

Mathematics Review

(*a*) Review—mensuration and geometry.
(*b*) Review—simple trigonometry.
(*c*) Review—use of slide rule.

Surveying and Mapping

(*a*) Use of staff compass, abney level and topography chain.
(*b*) Methods of offsetting and triangulation.
(*c*) Compilation of traverses.

(*d*) Field-notes and mapping.
(*e*) Field traverses.
(*f*) Interpretation of aerial photos (field work at U.B.C. Forest).

FOREST MENSURATION

(*a*) Tree measurements. D.b.h.
(*b*) Volume tables—the use of.
(*c*) Measuring stands of timber.
(*d*) Compilation of cruises and map-making (field work at U.B.C. Forest).

FOREST MANAGEMENT—POLICY AND PROCEDURE

(*a*) Review of the "Forest Act."
(*b*) Timber-sale contracts—policy and procedure.
(*c*) Logging inspections.
(*d*) Management licences—ranger district procedure.
(*e*) Farm wood-lots—ranger district procedure.
(*f*) Review—management manual and circulars.

FOREST INVENTORY AND MAPPING

(*a*) Cover-mapping.
(*b*) Map indexing and filing.

FOREST ENTOMOLOGY

Dangerous insects of British Columbia.

FOREST PATHOLOGY

Tree diseases of British Columbia.

STUMPAGE APPRAISALS

(*a*) Appraisal methods.
(*b*) Working out examples.

BOTANY—DENDROLOGY

(*a*) Life and growth of forest trees, leading to understanding of silvicultural principles.
(*b*) Characteristics of native species.

SILVICULTURE

(*a*) Elementary silvics.
(*b*) Application in British Columbia.

The following table indicates the summary of enrolment and distribution of candidates:—

TABLE 145

Class Year	Enrolled			Distribution and Disposition							
	Enrolment	Completed Course	Failed to Complete Course	Dismissals and Resignations	Employed in Miscellaneous Field Positions	Employed in Miscellaneous Office Positions	Deceased	Appointed Forest Rangers	Promoted to Ranger Supervisors	Promoted to Forest Protection Officers	Totals
1946	20	19	1	4	2	2	1	5	3	3	20
1947	20	20	—	4	2	—	—	9	3	2	20
1948	19	18	1	2	—	—	1	11	4	1	19
1949–50	21	21	—	5	—	1	—	11	4	—	21
1950–51	21	21	—	—	—	—	—	19	2	—	21
1952–53	21	20	1	1	1	—	—	19	—	—	21
1953–54	21	20	1	—	1	—	—	20	—	—	21
1955–56	21	21	—	—	2	—	—	19	—	—	21
Totals	164	160	4	16	8	3	2	113	16	6	164

The wastage occurring in graduates up to and including the 1949–50 class was noted and countered by more stringent screening, commencing during 1949. This has been possible due to a continually increasing eligible list.

To avoid wastage, a medical certificate is required showing their physical fitness for the job, and each selected candidate is required to sign a statement promising to stay with the Service, if offered appointment, for at least two years following graduation.

The training is expensive and would not be justified if the trained men only remained with the Service for the two-year minimum period. The above table indicates that the Service expectation that the majority of these men will continue in Service employment for much longer seems justified.

If my recommendation is accepted that the ranger districts be reduced in area, more Rangers will undoubtedly be required. The present graduation of twenty men every eighteen months just about balances the present wastage due to promotions, retirements, resignations, and other causes and is not sufficient to provide for the projected increases in the Ranger staff.

The enrolment should be increased to thirty pupils or more as soon as possible. Teaching personnel is now adequate, and the only other facilities required would be more bedrooms to provide for the ten or other additional enrolments. In view of the necessity for more Rangers and the important functions they fulfil, the extra cost occasioned would be relatively minor.

This Ranger School is presently exercising an extremely valuable function and, I believe, it will in time extend and expand its activities into other fields of training, for example, in providing refresher courses by experts in specialized subjects to ranking officers of the Service and other staff officials.

FOREST COMMISSION

This subject is correlative to administration. In the 1944–45 Inquiry the evidence indicated that Industry at that time was strongly in favour of having a Forest Commission vested and charged with the responsibility of organizing, planning, and carrying into execution the concept of sustained-yield management. In consequence I recommended the creation of this proposed Commission in my Report. In this connection I said in part:—

> "It is my opinion that a Forest Commission should be created.
>
> "The chief reason compelling me to this conclusion is the long-range planning required, without which it will be impossible to change over from our present system of forest liquidation and depletion to one of sustained-yield management.
>
> "This kind of planning has as its concomitant, long-range financing. The present system of annual appropriations from the general revenue, for which the Forest Service must compete with other spending departments of Government, is subject to vagaries in general business activity, the exigencies of short-term financing, and the uncertainty of money

supply due to temporal variations in governmental receipts available for departmental allocation. These factors, coupled with recurrent periods of transitory demands for increased expenditures in social and economic fields, unrelated to forestry, have in the past and will in the future, under the present system, retard if not frustrate any long-term policy of forest management.

"In the language of one witness, 'Forest policy is put in bondage to the system of Treasury control.'

"By reason of the constitutional limitations imposed upon this Province all public moneys from whatever source of revenue derived must be paid into the Consolidated Revenue Fund to be appropriated for the public service of the Province as the Legislature may direct.

"The only way in which direct Treasury control over departmental appropriations may be avoided is to place the Forest Service under a Commission empowered to collect all direct forest revenue and to expend all or that part thereof as may be necessary to finance adequately its operation.

"Then, too, administrative Commissions have been created not only to ensure a more convenient method of handling public finance, which in many instances is a mere incident in the exercise of their powers, but also as a device designed to carry out administrative functions of Government in highly specialized and technical fields of endeavour.

"A Forest Commission would thus have two main purposes: First, to formulate and administer a long-term system of planned forest management and forest industry regulation where essential thereto. Second, to supply the machinery for long-range financing divorced from the system of annual departmental appropriation from general revenue.

"The Commission would be charged, therefore, with a very heavy responsibility. It should, in consequence, be vested with jurisdiction wide enough to permit the proper discharge of that responsibility.

"Statutes creating Commissions usually fall within one of two classifications: Those in which the powers conferred upon Commissions are defined in minute detail and hedged about with confining restrictions, and those in which a broad governmental policy is delineated and the Commission given wide and exclusive powers to effectuate that policy.

"Future forest planning and management, with its concomitant forest industry regulation, will be a complex business calling for the solution of a multiplicity of problems arising from an infinite variety of circumstance.

"I therefore recommend that the Commission be not imprisoned within the iron framework of prescribed rules and regulations, but that within its own sphere of activity it be given a free and powerful hand.

"Objections have been voiced from time to time to what has been described as 'an ever-increasing bureaucracy,' but it must be recognized

that modern developments in the fields of economics and sociology have thrust upon Governments duties and obligations that are difficult if not impossible of fulfilment by the same departmental processes that were designed to function in the horse and buggy era. Delegation of authority to Commissions in technological fields has been found an effective way of adapting existing processes of government to the requirements of a modern civilization. Our forest problem, it seems to me, can not be met and solved effectively except by this form of administration.

"The Commission should, in my opinion, consist of not more than five and not less than three members, one of whom shall be Chairman or Chief Commissioner. The Deputy Minister of Forests should be a member, but not the Chairman of the Commission. He would be the liaison officer between the Commission and the Minister of Forests. I am of the firm view that members of the Commission should not be appointed thereto as representatives of any branch of the forest industries. Their duties are bound to compel them from time to time to make far-reaching decisions concerning matters in which private and public interests will be in conflict. They must therefore be in a position to reach their conclusions free from any self-interest and solely on the basis of merit.

"It follows in consequence that in selecting the members of the Commission the Government should seek to appoint those of proven ability, of personal integrity, sound judgment, and with general business experience.

"In the final analysis the Commission should be composed of reliable men of sound common sense who can accept responsibility and make proper decisions free from any trammelling influences—political or otherwise."

This recommendation was not implemented by the Government of 1945 nor since.

During this Inquiry a considerable number of informed witnesses and organizations still supported the Commission plan. For instance, the Canadian Institute of Forestry submitted that "the long range planning required for sustained yield management can be accomplished best under a Forest Commission. Such a Commission should have full control, under the Legislature, of forest policy administration and finance in order to secure the full long-term benefits of the forest resource."*

The view-point of industrial witnesses in favour of a Forest Commission is fairly epitomized in the brief of the Powell River Company. After reciting my comments concerning the necessity for long-range financing as a concomitant of long-range planning and the interdepartmental competition for available funds (quoted above), the brief continues:—†

* Transcript, p. 11362.
† Exhibit 232, pp. 44–45.

"Time has served only to emphasize the validity of the Commissioner's prediction.

"In view of ever larger public demands on government for social services, highways, hospitals, and education, it would be unrealistic and unwise to expect any marked improvement in this situation from the Governments of the future.

"In spite of the facts of the situation which have been apparent over the years, some people advocate not only keeping present Crown forests under direct management of the Forest Service, but in addition advocate that all present temporary tenures be turned over to the Forest Service for management as soon as possible, thus increasing materially the present impossible load they are attempting to carry.

"The Forestry Commission recommended by Chief Justice Sloan in the 1945 report, we believe, could have solved many problems provided:—

"(1) Personnel of sufficient stature had been appointed.

"(2) The Commission had been 'empowered to collect all direct forest revenue and to expend all or that part thereof as may be necessary to finance adequately its operation.'

"(3) The Commission had been given authority to develop forest policies, including other forms of tenure, which might prove desirable.

"In fact, if the above conditions were met, we would be in favour of the appointment of such a Commission.

"There is no reason to assume that the administrative powers of the Forest Service would be curtailed in any way. On the contrary, the Service would be strengthened.

"Presumably the Forest Service, on transfer to the Forestry Commission, could be removed from civil service categories, as in the case of the B.C. Power Commission, the Workmen's Compensation Board and the Public Utilities Commission. This would permit foresters and engineers to be paid at the prevailing rate for experienced professional men, reducing the present steady drain through resignations."

The logging branch of the industry, as represented by the Truck Loggers' Association, had these comments to make:—*

"It is our belief that a Forest Commission, with funds on which they could rely for years in advance, is the only way by which a long-range business such as forest administration can possibly be given good management.

"Under the present administration the Forest Service has to participate in the annual 'scramble' to get the funds it requires, against the competition of all other Governmental Departments. Some of these other Departments no doubt offer more immediately interesting pro-

* Exhibit 76, p. 20 *et seq.*

grammes to the Department of Finance, such as roads, schools, and various social benefits. These items, no doubt, bear a lot of weight with the Legislature because of their popular appeal to the electors. It is of small wonder that the Chief Forester in his evidence before the present Commission constantly referred to insufficient staff and lack of funds. A professional forester, trained to think in long periods of years, and unflagging attention during that time, must wonder whether the present system of management can lead to anything but complete disaster. The results in the past 30 years point definitely in that direction. As the Chief Forester stated in his evidence before the present Commission, ' Neither staff nor appropriations were ever adequate to handle the job assigned.' This is a long period, under several Governments—quite long enough to show that the Departmental system cannot work effectively in this business.

" We strongly support the appointment of a Forest Commission as recommended by the Commissioner in his 1945 Report, preferably to consist of five members."

The Interior Lumber Manufacturers' Association said:—*

" In your 1945 report on The Forest Resources of British Columbia, in that portion dealing with Future Forest Administration you state, ' It is my opinion that a Forest Commission should be created.' We are fully in accord with this opinion and regret that it has not been implemented.

" The reasons which you gave as necessitating the formation of a Forest Commission hold as good today as they did when stated in 1945 but, if anything, to a more intensive degree.

" We are in full accord with your proposals, contained in the 1945 report on the Forest Resources of British Columbia, as to the financing of the Forest Commission. It is our opinion that far too much emphasis is being placed on obtaining maximum government revenues from the forests, with a minimum of revenue being returned to the forests."

Other witnesses took a more qualified view. An example of this is found in the brief presented by MacMillan & Bloedel Limited. It reads in part as follows:—†

" The value of the asset which the Forest Service administers will increase vastly in future years if these devoted and qualified men succeed, as it appears they can, in their plans to maintain a permanent Forest crop.

"All they need is support from Public.

" There has been no volume of complaint against the professional competence or integrity of the Forest Service. We British Columbians before changing its status or the form of administration should be sure of three things:—

* Exhibit 72, pp. 6, 10.

† Exhibit 206, p. 68 *et seq.*

"(*a*) Why are we proposing a change?

"(*b*) How can inexperienced men improve the professional administration of specialized assets of immense value?

"(*c*) Are we running any risk that our vast and phenomenally rich heritage of Crown timber will be dissipated under the possible combinations and permutations of the proposed new form of practically autonomous administration?

" If the Forest Service cannot succeed in two necessary objectives—

"(*a*) get a large-enough appropriation yearly to protect, manage, and provide business administration for the Forests;

"(*b*) build and retain a large-enough professional and other staff for its duties;

the Commission idea may then be worth examining. This would be on the assumption that the supporters of the Commission were justified in believing that the Commission would succeed where the Legislature had failed to support the Forest Service with sufficient appropriations and freedom to employ a large-enough staff and set high-enough standards of pay.

"A Commission might be justifiable:

"(i) if the Commission did not depend upon the Legislature for appropriation but could retain by statutory power a large-enough fixed share of the annual Forest Service revenue—large enough to do the work recommended by the Forest Service. Probably a minimum of 65 per cent of Forest revenues should be retained for several decades to maintain the long-term productivity of the Forest; this is about 120 per cent more than the legislature now allows to Forest Service from boom-time Government revenues;

"(ii) if the Commission could decide the size of professional staff needed, and the rates of pay required to retain enough good, trained men, in competition with other employment opportunities for the same men in the private business world of British Columbia. This the Legislature up to date has refused to do.

" If the Legislature would not yield these powers to the Commission, we cannot see that the Commission would be even as useful as a ' fifth wheel.' "

On the other hand, a number of witnesses opposed the idea. An instance of this point of view is found in the evidence of Mr. Walter Koerner, of the Alaska Pine and Cellulose Company. He said:—*

" One of the important questions is whether our forest laws and policies should be administered by the Government and Civil Service

* Transcript, p. 12267.

as at present, or by a commission such as you recommended, Mr. Commissioner, in 1945.

"I believe such a commission would have been beneficial at that time. However, under present circumstances, I believe the wise choice is a well-manned, professional Forest Service guided by an experienced Deputy Minister and Chief Forester and a Minister responsible to the electorate."

During a discussion of this subject with Mr. W. F. Veitch, of the Taxation Branch of the Department of Finance, when he was being examined as a witness, I asked him for his views on the matter of financing Forest Service administration through a form of Commission control. I may say at this point that I was much impressed and assisted by the competent manner in which he gave his evidence and the grasp he displayed of the whole field of taxation.

At a later stage of the Inquiry he answered my query and said in part:—*

"At the heart of this matter is the question whether the administrative agency responsible to the Legislature should be a separate Commission, such as the B.C. Power Commission, or should remain a Government department, subject to direction of a Minister. What form of administrative agency with what kind of revenue and expenditure powers should handle the day-to-day administration of forest resources, that produce directly and indirectly possibly 40 per cent of Provincial income?

"If asked to advise on this matter, I would say that democratic political considerations would receive more weight than economic and financial ones. Major business depressions of the 1932 to 1935 variety, which led to large-scale cuts in Forest Branch expenditures—and which, to some degree, no doubt influenced the evidence to and recommendations by your earlier Commission—are less likely to be as severe in the future.

"It should also be noted that drastic cuts in Provincial expenditures in 1932 to 1935 were not limited to the Forest Service, but included those on education, highways, and other natural resources. It appears axiomatic that in a period of severe economic depression that desirable expenditures on natural resources must give way to essential expenditures on social assistance to ensure the maintenance of human resources.

"Legislative expenditure authorizations, in the long run, are based on the assumption that severe economic depressions, such as in the 1930's, are short-run dips that are replaced by long periods of an expanding economy. They are temporary aberrations which we hope that economic planning will largely mitigate; when and if they reoccur the Legislature will have to improvise for their duration.

"Evidence given before this Commission has been controversial, and not one session of the Legislature passes, or is likely to pass, without

* Exhibit 143D.

heated and reasoned discussion of our major natural resource. The forests are of such consequence to a high employment and income that they should be under the constant surveillance of the Legislature. It is noted that other natural resources (i.e., water, mineral, natural-gas, and petroleum resources) are, at present, under similar Ministerial direction. Would a recommendation for a Forestry Commission logically suggest a similar agency for other natural resources?

" If separate Commissions are to be established for each natural resource, with revenues specifically earmarked for that purpose and with the residual to be paid into Consolidated Revenue, logic might also suggest similar Commissions to cover education, administration of justice, essential highways and social welfare services. Consolidated Revenue would then be reduced to a 'pothole' in place of a 'reservoir' of Provincial funds. One of the most important functions of our Legislature—that of exercising judgment from year to year as to appropriate amounts of public moneys to various services—would be substantially crippled. The Legislature would be prone—over a short period of time—to abolish all Commissions and return to annual appropriations from Consolidated Revenue.

" In theory, a Commission form of administration is directly responsible to the Legislature in the same manner that a Minister of the Crown in charge of a department is responsible to the Legislature. Nevertheless, there is a tendency, with a Commission form of administration, whether intentional or not, to transfer part of policy responsibilities to the semi-autonomous agency. We live in an age of specialists. Ministers or Commissioners are dependent, in large part, upon advice of technical officials. It seems essential that a Minister, who is a member of the Legislature, should exercise a non-technical judgment in selecting the best policy for the forests and people of the Province.

" On page 149 of your 1945 Report, one witness is quoted as stating 'forest policy is put in bondage to the system of Treasury control.' With deference, this statement appears to indicate that the witness is not conversant with the facts. Treasury Board comprises four Ministers of the Crown, with the Minister of Finance as Chairman. Treasury Board is a committee of the Executive Council ' in all matters relating to finance, revenue, expenditures, or public accounts, which are referred to it by the Executive Council, or to which the Board thinks it necessary to call to the attention of the Executive Council.' Treasury Board comprises elected members of the Legislature. All members are from the Executive Council; Executive Council, in turn, is responsible to the Legislature. Treasury Board has no authority to change departmental estimates of a Minister. Such decisions are the sole discretion of Executive Council.

" One of the important functions of the Legislature is to exercise final judgment from year to year as to the best manner in which public moneys should be expended.

" No Legislature can anticipate what will be the essential requirements in future years for the competing Provincial services. This legislative discretion remains one of the more essential responsibilities of our elected representatives.

" The administration of forest resources is of such consequence in the economic and political life of the Province that it should remain in a department under a responsible Minister.

"A system of annual appropriations, with statutory minima forestry expenditure estimates, together with percentages of growing annual forest revenues, and a blank cheque for catastrophic expenditures, should provide appropriate long-term forest financing.

" Sustained forestry costs on management licences and tree-farms are allowed in most cases as an expense before computation of Crown stumpage and property taxes. Such private expenses are adjuncts to government expenditure on forest management that are likely to increase and may reduce the need for similar government appropriations.

" Earmarking of all forest revenues to a Forest Commission would not be consistent with our Provincial democratic institutions and would negate the essential annual financial discretion of the Legislature."

In view of the comment by Mr. Veitch that the statement I quoted in 1945 from an identified witness, " ' forest policy is put in bondage to the system of Treasury control ' . . . appears to indicate that the witness is not conversant with facts," I feel I should now disclose that the witness was the late Dr. George F. Drummond, at that time Professor of Economics at the University of British Columbia. That quotation was excerpted from the following passage in his testimony, to be found at pages 7511 and 7512 of the 1944–45 transcript:—

" Treasury control has been salutary and necessary but it has disadvantages of its own. It is best suited to the short view, to the balancing of the annual budget, to the apportionment of financial resources on the basis of commitments and short-term priorities and to a scrutiny of items of expenditure. When the functions of government were simple and the services which the departments rendered of a routine character this year-to-year concept of financial responsibility was adequate. This simplicity has passed away. It is not solely due to the extension of government responsibility for regulation in fields hitherto unimportant, but chiefly to the increasing complexity of our economic and social system. Some economists frankly suggest that the annual budget should be scrapped and that in its place a budget based on, say, five-year estimates of income and expenditure should be adopted. These estimates on an annual basis have no reliability since fluctuations in business activity

cause wide temporal variations in receipts and expenditures. If government disbursements are accordingly based on the variations in receipts, the effect is for the government spending to intensify the fluctuations of business rather than to modify them. Good years should be set against lean years and, in fact, government expenditures should increase during the lean years rather than otherwise. Hence annual budgets are a hindrance to good financing and an intensification of the business cycle. Be that as it may, the technique of the annual budget when applied to the maintenance of our forest resources has certainly many disadvantages. Above all, forest policy must be a long-range policy with planning for generations ahead, whatever may be the vagaries of business activity or the exigencies of short-term financing. Annual budgeting for forestry is a financial anachronism.

"All is grist to the Treasury mill. Receipts from forest taxation are treated as regular income. The relation of forest income to the depletion or replenishment of forest resources is not the Treasury's concern as such. The only concern of the Treasury is the annual appropriation that may be voted or allotted to the Forestry Branch; it becomes just another departmental commitment. *Forest policy is put in bondage to the system of Treasury control.* This is not to say that appropriations for the needs of the Forestry Branch may not have been adequate; that is not the point. The point is that this is the wrong way to handle the finances of a long-range forest policy.

"The inference from the recognition of our forest industry as a public utility is that it should have a budget of its own, a budget that is independent of the Treasury's departmental appropriations. This can only be done by setting up a specialized administrative unit, such as a Commission of Forest Industries."

Notwithstanding the impressive number of important witnesses in favour of setting up a Forest Commission, the general opinion of Industry at large would not sustain a recommendation of that kind to-day. In view, then, of this lack of unanimity and my own feeling that developments in the intervening years have passed the point where the efficient functioning of such a Commission could have had the most beneficial results, I do not think there is much to be gained by suggesting that my 1945 recommendation be now implemented. Then, too, it has been made abundantly clear over the years since then that succeeding Governments are reluctant to liquidate their own prerogatives by delegating to an independent Commission the controls I thought in 1945 such a Commission should exercise over our forest resource.

ADVISORY BOARDS

There was almost a unanimity of opinion expressed by witnesses who, although not prepared to accept the controlling direction of a Forest Commission, considered there was a real need for some form or organization

outside the Service that would act in an advisory capacity, not only in relation to subjects referred to it by the Government, but extending to matters originating with the board itself. An endeavour to discuss these proposals with the individual witnesses had much the same effect as shining a light through a prism; it resulted in opinions as varied as the spectra.

Those witnesses who favoured decentralization of Forest Service authority did not seem to appreciate the inconsistency of their submissions that there should be one central Advisory Board. Nor did it appear illogical, to them, for witnesses to condemn the concept of a Forest Commission because it deprived the Government of final decision and in the next breath to submit there should be a Board of Appeal with binding authority to review decisions of the Minister relating to such matters as the issuance of forest management licences.

After doing my best to thread a way through these labyrinthine convolutions of testimony, during which about twenty-five different kinds of boards were suggested as essential to forest management, I agree with the basic contention that there is need for some channel of official communication from persons qualified to advise the Government on matters of forest policy in all its correlative aspects.

Dr. Orchard had this to say on this question:—

> "Advisory Committees can be most valuable and helpful and the Forest Service has both sought such aid and participated in the deliberations of extraneous boards and committees throughout its history. . . ."*

The problems on the Coast are dissimilar in many ways than those confronting the Interior operators. The problems peculiar to the Northern Interior bear little resemblance to those in the Southern Interior. The methods of appraising stumpage and my previous recommendations relating thereto may be considered as illustrative.

Because of this diversity of forestry problems and the distribution of activities wherein conflict is possible resulting from the multiple use of these forested areas, such as grazing, mining, watershed control in irrigation districts, and such like, it is my opinion that the creation of three Regional Advisory Boards would serve a very useful purpose, not only in the assistance the Service could derive therefrom, but also as media through which persons whose interests conflict would, by discussion, gain a mutual understanding of, and respect for, the difficulties of their neighbours. These three Regional Boards would represent the Coast, the Northern Interior, and the Southern Interior respectively. They should be sanctioned by the "Forest Act" and the members appointed by the Minister, either by virtue of their office, on the recommendation of responsible organizations, or because they can be regarded as the representative of some facet of multiple-use forestry.

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* Transcript, p. 15403.

The main objective would be to make these Regional Boards as widely representative of local conflicting interests as may be possible.

In order to have some correlation of their activities and to prevent sectionalism from developing to an undesirable degree, I recommend the creation of a Provincial Advisory Council. I may add in passing that my apprehension that Regional Boards might possibly become too parochial in outlook finds support in the submissions made to me in 1945. I said then in part:—*

> "The Interior lumbermen consider that as their problems are so dissimilar to those of their Coast brethren there ought to be a separate Forest Act for the Interior, or, failing that, a form of Commission be established to administer the Interior forest resource as a separate unit."

The Provincial Advisory Council, also to be a creature of the Act, should be a more compact organization than the Regional Boards. I would limit its size to not more than about fifteen members. These, too, would be appointed by the Minister—two from each Regional Advisory Board, to be nominated by such Boards, and the remaining members to be selected by him on the basis of experience and ability in forestry and related fields. The appointments at large should include such men as the Dean of the Faculty of Forestry, a representative of the Association of British Columbia Foresters, the Canadian Institute of Forestry, the Canadian Forestry Association, the Department of Recreation and Conservation respectively, a high-ranking official of the district office of International Woodworkers of America, the Chairman of the Game Commission, and outstanding men representing the Coast logging, sawmilling, and pulp and paper industries.

The Regional Boards would forward their recommendations to the Provincial Advisory Council, and this Council would in turn, if it approved of such recommendations, submit them to the Minister for his consideration in original or amended form.

It is my opinion that in order to render the work of the Regional Boards and the Council more efficient, the Council should have, at its head, a permanent salaried Chairman, an office headquarters at Vancouver or Victoria, and an appropriate clerical staff. He should also be *ex officio* a member of each Regional Board.

The Chairman should be appointed by the Minister, upon the recommendation of the Council, for a period of not less than five years and be removable only for cause.

Qualifications for his office should be that he is a man of sound judgment and integrity with an impartial and objective personality, the ability to translate individuals into a homogeneous group, and the initiative and "drive" to see that the Regional Boards and the Council do not exist merely on paper. His duties should be primarily executive.

* 1945 Report, p. 168.

The duties of the Regional Boards would be limited to the consideration of problems of a local nature with consequential recommendations relating thereto.

The duties of the Council should be all embracing. What I have in mind could be explained by envisaging an instance when the Minister sought the advice of the Council. If this involved a matter of local significance peculiar, let us say, to the Northern Interior, the Council would, as a preliminary step, transmit the query to the Northern Interior Regional Board for processing at that level. The recommendation of the Board would then be sent up to the Council for its review and thence to the Minister.

If, on the other hand, the matter originated with a Regional Board, it would go through much the same process of reference.

Assuming the matter involves a Province-wide problem concerning which the Minister seeks assistance, both the Regional Boards would be so advised by the Council and both would submit the views of its members to the Council for its guidance and assistance.

I do not mean to imply that the Council could not *ex mero* institute studies of its own. Indeed, that would be a most beneficial exercise of its advisory function. When the organization of the Council is well established, it could call in experts for advice on any relevant aspects of its duties, whether the studies it undertakes are original in origin or referred by the Minister or the Regional Boards.

For this sort of research and report, a budget of some substantial size would be required. I suggest a revolving fund of $100,000 be established for the payment of the salary of the permanent Chairman, the cost of expert assistance, clerical help, and expenses of the members of the Council and Regional Boards. This fund could be raised and kept at its level by a small assessment on stumpage and royalty, and if these Boards and the Council discharge their functions as fully as I believe they will, the fund should prove a worth-while investment in good forestry. It is my thought that in relation thereto the Government should act merely as a collection agency, using the machinery of the Accounting Department of the Forest Service to carry out this function. The revolving fund should not be under Treasury control, but all expenditure for staff, professional assistance, and expenses should be solely under the direction and in the discretion of the Council itself. The salary of the Chairman should be high enough to attract the services of a man of high calibre and should be fixed (and paid) by the Council with that objective in view.

I do not propose to deal in detail with the set-up of these organizations except in the broad treatment I have accorded them. Those details can be worked out by Industry, in conjunction with the Service and the Minister. It may well be, for instance, that as the Council would be composed of men drawn chiefly from the Coast, a Coast Regional Board would appear unnecessary and redundant.

The scope of the Council's jurisdiction, as I have indicated, should encompass all aspects of forest management in its widest sense, including the social and economic values involved and the various multiple and inter-related forest uses. The Council should be empowered to appoint sub-committees from outside its own membership to conduct studies in delegated subjects on behalf of the Council. I would suggest that the existing Advisory Committee on Scaling, the Advisory Committee on Exports, and the Advisory Committee on Research be considered as sub-committees of the Provincial Advisory Council and responsible thereto.

The Council should also be empowered to subpœna witnesses, take evidence under oath, and compel the production of documents when deemed essential to reach a conclusion on controversial issues. I would not extend this power to the Regional Boards.

APPEAL BOARDS

A number of witnesses stressed the need for some form of independent tribunal to which appeals could be taken, not only from the Minister, but from the Executive branch of the Government itself. It was, for instance, a belief held by many witnesses that an appeal to the Cabinet from the decision of the Minister, who is also a member of that appellate tribunal, was not an appeal in a true sense. The present appeal procedure set out in the " Forest Act " is certainly not the best that can be devised, but I am unable to suggest a better one that would be acceptable. An Appeal Board in a proper sense should have power to issue binding decisions. If it does, then it, in effect, usurps the functions of the Minister and, if its jurisdiction was extended that far, could also overrule the Cabinet. Such a tribunal would not, I think, have the support of Industry generally and certainly, I believe, would be looked upon with disfavour by the Government and rejected for much the same reason as a form of commission control has been rejected in the past.

An Appeal Tribunal without binding authority is nothing more than an Advisory Board under another name, and if my recommendations relating to the creation of two or three Regional Boards and a Provincial Advisory Council are accepted and acted upon, it would be an unnecessary adjunct. For these reasons I feel impelled to reject the submissions that an Appeal Board be established.

Matters of contention between the Government or the Service and Industry can be processed adequately and fairly determined by the Provincial Advisory Council, which, if its personnel is as I have indicated, should have, in its advisory recommendations, the confidence of the Government and the support of public opinion.

FORESTERS

In my view this subject is worthy of special review in a report of this nature, although it is closely related to Administration.

It is axiomatic that to assure the optimum return from and management of our forest resource, the services of trained foresters are essential. Our system of forest management both of public and private forests is dependent upon their administration of this most important segment of our economy. Without foresters the management policy in all its aspects, technical and operational, is a structure without foundation.

The Forest Service witnesses, comprising top officials in every division thereof, were practically unanimous in stressing the need for strengthening the Service by staff additions. Industrial witnesses supported this plea and, less reticent on the subject of salaries than the Forest Service witnesses, emphasized the necessity of higher wage schedules for forest officials, especially in key positions. During the previous discussion of Administration I made mention of these representations.

Industrial witnesses, representing large and wealthy corporations, seemed unaware of the fact that their pleas for a stronger Service had, to me, an ironical echo. Industrial concerns have been bleeding the Service of its skilled and experienced men for years. In 1945 I commented upon this same situation as follows:—

> "For some time past the most promising men, especially in the technical end of the work, have been leaving the Service because of the offer of higher paid employment in industry. The Crown has too valuable an interest in our forest land areas to permit this continual loss of its best men."*

The loss to industry still continues to-day perhaps more than ever before. Since January 1st, 1954, to December of 1956, forty-eight forestry graduates (or 32 per cent of the 150 professional staff) left the Service for better wages in Industry, taking with them 229 years of experience. If the services of these experienced men could have been retained, there would have been a correspondingly less need for replacements.

There is a nation-wide shortage of qualified men in almost every field requiring specialized university training.

The Unemployment Insurance Commission of Canada's September 1st, 1956, Bulletin on the Supply and Demand Situation in regard to University Graduates shows 1,700 engineers graduating in the spring of 1957 and an expected demand for 4,000. In conclusion, the Bulletin states the supply of university graduates is less than the present demand now, and will continue to be so for several years in the future.

* 1945 Report, p. 124.

A study by the Professional Institute of Canada tabulates the median starting salaries per month for university graduates across Canada in the engineering fields as follows:—

Profession	Median Monthly Starting Salary 1956	1957 (Estimated)
Mining engineering	$360	$395
Metallurgical engineering	340	390
Mechanical engineering	350	390
Petroleum engineering	370	390
Geological engineering	360	390
Chemical engineering	350	380
Civil engineering	340	375
Forestry	315	360

A significant factor contributing to the inability of the Forest Service to recruit U.B.C. graduates is the present salary differential between Government and Industry. For instance, the 1956–57 graduates were offered from $303 to $327 per month by the Forest Service and from $350 to $460 per month by Industry. This difference is further emphasized when it is recognized that many of the larger companies offer equal security, comparable pension schemes, vacation pay and sick-leave allowances, and, in some cases, subsidized housing and the use of company cars for private purposes.

Once having obtained the services of graduate foresters, who gain a valuable experience as the years pass, another difficulty in retaining their services as Government employees becomes manifest when comparisons are made in wage increases between those employed by the Government and others in different fields of endeavour. The following table is illustrative of these disparities when comparing wage schedules in 1940 and 1956:—

TABLE 146

COMPARATIVE PER CENT INCREASE IN WAGE RATES

Position	1940	1956	Percentage Increase on Maximum from 1940 to 1956
B.C. Forest Service			
Forester-in-training	.....	$3,636–$4,356	.....
Assistant Forester—Grade 1 (two in charge of Management, Vancouver and Kamloops)	$1,800–$2,400	4,068– 4,800	100
Assistant Forester—Grade 2	.....	4,644– 5,520	.....
Assistant Forester—Grade 3 (in charge of Management, Nelson and Prince George)	2,220– 3,000	5,040– 6,000	100
Forester—Grade 1	.....	5,760– 6,600	.....
Forester—Grade 2 (Assistant District Forester, Kamloops and Vancouver)	2,700– 3,300	6,300– 7,200	118
Forester—Grade 3 (District Forester, Prince George)	3,000– 3,600	7,200– 7,800	116
Forester—Grade 4 (District Forester, Vancouver)	3,300– 4,000	7,800– 8,400	121
Forest Ranger—Grade 2	1,560– 2,200	4,212– 5,040	129
B.C. Teachers, High Schools[1]		(1957)	
Teachers (S.A.), Greater Victoria	1,200– 2,800	3,550– 6,420	130
Principals	2,100– 3,790	9,600	154
Teachers (S.A.), Vancouver	1,436– 3,064	3,700– 6,700	122
Principals	3,734– 4,213	8,300–10,200	144
Assistant Superintendent	4,800	11,300–11,800	146
Superintendent	6,500	18,000	177
B.C. Logging Industry[2]		(1956)	
Whistle punk per day	4.62	13.96	202
Loader „	5.15	15.24	196
Rigging-slinger „	5.67	15.86	179
Tractor-driver „	7.75	18.36	137
Tradesman[2]			
Electrician per hour	.92	2.52	174
Carpenter „	.87	2.28	162
Plumber „	1.00	2.55	155

[1] Source: From publications of the Provincial Department of Education, from the Teachers' Federation, and from appropriate School Board offices.

[2] Source: Reports of Federal Department of Labour.

It will be noted that the steadily increasing salaries for high-school teachers, in a profession of long holiday periods and attractive living conditions for married men with families, is providing a profitable alternative field of employment in which there is a severe shortage of available teaching staff.

From this table it can be readily seen that the loggers and tradesmen are far ahead of the foresters in relative increases over the past sixteen years. This is without considering the overtime pay now available to the construction tradesmen. It is commonly reported that, with overtime, many of them are earning in excess of $1,000 per month. This trend has undoubtedly influenced the non-technical wage rates of the Forest Service,

and it will be noted that the Forest Rangers' salaries increased 129 per cent in the last sixteen years.

The result of the failure of the Government to parallel in a reasonable degree industrial salary increases commensurate with experience for graduate foresters is shown on the following table:—

TABLE 147

ANALYSIS OF PRESENT GRADUATE FORESTER STAFF, COMPARING GOVERNMENT AND INDUSTRY SALARIES IN BRITISH COLUMBIA

Years Since Graduation	B.C. Forest Service		Average of Eight Companies' Rates
	Number of Men	Average Monthly Rate	
0	4	$303	$360
1	3	331	400
2	5	322	425
3	12	338	450
4	10	346	530
5	16	372	550
6	13	387	640
7	26	433	.....
8	11	450	.....
9	7	425	.....
10	5	483	.....
11	3	567	.....
12	3	492	.....
14	2	475	.....
15	4	518	1,000[1]
16	2	481	.....
17	5	595	.....
18	4	546	1,000[1]
19	1	363	1,250[1]
20	1	650	1,250[1]
21	1	700	1,000[1]
23	1	650	2,000[1]
24	1	339	.....
26	1	700	.....
27	1	650	.....
28	1	775	.....
29	1	500	.....
30	2	430	.....
32	1	700	.....
33	1	775	.....
34	1	600	.....
35	1	600	.....
Total	150	.....	.....

[1] Approximate known salaries of some of the ex-Forest Service men now in industry also tabulated in relation to years since graduation.

There are only thirteen professional foresters in the Forest Service being paid more than $640 per month. Eight are listed individually in the above table with the group having twenty to thirty-three years of experience, the remaining five are hidden in average monthly rates for men with fourteen

to eighteen years of experience. The monthly salary for the combined position of Chief Forester and Deputy Minister is omitted.

It will be noted from the table that six years after graduation the average salary of the company foresters is $640 per month. This rate is reached by only one Government forester after fourteen years of experience, one after fifteen years, two after seventeen years, and so on. The average salary of those men with from twenty-one to thirty-five years of experience is $601 per month. These average low salaries, after long experience, are partly due to the recruitment in the Forest Surveys Division of European foresters long on experience but not yet registered foresters or capable of handling district administrative work. It is quite apparent, however, that once the top bracket is reached by the senior men at an age long before retirement there is no possibility or hope of financial betterment in the Service.

Industrial employment offers other inducements as well as higher remunerations than does the Government service. For instance, promotions are likely to be quicker for the man with special aptitudes in large industrial organizations than in Government employment, wherein seniority of service, generally speaking, determines the rate of climb into top-bracket positions. In one sense this is an offsetting advantage, relieving the officials of the Civil Service from the frustrations and insecurity often experienced by executives in our highly competitive business complex.

The introduction of forest management in this Province has resulted in this intensified competition between Government and Industry for the services of trained men already in short supply. In this sort of tug-of-war, Industry, as I have shown, pulls the greater weight, but I feel reasonably sure that if more foresters were graduating and available for employment, the Forest Service would attract a reasonable number into its team. Government employment has undoubtedly many attractive features and opportunities for public service, including the exercise of power lacking in other fields of private endeavour. A great many dedicated and devoted Civil Service officials—men of high attainments—are a testimonial to this fact.

The real reason for lack of sufficient foresters in the Service must, it seems to me, be found in more basic strata than a comparative salary analysis, although that is the causation advanced for this situation by most commentators and undeniably is a most weighty factor. Nevertheless it is my view that while at present these differentials seem *ex facie* to supply the whole answer, it is not so much a cause as an effect. It must be remembered that Industry, in spite of its ability to pay attractive salaries and other substantial fringe benefits, is far short of its required quota of foresters as well as the Service.

The cause then is to be found, in my opinion, in the dearth of young men interested in forestry as a life's work. This is reflected in a steady decline in enrolments and in forestry graduates from Canadian and United

States universities over the past five years. In the vernacular, they have never been sold the idea either by the Government or by Industry. The younger generation is, in the main, being brought up to enjoy the amenities of urban life. For them the challenge of the future in forestry has not been dramatized. The green and shadowed forests and the tranquillity of its cathedral silences is an unknown world to most of them. Forestry is for men who can suffer its harsher moments, strengthened by an inner conviction that they are blazing trails, whether in the field or elsewhere, leading forever into the beckoning future. They are working with a great elemental living force. They are the pioneers of a last frontier and, if they work well, future generations in the long years ahead will gratefully remember them.

The abundant, healthy, and magnificent forests of the future will stand as a living monument to their dedication to this ideal.

In time the earth will be sucked dry of its oil and filched of its minerals, but the managed and protected forests, forever renewing themselves, are immortal.

To those who have ventured into the trackless vastness of our Coast forests and travelled its unknown ways, and to those who, in the Interior, have climbed and stood upon the crest of a lonely hill thrusting abruptly from an illimitable sea of green that sweeps in all directions expanding until it darkens and loses its identity at the far reaches of an encircling horizon will understand the spirit of the things whereof I speak. Forestry, in this sense, is not merely a profession, it is a calling. Its challenge is tremendous, and the real reward is to be found in an inner sense of fulfilment and the certain knowledge that no matter how comparatively insignificant the contribution that can be made during the short span of a man's lifetime he has, as a forester, in some measure moulded and shaped the affluent destiny of British Columbia and of Canada. These rewards cannot be measured in terms of money.

A true forester is probably born with an innate love for the woods and its wild and shy inhabitants, but to be skilled in its sciences he needs a long and intensive training. We are fortunate in having at the University of British Columbia a Forestry School under Dean G. S. Allen which now ranks among the best in the world. Its staff of eight members includes seven with a Ph.D. degree, the highest academic degree obtainable.

In the session 1944–45, Forestry was a department in the Faculty of Applied Science. It included on its staff four full-time members, two of whom were on leave of absence. One temporary lecturer was employed that year.

Mr. John E. Liersch was then head of that Department, and he appeared before the 1944–45 Commission as a witness. He stated that the facilities at the University for training foresters were " very inadequate."

In my 1945 Report I said:—

" The development of forest management policies in this Province will require the services of many more trained professional foresters than are presently available to supply the future requirements of the Forest Service and Industry. It is therefore of manifest importance that the University of British Columbia should be able to graduate a sufficient number of foresters each year to meet the anticipated demand.

" Upon consideration of the evidence of Professor Liersch and that of other witnesses who testified upon this subject I recommend:—

"(*a*) That the Department of Forestry be raised to the status of a Faculty.

"(*b*) That the teaching staff be increased to the extent required for adequate student instruction.

"(*c*) That as soon as practicable, and when student enrolment justifies the expenditure, a building be erected and properly equipped for this branch of teaching.

"(*d*) That the University curricula provide more intensive training in forestry subjects during the first four years, instead of postponing the study of forest sciences until the fifth year as at present.

"(*e*) That greater use of the Pitt Lake Forest for practical field instruction be encouraged by the erection of suitable buildings and other facilities. Money should also be made available for more intensive silvicultural practices and research in this Forest.

"(*f*) That consideration be given to the suggestions emanating from the Forestry Club of the University, reading as follows:—

" ' That it be a requirement of the Faculty that all students must put in at least two summers in forestry work of some sort, such as forest surveying, logging, milling, etc., before being granted a degree of Bachelor of the Science of Forestry, providing economic conditions do not render this impossible.'

"And

" ' That one undergraduate Degree in Forestry be granted —namely, Bachelor of the Science of Forestry—and that opportunity for postgraduate work leading to the degrees of Master of the Science of Forestry and Doctor of Philosophy be set up.' "

I am pleased to know that all of these recommendations with one exception have been carried out. Briefly stated the following developments took place:—*

* The material in this section of the Report dealing with the University has been extracted from the brief prepared by Dean Allen.

(*a*) The Department of Forestry was raised to the status of a Faculty in 1950.

(*b*) The teaching staff exclusively concerned with Forestry subjects was increased from three active full-time teaching members in 1944–45 to ten in 1948–49. Eight were in the then Department of Forestry, one in the Department of Biology and Botany, and one in the Department of Zoology.

(*c*) A four-year professional course leading to the degree of Bachelor of Science in Forestry was instituted in 1946–47 to replace the previous course in which forestry subjects were concentrated largely in the last year.

(*d*) The University research forest near Pitt Lake was Crown-granted by the Government in 1949, and an appropriate camp and facilities were constructed with funds provided by the British Columbia Loggers' Association.

From 1948 onward, all Forestry and Forest Engineering students have attended a summer camp of approximately one month at the end of their third year.

The University forest is under management. Research was started there in 1949 and has been continued since.

(*e*) At least two summers of approved forestry work are required before the degree in Forestry or Forest Engineering is granted. By the time they graduate, most students have had from three to five or more summers' practical experience.

(*f*) Only one degree is offered through the Faculty of Forestry as such, namely, the degree of Bachelor of Science in Forestry (B.S.F.). The degree of Bachelor of Applied Science in Forest Engineering (B.A.Sc. in F.E.) has been continued in the Faculty of Applied Science.

(*g*) Postgraduate work leading toward the degrees of Master of Forestry and Doctor of Philosophy was initiated in 1949.

The one recommendation that has not been implemented is that respecting a new Forestry Building. Student enrolment, except during the few years following the Second World War, has not yet justified this in view of what were considered the more pressing needs of other departments and faculties within the University.

About twenty-five men are presently graduating each year from the University as foresters, but that number is far from what is required.

The National Forest Administration in Washington and Oregon employs 550 graduate foresters to manage the National Forest area of about 20 million productive acres, or one man to 36,400 acres. If this Province is to attain in the next twenty years on its public lands the degree of forest management now in effect in the Federal forests in Washington and Oregon (Region 6), it will require an estimated 1,750 more trained foresters

than are practising in this Province at the present time. It is of interest that the National Forest Administration in Washington and Oregon is planning to add seventy Forestry graduates per year to its staff to administer a forest area of about one-fourth of that of British Columbia.

To-day a number of companies in British Columbia, Washington, and Oregon employ one Forestry graduate for each 7 to 10 million board-feet of annual cut. Using this figure as a possible average for Industry, by 1975 the number of Forestry graduates employed by Industry should then be between 500 and 1,000.

In round figures then, close to 3,000 Forestry graduates will be required over the next twenty years, or about 2,500 more than are now in the Province. In order to meet this future demand, and assuming some percentage will come to this Province from other places, about 100 or more men should be graduating each year from our University instead of about twenty-five at present.

Dean Allen supplied the following comparative data, which is shown in the following tables:—

TABLE 148

NUMBER OF FORESTRY GRADUATES, BY YEARS, FROM 1945 TO 1954, INCLUSIVE, AT OREGON STATE COLLEGE AND THE UNIVERSITIES OF BRITISH COLUMBIA, TORONTO, NEW BRUNSWICK, AND CALIFORNIA.

Year	British Columbia	Toronto	New Brunswick	Oregon	California
1945	3	5	3	7	2
1946	15	13	9	22	14
1947	15	22	13	38	31
1948	23	36	33	68	40
1949	63	86	125	85	64
1950	99	90	125	106	83
1951	91	56	61	86	56
1952	41	46	60	59	34
1953	29	23	43	52	33
1954	20	37	30	37	26
Totals, 1945–54	399	414	447	560	383

[1] Change from four- to five-year course.

The steady decline in the number of graduates from each of these institutions since 1950 will be noted.

TABLE 149

PLACEMENT OF FORESTRY GRADUATES FROM OREGON STATE COLLEGE AND THE UNIVERSITIES OF BRITISH COLUMBIA, TORONTO, NEW BRUNSWICK, AND CALIFORNIA, AS OF JANUARY 1ST, 1955.

Classification	Per Cent of All Graduates				
	British Columbia	Toronto	New Brunswick	Oregon	California
Forestry Industry	52	35	51	35	29
Public Forestry	33	34	33	35	27
Teaching Forestry, etc.	3	4	3	1	16
Non-forestry, including armed services	9	12	9	17	14
Deceased	2	(1)	4	3	(1)
Unknown	1	15	....	9	14
Totals	100	100	100	100	100

[1] Data not available.

TABLE 150

COMPARISON OF FACULTY OF FORESTRY, UNIVERSITY OF BRITISH COLUMBIA, WITH FACULTIES OF FORESTRY IN UNIVERSITIES OF TORONTO AND NEW BRUNSWICK AND SCHOOLS OF FORESTRY AT UNIVERSITY OF CALIFORNIA AND OREGON STATE COLLEGE WITH RESPECT TO BUDGETS, STAFF, SCHOLARSHIP FUNDS, AND GRANTS.

Item	British Columbia	Toronto	New Brunswick	Oregon	California
1. Budgets—					
1944–45	$10,127.91	$25,200	(1)	$27,474	$50,100
1954–55	$74,188.52[2]	$60,420	$51,194	$172,250	$170,483
2. Staff (1954–55)—					
Full-time teaching staff	10	7	8	15	12
Part-time teaching staff	2	1	3	1	---
Office and library staff	2	4½	2	4	6½
University forest staff	1	---	---	1	1
Other professional staff	---	---	---	1	2
3. Funds available to graduate students (1954–55)—					
Scholarships	$300	.....	$500		.....
Fellowships	$1,000	$3,000	.....		$1,200
Assistantships, university	$1,800	.....	$600	$4,940	$8,000–$10,000
Assistantships, N.R.C., etc.	$3,000	(3)	(3)		.....
4. Funds available to undergraduate students (1954–55)—					
Scholarships	$2,400			$4,800	$600
Prizes	$700	$3,000	$1,760	$1,825	$330
5. Outside financial support for teaching and related work in forestry (1954–55)	$27,050[4]	*Nil*	$16,000	*Nil*	*Nil*

[1] Not available.

[2] Does not include Forest Entomology and Forest Pathology with budget totalling $15,000 but includes $27,050 in grants.

[3] Variable.

[4] Industry and individual grants.

One of the dangers inherent in the present and anticipated future lack of experienced foresters is that inexperienced men will, of necessity, be placed in responsible positions in the Service.

A number of witnesses complained of this phase of Service administration and stated that even at present experienced foresters in private employment, for instance, managing areas included in forest management licences, were dictated to and on occasion overruled by men years their junior when submitting working plans and cutting programmes for Service approval. Mr. J. F. Jacobsen, president of the B.C. Foresters' Association, an organization I propose to consider later, said in this context:—

> " University records show that out of 307 graduates in Forestry in the past six years, only sixty-three, or 20½ per cent, of those who graduated remain with the Forest Service to-day (1955), and only 26 per cent of those 307 graduates have worked for the B.C. Forest Service since graduation."*

It is also of interest to note that the Forest Service in 1955–56 recruited twenty-seven foresters but only thirteen currently graduated from the University of British Columbia, four graduated from the University of British Columbia prior to 1944, and the balance came from the following countries: Six from Eastern Canada, two from the United States, seventeen from the United Kingdom, and five from Central Europe. Thus the Department is replacing British Columbia graduates and their local knowledge of an average of five years' experience in Government work, plus five summers in the woods while attending University in British Columbia, for foresters with less than a year's experience, most of whom have yet to become familiar with British Columbia conditions and some of whom are not yet Canadian citizens.

Even if recruitment at the University could be stepped up, the supply will inevitably lag behind the demand. The four-year course leading to the degree of Bachelor of Science in Forestry (B.S.F.) is designed to give students a comprehensive education in technical and other broader aspects of forestry. Graduates are suitably trained to begin their professional careers as general practitioners under direction.

A graduate forester cannot practise, however, as such until he has been engaged in forestry work for at least two years and becomes a registered member of the Association of British Columbia Foresters, although he is accepted as an active member of the Canadian Institute of Forestry on graduation. (This Institute operates on a national basis and its function is to deal primarily with the technical side of forestry.) Graduate foresters working out their two-year experience period are classified as Foresters-in-training.

The Association of British Columbia Foresters is a controlling body sanctioned by an Act of the Legislature (S.B.C. 1947, chapter 37, and

* Transcript, p. 9689.

amending Acts) operating through a Council and with a Board of Examiners. Qualifications for membership are set out in sections 7, 8, 9, and 10.

Section 7 applies to University graduates and reads as follows:—

> "Any person who is a resident of the Province at the time of the passing of this Act, and who, within one year thereafter, makes application for registration as a member of the Association, and proves to the satisfaction of the Board:—
>
> "(*a*) That he is a graduate in forestry or allied science of the University of British Columbia, or holds a similar university qualification from another university recognized by the Council, and that subsequent to graduation he has been engaged in forestry work for at least two years; . . .
>
> and satisfies the Board as to his good character, shall, upon payment of the required fee, be entered upon the register of members of the Association without examination."

Provision is also made for those with ten years of experience (at least five years of which was in the Province) but without a university degree to become eligible for registration upon passing an examination set by the Examining Board of the Association, but this provision is not often invoked.

The Act also provides for the recognition of degrees of other universities and for admission of extra-provincial foresters where a reciprocal arrangement is in force; a notable exception is the Province of Quebec.

While on this subject, it would be, I think, of interest to consider the genesis of this Association.*

Thirty-five years ago there was no organized body of foresters in British Columbia. In Eastern Canada foresters wishing to form a technical society for the advancement of their profession thought it desirable to designate their work a branch of engineering and in 1908 founded the Canadian Society of Forest Engineers. In 1950 this name was changed to the "Canadian Institute of Forestry."

In British Columbia in 1920 the engineering profession organized a registering body, the "Association of Professional Engineers." The "Engineering Profession Act," which established that Association, did not specifically include forest engineering among the various branches of the profession covered by the Act. Some of the leading members of the Canadian Society of Forest Engineers were in favour of obtaining registration as forest engineers under the provisions of the "Engineering Profession Act." Eventually forest engineering was recognized as professional engineering. The Association of Professional Engineers, therefore, for many years has registered foresters with an engineering background. In so doing the Association filled a need. Since the Canadian Society of Forest Engineers (now the Canadian Institute of Forestry) was a technical society, without power

* From Exhibit 219, brief of the Association.

to licence its members in the practice of their profession, a forester had no legal status as such and anyone who chose could call himself a forester. In actual fact few men did so, probably because the addition of the term "forester" to the business card or door plate of a timber cruiser or logging engineer would not in those days have raised his status in the estimation of prospective employers. It was necessary, therefore, for any forester who wanted it to seek registration in the Association of Professional Engineers.

The need for practising professional foresters became apparent as the members of the forest industries of British Columbia began to realize that they could not depend indefinitely on virgin timber. The comprehensive evidence made available to the 1944–45 Commission, and my Report thereon, made the necessity for more forestry and more professional foresters abundantly clear. Steps were therefore taken to draft a proposed Act to authorize an Association of British Columbia Foresters with the power to qualify and regulate the professional conduct of foresters in British Columbia.

The Bill to enact the proposed legislation was passed by the Legislature on April 3rd, 1947. Shortly after passing the Bill the forest management licence legislation, which required the employment of "a graduate of a school of forestry approved by the Department of Lands and Forests," was amended to substitute "a British Columbia registered forester," thus giving effect to the "British Columbia Foresters Act."

The membership of the Association was 241 as of September 12th, 1955, with fifty-five additional applications going through the various stages of examination. A total of 253 members have been registered. Of these, twelve have died or resigned. Ninety-four of the members live on Vancouver Island, seventy-seven on the Lower Mainland, twenty-eight on the North Coast and Northern Interior, thirty-five in the Central and Southern Interior, and seven outside the Province.

Of the total membership, 55 per cent are employed in Government service, mainly by the British Columbia Forest Service and the Federal Government; 38 per cent are engaged in the forest industries and in the consulting field; 4 per cent are teaching forestry; and 3 per cent are retired. When these percentages were arrived at, 117 registered foresters were in the employ of the Forest Service. Up to the end of 1956 this total had been changed due to the fact that a number of these men had left the Service to take employment with industrial concerns and others had been recruited. The 1955 percentages of employment by the two Governments were, I think, in consequence, on the high side.

Two hundred and twenty-four members of the Association of British Columbia Foresters are university graduates with one or more university degrees. Thirty-six have taken advanced work in forestry or allied sciences and hold Master's degrees, and six of these have obtained their Doctorate degree. The total of 266 degrees were obtained, as follows: 154 from the

University of British Columbia, 29 from other Canadian universities, 62 from American universities, 13 from universities in the United Kingdom, 6 from universities in Scandinavian countries, and 2 from Germany, a total of 266 degrees from twenty-eight universities.

It is almost impossible to arrive at an accurate figure of the number of registered foresters who are engaged in forestry work on managed forests because many are so engaged partially or in varying degree. The following list omits foresters in charge of management divisions in the various forest districts who are actively engaged in forestry on managed forests in the broadest sense. On the basis of the qualifying headings and subject to the possible misinterpretation in border-line cases, the following is believed to be fairly accurate:—

1. Foresters engaged in administration and operation of managed forests, such as logging superintendents, logging engineers, etc.	12
2. Private foresters engaged in forestry on managed forests	21
3. Consulting foresters engaged in forestry on managed forests	14
4. Government foresters engaged in planning and administration of forest management licences, public working circles, or farm wood-lots and tree-farms	25
5. Government foresters engaged in surveys, research, reforestation, etc., on public working circles	24
Total	96

This represents 41 per cent of the members resident in the Province. In addition, a large percentage of the remaining members are administering or practising some measure of forestry on forests which have not yet obtained the official status of a managed forest.*

Dean Allen, in his evidence, expressed the opinion that one important reason there was not a wider enrolment in the Forestry course at the University "is the general lack of knowledge respecting the present and future opportunities for forestry graduates in the Province."

He was questioned on this point, and I think his evidence should be reproduced. It is as follows:—†

"Q.—What steps is the University taking to remedy that situation? A.—We have talked to a number of the high schools as we have been able to get around to them. The Forest Club has also gone out of its way to carry on an educational programme in the Fraser Valley, at a few of the schools there. We have not attempted to get around the Province as a Faculty of Forestry up to date. Perhaps we should do that. The University itself, however, has sent out teams of people to travel throughout the Province as far as they are able to talk to the various high-school classes. I don't know whether this year is the first year that that was done as extensively, but I know this year (1955),

* Exhibit 219, brief of the Association.

† Transcript, p. 4112 *et seq.*

I believe, five teams went out of two people in each, on the Island, in the Interior, and on the Coast. They are attempting to make known to students in first-, second-, and third-year high school what the requirements for University education are, requirements for admission, and what the opportunities offered by the University are. They are carrying something of the forestry story if not as we would give it.

"Q.—Are there any efforts on the formal basis being made by any association that you know of to rectify this lack of knowledge, particularly in the smaller towns of British Columbia? A.—I don't know of any, I am afraid, not on an official or formal basis.

"Q.—Have you got any suggestions as to how this lack of knowledge might be remedied? A.—There are a number of possibilities. I think the various associations could help—that is, the B.C. Loggers' Association, the Truck Loggers' Association, and others—perhaps the Canadian Institute of Forestry with its several sections in British Columbia could also help. They would be limited, I think, by distances from their own centres, but I think could at least get to some that we can't possibly get to at the present time. I think, too, that in spite of the Canadian Forestry Association efforts to get to the high schools and their vocational guidance literature, I think the school-teachers themselves, perhaps, need a little more priming on this whole subject. In other words, concerning the use of the material. For instance, this Opportunities Bulletin that I mentioned, put out by the Forest Club, is in the hands of every high school in the Province; that is, it is in their vocational guidance folders. There is other literature sent by the C.F.A., but I am afraid a lot of students never see that. Apparently it is not brought to their attention.

"Q.—We have had evidence from the Canadian Forestry Association, and they indicated and gave as a recommendation of one of their committees that teachers be instructed and recommendation number two was 'that a teachers' workshop should be established at the University Forest at Haney under Canadian Forestry Association sponsorship with the support of the Faculty of Forestry at the University of British Columbia, to acquaint teachers with the elements of forestry field work as related to the schools' programme.' Has that suggestion merit in your view? A.—I think it has, yes. I believe that such a workshop, in fact, I know that such a workshop was planned for this summer, but I don't believe the permission of the Department of Education has yet been obtained and it will probably be delayed until next year. However, that was only for a week-end. It was a pretty small effort, but would give some information to teachers interested.

"Q.—Do you think, perhaps, a solution lies in making the teachers more aware of possible careers in forestry? A.—I would say yes, and I believe that the proper answer to that is to have a summer session

course and even a winter session course in forestry for such people. Perhaps not in forestry as such, perhaps more in resources in which forestry would be brought in its proper perspective along with fishing and other things. Then the opportunities in those fields, I think, could be brought out to the teachers and passed along to their students eventually. That might be the most effective way of getting to all these various centres.

"Q.—Again, you say that 'this, in turn, is related to the lack of a firm recruiting policy on the part of various employers or potential employers.' From your contact with industry in the Province, are there any of the larger companies which have what you could describe as a firm recruiting policy at the present time? A.—Yes, I would say that there are two companies, possibly three, there may be others, but I know of three that have what we would call a firm recruiting policy. They do hire pretty much the same number each year of graduating students, and let us know fairly well ahead of time what the requirements will be. There are others who come along for one man perhaps every two or three years. They may be just as large companies, but their policies apparently differ. There are a good many companies that we never hear from at all, small companies, middle-sized companies, and a few large ones. But there is a wide range apparently in recruiting policies among companies, and I think Governments are the same way. Government requirements vary quite widely from year to year, and I don't think the people who are hiring our students really know ahead of time how many they are going to need. It seems to be a matter of waiting until the first of April and then deciding whether five men can be taken on or not.

"Q.—You suggest then that as far as the local situation in British Columbia is concerned in the forest industry that a large part of the remedy would appear to be up to those employers? A.—I think so. I think that is part of the story plus informing the young people that there are these opportunities, that industry is going to need so many men per year or, in rough terms, and Government, because that seems to be the unknown part of it. In other words, when we talk to a high-school group, we find that they had no idea that there were such opportunities, certainly that there are perhaps even greater opportunities lying ahead than there are at the present time. That, I think, decides people between going into forestry or going into civil engineering, chemistry, or something else; it is the job opportunities that they think lie ahead five years from now, that is what decides them where they are going in many cases.

"Q.—It would seem, of course, obvious that the decision to place the Province under various forms of management has had a great deal

to do with the increased opportunities lying ahead for those who wish to take up forestry? A.—Yes."

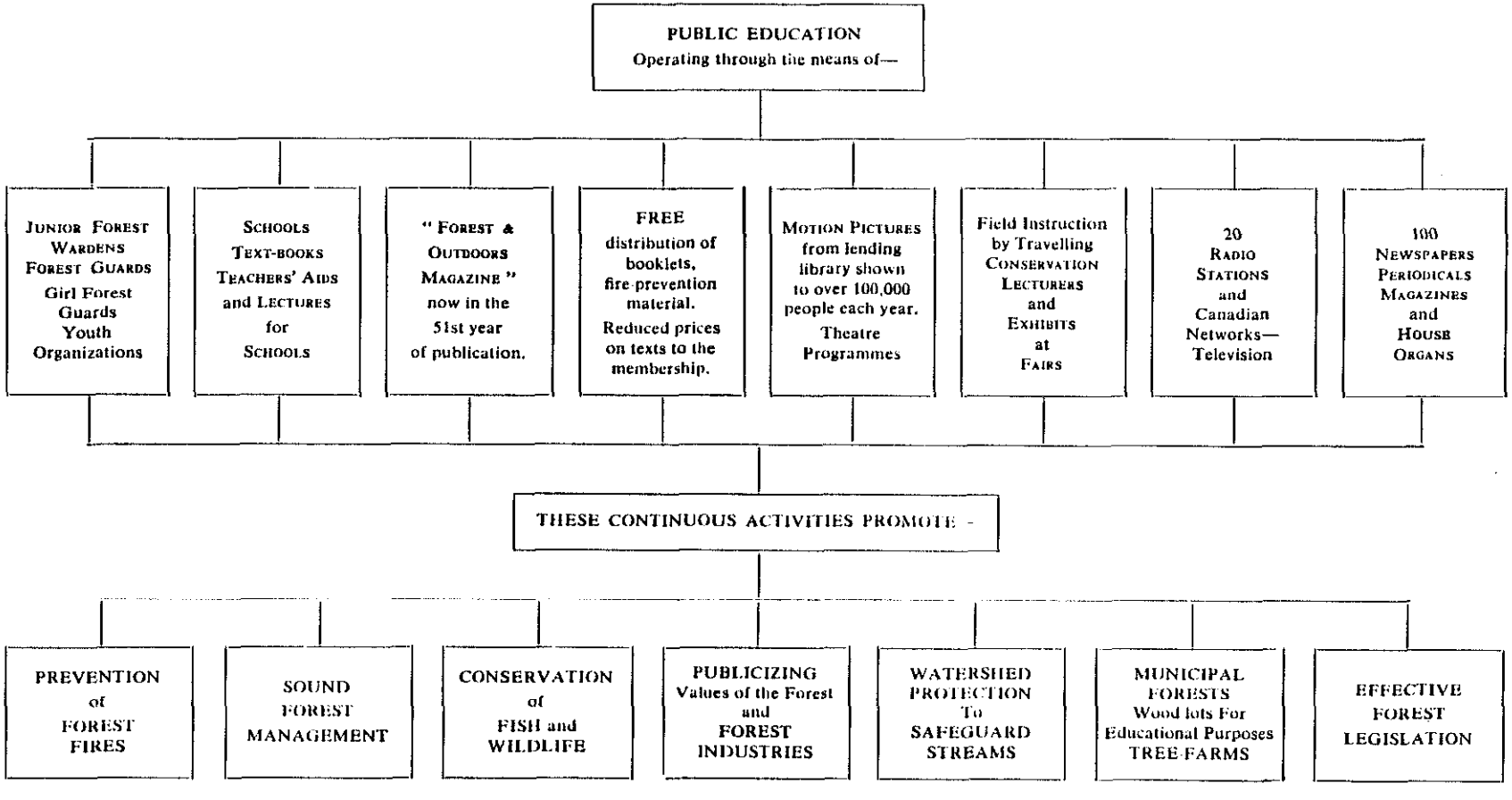
The evidence of Dean Allen indicates clearly that a much more extensive programme of recruitment is essential if the necessary men are to be attracted to the profession of forestry and that a much closer liaison should be established in that connection between the Service, Industry, and the University.*

The British Columbia branch of the Canadian Forestry Association mentioned by Dean Allen has made a most commendable contribution to this field of public education. It is deserving of substantial and appreciative Government support.

I cannot do better than to reproduce a chart furnished me by the Association. This was included in a comprehensive brief outlining the many and varied activities of this Association relating to the forest resources of Canada. The chart gives some indication of the scope of the subjects in which public instruction and education is regarded as essential.†

* *See* section on Public Relations for what is being done in this field by the Forest Service and Industry.

† From Exhibit 83.


PUBLIC EDUCATION
Operating through the means of—
Junior Forest Wardens
Forest Guards
Girl Forest Guards
Youth Organizations
Schools
Text-books
Teachers' Aids
and Lectures
for
Schools
" Forest & Outdoors Magazine "
now in the
51st year
of publication.
FREE
distribution of booklets, fire-prevention material.
Reduced prices on texts to the membership.
Motion Pictures
from lending library shown to over 100,000 people each year.
Theatre Programmes
Field Instruction
by Travelling
Conservation Lecturers
and
Exhibits
at
Fairs
20
Radio Stations
and
Canadian Networks—
Television
100
Newspapers
Periodicals
Magazines
and
House Organs
THESE CONTINUOUS ACTIVITIES PROMOTE -
PREVENTION of FOREST FIRES
SOUND FOREST MANAGEMENT
CONSERVATION of FISH and WILDLIFE
PUBLICIZING Values of the Forest and FOREST INDUSTRIES
WATERSHED PROTECTION To SAFEGUARD STREAMS
MUNICIPAL FORESTS
Wood lots For Educational Purposes
TREE-FARMS
EFFECTIVE FOREST LEGISLATION

Turning back to the University for a moment, two other items require further mention—research and accommodation; research will be dealt with under that heading. While the accommodation at the University for the Faculty of Forestry has increased from 2,375 square feet in 1944–45 to about 15,000 square feet in 1955, at some future period when enrolment justifies the expense, a new building of about 60,000 square feet will be a necessary requirement. In the meantime an allocation of the old Forest Products Laboratory building to the Faculty of Forestry would be a desirable step, and permit the purchase and use of equipment not now available to students because of the lack of a suitable building in which to house it. The present structure in use is over thirty years old and was classified as "temporary" when constructed. I suppose "temporary" is a relative term in this context.

ACCESS ROADS

The need for an immediate and aggressive programme of main-haul access-road construction by the Forest Service into public working circles and other Crown forest areas was stressed by a great number of informed witnesses.

In order to obviate any impression that my thinking in this regard has been influenced by the extreme views of enthusiastic amateurs, I propose to document the imperative necessity for such a programme by quoting from Dr. Orchard and other Forest Service officials solely.

In the brief prepared by Mr. J. S. Stokes, Forester in Charge of the Management Division, it is stated in part:—

" The harvesting of timber in British Columbia began a comparatively short time ago, in the late '90's, and naturally commenced in the areas of easiest access along the waterways, railways, and highways of the Province. This very natural trend has carried on throughout the years. The result has been a ribbon development following the main transportation routes. With the increase in the number of sawmills from 931 to 2,413 in the last ten years, the areas close to main lines of transportation are rapidly being cut out. Many of the smaller type of operators in localized areas are becoming desperate for timber. The end of the road has nearly been reached and the remaining stands of timber are back in the hinterland. The smaller operator, of which there are many, cannot finance the expensive road required to tap this timber. Within the ribbon areas we have immature and thrifty stands of timber adding valuable quality and volume yearly, and the pressure mounts for the Department to sell this timber despite the fact there are stands of overmature decadent timber to be cut which unfortunately are presently out of reach.

" It is safe to say that even reasonably satisfactory forest management will be impossible without an adequate system of access roads. On management licences we may be reasonably assured that the licensees will effectively solve this problem in their own interest. On the public working circles the responsibility rests with the Government.

"An adequate system of access roads is urgently needed to:—

"(*a*) Enable effective protection from fire, insects, and disease.

"(*b*) Facilitate salvage and minimize losses in such cases as fire, insect damage, and windthrow.

"(*c*) Enable effective application of cutting plans giving the necessary priority to mature and decadent stands, and preserving younger growth for maximum profit.

"(*d*) Permit flexibility in cutting plans to take advantage of fluctuating market conditions.

"(*e*) Allow distribution of operations throughout the working circle, thereby minimizing the evils, frustrations, and business losses that inevitably arise out of concentrating several operations in too close quarters.

"In as much as the main access roads will be used continuously it is essential that they be built on the proper location and to a reasonably high standard. The cost of such roads may vary from $10,000 to $50,000 per mile, depending upon the amount of rock work, soil conditions, and proximity of gravel. Although the initial investment will require a considerable cash outlay, it can be recovered by the collection of increased stumpage and amortized in a reasonable length of time. In addition, of course, there are the benefits to be derived from the establishment of a stabilized industry. Public working circles may vary in size and topography and road requirements differ considerably. An example would be the Naver Public Working Circle in the Prince George Forest District, comprising 242,935 acres with an allowable annual cut of 6,720 M cubic feet. This public working circle should have about 70 miles of carefully located main haul road built by the Department.

"When the main haul roads are constructed we can, for some years at least, depend on the operator to build the branch roads that will give immediate access to the individual timber sales. By way of comparison, one typical private operator on the B.C. Coast operating 121,154 productive acres under management and cutting 10,800 M cubic feet per year has 67 miles of existing main and secondary roads and has an annual road building programme of 20 miles per year (Salmon River Logging Co.).

"In the case of public working circles, a modest start has been made by the Forest Service on the building of access roads. Two roads have been built and three others have been started. These five aggregate 40 miles completed and 60 miles projected. But the programme to date has barely scratched the surface of the problem."*

The following questions and answers are extracted from the evidence of Dr. Orchard:—†

"Roads are of the most vital importance in forest management. Up to, well, let's say 1945, there was practically no element of forest management in the disposal of Crown timber. It was a liquidation process, and we could afford, if that was our whole interest, we could afford to sell any piece of timber to any comer and say, 'How you get it out is your concern. We are not concerned at all.' Just as soon as we enter into forest management, then whether we take this piece of timber close in where there is a little road-building, or take the piece

* Exhibit, pp. 38, 39, 40.

† Transcript, pp. 1160–1161, 1170, 1608, 1617, 1621, 1624, 2020.

of timber away back where it requires a long and expensive road, becomes of very vital importance. Some of that poor stuff, usually poor at the back, should come out with the good. The overmature and decadent stands should come out before the thrifty, sound, and you have just got to have a good road system and your management area opened up if you are going to manage it to any advantage and make a success of your management.

" Q.—In the working circles which you have to-day, which are fully committed as to cut, and I understand that from the figures given that approximately ten of them are so, is your road system adequate for those circles at the present time, speaking in general terms?

"A.—There are one or two cases where there is a good start on the road system. They are not adequate anywhere. Now, the roads that we have been talking about and our road programme up to this date, it wasn't said so, but for the present we are talking only about main access roads. In a logging operation, your main road is probably a pretty high-class road. In some modern operations they are superior to our highway roads, paved and all the rest of it. Then they get progressively less elaborate as you get out, finally to the little skid-road.

" Now, your main-haul road and your branch roads are on a sustained-yield operation, and are permanent roads. The ultimate road into the setting is just put in there for the purpose of being just good enough to take out the product of that setting and then it is forgotten and abandoned. It may or may not have some residual value at some later date when they go back in there again.

" We have proposed, where we can, and would like to see ourselves expand, a programme of main-haul roads, and then the licensee will have to build his own roads into his own timber sale, his own little block of timber, just the same as in years gone by he has built his own roads into his timber sale from a—let us say—a public highway.

" What the operator wants to-day and what we have a crying need for, and what industry and the Department can co-operate on with the greatest of friendliness, and a common objective are the main-haul roads, main access roads.

" Q.—Dr. Orchard, the working circles that have been established over the Province have been in existence from the year 1951. That is the date given for the initiation of cutting ledgers. Now, there have been a number of them that have been established in 1951 and 1952, and in looking at the road picture as a whole we have seen that the Crown has constructed some 40 miles of access roads into those public working circles. Now, can you tell me how it is that only 40 miles of roads have been built?

"A.—Partly the obvious answer which I have given on several occasions is lack of money and lack of staff. Also, the Engineering

Division of the Forest Service just can't go out and decide 'I'll build a road here.' We have got to get approval all the way up the line, and we can't touch a piece of road until we have got Government approval to go ahead with it, the expenditure of public moneys.

"Q.—It would, perhaps, seem to be a rather slow process?

"A.—It has been pretty slow to date. The road programme has been completely inadequate to take care of the management problem on these public working circles. We have built in seven years 40 miles of road. I've got some figures here that I jotted down.

"Here's one company that told me that they have a programme of 20 miles a year, it costs $400,000. There's another company that tells me they have a programme of 35 miles a year, it costs $681,000. Well, you could take another fifty operators in British Columbia who have a bigger road programme than we have, individual operators. We're catering to, goodness knows, 5,000 operators.

"This access-road problem is one of the two or three primary outstanding problems in the forest-management picture in British Columbia to-day.

"Q.—Would it be fair to say that it's a matter of emergency to get your Forest Development Fund increased and your procedure speeded up so you can get these roads built?

"A.—In my opinion, yes. The really urgent ones that are now receiving some attention are Purden Lake, the Willow River, the Upper Kootenay, and the Morice (Public Working Circles). The Willow River Public Working Circle will take about 35 miles of access road. It's well removed from any highway. About 35 or 40 miles of access road would open up an enormous reserve of timber that is very badly needed by the local industry, and that, in my opinion, is the most urgent road project that we have, other than the Morice, that we are already working on. Purden Lake, in the same region, is almost identically the same proposition, and the Upper Kootenay is away up the White River, in the Kootenay River, the headwaters where there is a very large, comparatively large reserve of timber in a valley that otherwise has been just desecrated, completely logged out, and that's another urgent one for the local industry in the Upper Kootenay Valley.

"Now, I used the Willow River as the prime example. There's no competition in Willow River, there's nobody in there, no one can get in, but in the bordering area, close to the highway roads, and so on, the competition is extremely keen. And there just isn't enough on regional sustained-yield basis in that country to support the existing industry without opening up areas like the Willow River.

"The industry (at Prince George) doesn't want to move. They do want to, but economically they can't. That is one reason why we were talking about access roads and why we did go to the Interior and ignore the Coast entirely. Our programme is pretty small, and you have a very bad situation in that region. So we are putting in some access roads to push that industry out where there is timber, alleviate that very bad overcut.

"The industry in the Prince George (area) is concentrated by and large along the highways and easily accessible areas, and the industries in the vicinity of Prince George, by and large, are pretty nearly incapable themselves of getting out of that. Now, within a comparatively few years—they are suffering right now—within a comparatively few years, unless we are able to do something about it, I would anticipate that 50 per cent of that industry would close down. They are very small. There is lots of timber farther out.

"Q.—And lots of timber that can be made accessible?

"A.—Yes, by road access."

It is anticipated that the cost of building these access roads will be paid for by the increased value of the stumpage.

This is explained by Dr. Orchard as follows:—*

"A.—Now, the stumpage value of the timber, it doesn't matter who owns it, is a function of the cost of extracting it, and the price that you can get for it after you get it out into the market, and the less it costs to get it out, the bigger the spread between the two and the more you can afford to pay for the timber. Now, if you build a road, there's going to be 'X' dollars left there from which you can pay stumpage and make your own profit. If I build the road for you, you're going to have 'X' plus 'Y,' because you have just that many more dollars you can spend. In other words, from the owner's standpoint, the stumpage is worth more. If you build a road, if you take out my timber and you build a road, let's say the stumpage is worth $5; if I go build a road and you can use it and you haven't any road to build, then I'm in a very good position to ask you $7, let us say. Now, that $2 accrues because of the existence of the road, and can be used to repay the cost of building the road."

Access-road construction, limited as it is, has been confined solely to the Interior. The Forest Service has not built any such roads on the Coast.

The reasons advanced for this policy are varied and the main headings may be summarized as follows:—

Coast public working circles do not lend themselves as well to access roads because the topography is much more rugged and, generally speak-

* Transcript, pp. 1622–1623.

ing, a costly road into a Coast area would open up less country than one in the Central Interior. While it is desirable to build access roads on the Coast, there is a greater necessity for such construction in the Interior in areas of short supply.

Convenient Coastal waterways offer means of log transportation not available in the Interior and, generally speaking, relatively short hauls to water is the rule. These short roads are not regarded as main-haul roads, but as haul-roads or logging-roads usually built by the operator. The Silvicultural Fund serves as a means of financing Interior road construction, but this Fund is applicable only to the Interior.

There is a greater demand from operators for road construction in the Interior than on the Coast. Mr. R. D. Greggor, of the Engineering Division of the Forest Service, said in this context:—*

> " The Vancouver District have a lot of so-called small operators who are a lot larger than the small operator of the Interior. In other words, they probably have $100,000, $200,000, maybe up to $500,000 and still considered a small operator, but that class of operator can very well tackle their own road show, given due allowance for road costs in stumpage appraisal, which means that by and large we haven't had the pressure for access roads on the Coast that we have had in the Interior. That is one of the aspects of this relative wait to the access-road programme in the Vancouver District as compared to the rest of the Province. Incidentally, also, you have more roads in the Vancouver District, it having been settled for a much longer time than the rest of the Province. The big areas of unexploited timber are in the Interior, not on the Coast.
>
> " Q.—I know you wouldn't want to leave the impression that your Division only builds roads because of pressure. You used the word ' pressure,' but I know you wouldn't want to leave that impression. I presume you build roads because you think that roads should be built in order to open up areas of timber for public auction? A.—When I used the word ' pressure ' I meant the fact that if there is a big demand here, and not a big demand someplace else, obviously there will be pressure for somebody to build a road where the demand is. Also, if there is a big road system in one place and not in another, you are liable to find the demand for roads in the place where there isn't the roads, and where the operators are smaller, of less capital.
>
> " Q.—Would it be correct to say, Mr. Greggor, that your Division builds roads where the demand is the heaviest? A.—I think that is fair enough, to some extent, now, you have got to qualify every statement, but that covers one phase of it, yes.

* Transcript, pp. 15183–15184.

"Q.—Does that put it fairly? A.—Within certain limits, yes, it does.

"Q.—So that, generally speaking, then, if the demand was heavier to build roads on some of the Coastal public working circles than it was in the Interior, then the roads would be built on the Coast? A.—There would be a good likelihood of that happening, yes.

"Q.—Then I take it that there has really been no demand for building roads in the Coastal public working circles? A.—I wouldn't say 'no demand,' but I would say that the demand was less than the need that seemed to exist someplace else."

It seems to me that the available timber on the Coast public working circles or Crown lands has receded from a near distance to convenient waterways to the point where main access roads must be constructed in the near future in those Coast working circles where the demand for timber is keen.

The Government is fully aware of the present need for access roads. This is made manifest by its submission to the Royal Commission on Canada's Economic Prospects (the Gordon Commission), no doubt based on recommendations of the Forest Service, and reading in part as follows:—*

"A fifteeen-year programme to complete 4,400 miles of major all-weather forest-development roads is required for public working circles. This programme would cost approximately $123 million, and would produce a minimum net additional annual value of forest products of $195 million."

The Government's five-year projected programme, presented to the Gordon Commission, is as follows:—

TABLE 151

FIVE-YEAR FOREST ACCESS-ROAD PROGRAMME IN PUBLIC WORKING CIRCLES FOR BRITISH COLUMBIA (OUTSIDE FOREST MANAGEMENT LICENCES)[1]

Location of Roads	Productive Forest Area	Volume of Mature Timber (M C.F.)	Allowable Annual Cut (M C.F.)	Number of Miles of Access Road	Total Estimate of Road Cost	Estimate of Annual Value of Timber Produced
Vancouver Forest District						
1. Chilliwack Public Working Circle	57,630	127,450	2,330	30	$ 900,000	$ 953,436
2. Barclay Public Working Circle	47,665	224,963	2,500	25	750,000	1,023,000
3. Anderson River drainage	95,150	175,147	3,644	20	600,000	1,491,125
4. Scuzzy Creek drainage	25,312	102,480	706	15	300,000	288,895
5. Nahatlach River drainage	29,600	60,000	3,716	25	750,000	1,520,587

[1] These are main access roads, and the relatively small logging operators therein would be expected to build and maintain laterals and also pay the cost of maintaining the main access roads.

* P. 11.

Continued overleaf.

TABLE 151—*Continued*

Location of Roads	Productive Forest Area	Volume of Mature Timber (M C.F.)	Allowable Annual Cut (M C.F.)	Number of Miles of Access Road	Total Estimate of Road Cost	Estimate of Annual Value of Timber Produced
Prince Rupert Forest District						
					$	$
6. Morice Public Working Circle (proposed)	367,794	142,730	3,920	50	1,500,000	1,285,450
7. Babine Public Working Circle	541,400	480,000	6,900	50	1,500,000	2,262,655
8. Smithers Public Working Circle	506,810	291,970	4,500	50	1,500,000	1,475,645
Prince George Forest District						
9. Cottonwood Public Working Circle	379,000	360,000	5,000	30	900,000	1,770,150
10. Naver Public Working Circle	242,930	439,324	6,720	30	900,000	2,379,082
11. Willow Public Working Circle	305,930	813,188	7,000	70	2,100,000	2,478,210
12. Purden Public Working Circle	170,700	570,220	5,350	40	1,200,000	1,894,061
13. Stuart Lake Public Working Circle	350,000	300,000	4,310	50	1,500,000	1,525,869
14. Carp Lake Public Working Circle (proposed)	683,897	171,475	5,000	30	900,000	1,770,150
15. Upper Willow drainage	467,114	1,226,990	8,000	70	2,100,000	2,832,240
16. West Lake Public Working Circle	200,000	40,000	3,700	30	900,000	1,309,911
17. Slim Creek drainage	46,340	259,400	2,180	30	900,000	771,785
18. McGregor River drainage	461,762	1,376,490	9,000	70	2,100,000	3,186,270
19. Upper Bowron River drainage	353,243	782,200	7,000	90	2,700,000	2,478,210
20. Crooked River Public Working Circle	500,000	1,564,060	6,030	20	600,000	2,134,801
Kamloops Forest District						
21. Salmon Arm Public Working Circle	78,250	31,592	1,520	15	450,000	547,306
22. Niskonlith Public Working Circle	219,700	121,440	2,350	30	900,000	846,165
23. Spallumcheen Public Working Circle	551,627	384,672	9,700	50	1,000,000	3,492,679
24. Quesnel Lake and Horsefly Lake drainage	1,397,367	1,422,803	23,000	100	3,000,000	8,281,610
25. Similkameen Public Working Circle	706,403	768,060	9,837	70	1,400,000	3,542,009
26. Ashnola Public Working Circle (proposed)	77,530	200,800	3,000	30	900,000	1,080,210
27. Spius Creek Public Working Circle (proposed)	110,695	57,060	1,492	15	450,000	537,224
28. Kwoiek River drainge	47,427	45,455	1,027	15	450,000	369,792
29. Upper Adams Public Working Circle (proposed)	177,245	351,782	3,570	30	900,000	1,285,450
Nelson Forest District						
30. Upper Kootenay Public Working Circle	286,855	366,797	6,000	80	2,400,000	2,160,420
31. Slocan Public Working Circle	187,195	38,400	2,500	30	900,000	900,175
32. Arrowhead Public Working Circle	66,430	63,520	2,000	30	900,000	720,140
33. Edgewood Public Working Circle	151,820	36,000	2,800	20	400,000	1,008,196
34. Nakusp Public Working Circle	94,460	59,000	2,200	30	600,000	792,154
35. Kettle Public Working Circle	510,140	96,000	4,400	40	800,000	1,584,308
36. Creston Public Working Circle (proposed)	620,352	216,700	6,000	30	900,000	2,160,420
37. Granby River area	199,600	59,438	1,800	20	400,000	648,126
Totals	11,315,373	13,827,606	180,702	1,460	41,350,000	64,787,916

Dr. Orchard's* comment on this projection is that "this is the programme, unless conditions change radically, and circumstances alter in various parts of the Province, this is the programme that will be carried out whether it is five years or fifty years before we get it finished."

This problem of access roads is not of recent origin. In 1945 I said in relation thereto:—†

> "In order to broaden the areas contributory to mills supporting permanent Interior settlements the Crown should build roads to timber stands now inaccessible. The direct and indirect benefits received in return by the Crown should amply repay the expenditures necessary for this purpose. Building roads to open up timber areas essential to the maintenance of a permanent forest industry is of more importance, to my way of thinking, than constructing roads to mining areas. Minerals once extracted from the ground can not be replaced. The forest crop under proper management is a perpetual source of revenue."

With a full recognition of the urgency of the need, the extent to which this has been alleviated does not appear to do more than "scratch the surface." The access-road programme got under way in 1950 when the Engineering Section was inaugurated as a unit of the Management Division of the Forest Service with a complement of three engineers. During the first year, five road reconnaissance projects were undertaken and 13.6 miles of road location was completed. A start was made in the fall on the first construction project, namely, the Fly Hills Forest Development Road. Expenditure on construction to March 31st, 1951, amounted to $7,958 and approximately a mile of Class 4 road was built.

Staff was increased to seven engineers in 1951, and this made a modest expansion of both survey and construction programmes possible. A reconnaissance party determined 68 miles of general road route, and location surveys totalled 17½ miles. Expenditure on road construction for the fiscal year 1951–52 amounted to $164,093, which completed the Fly Hills Road to Mile 10.1, built 7 miles of road through the Aleza Lake Experimental Forest and made a start of about 2 miles on the McGillivray Lake Road in the Nisconlith Public Working Circle.

An increase of one engineer to staff and additions to construction equipment allowed a further expansion of the programme in 1952. Reconnaisance totalled 185 miles and location surveys 71.7 miles. A 10-mile section of the McGillivray Lake Road was built at a cost of $107,950, and two right-of-way clearing projects were undertaken for the Stone Creek and Naver Creek Roads. Total expenditure on road construction for the fiscal year 1952–53 amounted to $219,789.

* Transcript, pp. 17829–17830.
† 1945 Report, p. 148.

The fourth year of operations (1953) continued the slow development. One more engineer was added to staff and a second was employed for six months.

Reconnaissance totalled 160 miles, and three survey parties completed 54.4 miles of location. Expenditures for road construction for the fiscal year 1953–54 amounted to $352,025 on two projects. About 8 miles of the Stone Creek Road and 5 miles of the Naver Creek Road were built to Class 2 standards. The problem of maintenance of roads began to assume noticeable proportions and necessitated the organization of a maintenance crew under one engineer; $15,739 was spent by this crew on maintenance of the Fly Hills, McGillivray Lake, and Aleza Lake Roads.

The 1954 operations were disrupted early in the year by a request from the Government to the Engineering Section of the Forest Service to undertake the clearing of the right-of-way for the Pacific Great Eastern Railway between Horseshoe Bay and Squamish. However, the staff was expanded with temporary engineering help to a maximum of eighteen at one time, and although resignations reduced the effective number, it was possible to complete 146 miles of road reconnaissance and two location surveys totalling 37.3 miles. In addition, construction on the Stone Creek Road was extended approximately 4 miles at a cost of $133,016 and 7 miles of the Naver Creek Road was built at a cost of $190,852. A contract for a further 10-mile section of the Naver Creek Road was awarded early in 1955, and by March 31st, 1955, the contractor had completed work to the value of $9,848 on this project. A start was made late in 1954 on the Morice River Forest Development Road, and $107,220 was expended on clearing 4 miles of right-of-way and constructing 3 miles of subgrade. The maintenance crew expended $9,189 on the Fly Hills and McGillivray Lake Roads. New construction for the fiscal year 1954–55 totalled $440,936.

The Service hoped that an appreciable increase in the rate of construction of access roads and the necessary preliminary surveying would be possible in 1955. Unfortunately the difficulty of finding engineers willing to join the organization and stay with it at the salaries offered limited efforts. Engineering staff strength varied from fourteen to a high of seventeen, with the 1955 strength at fifteen. However, it was possible to concentrate most of the effort on the access-road programme and, as a result, significant achievements were recorded.

Preliminary reconnaissance established routes for four proposed roads in the Willow River, Purden Lake, Weedon Lake, and Babine Public Working Circles for a total of 66 miles. Three survey parties completed 39.1 miles of road location for the Willow River, Morice River, and White River Roads. Construction projects included sections of the Willow River, Stone Creek, Naver Creek, and Morice River Forest Development Roads. Work on the Stone Creek Road was completed.

For the fiscal year 1955–56 the following road mileage was constructed at the indicated cost:—

Name of Road	Miles Constructed	Cost
1. Willow River Road west[1]	7.0	$245,183.79
2. Stone Creek Road	2.5	36,217.71
3. Naver Creek Road	3.0	156,964.55
4. Morice River Road	13.4	242,877.56
Totals	25.9	$681,243.61

[1] Includes 5 miles of right-of-way clearing east of Willow River.

For the fiscal year 1956–57 the Legislature voted an appropriation of $2,278,000 for the construction of forest-development roads. This was a distinct and encouraging increase over previous appropriations but far from the expenditure of $8,000,000 a year for a five-year period, envisaged in the projected road programme submitted by the Government to the Gordon Commission, a sum thought sufficient to build annually about 290 miles of roads at an average cost of about $28,000 a mile. The disappointing feature, apart from the size of the appropriation measured in terms of need, is the fact that only $900,000 of this vote was expended, not only for roads, but for bridges and maintenance as well. Of this total, the relatively small sum of $773,588 was spent in the construction of 32.3 miles of roads. Particulars are as follows:—

TABLE 152

New Road Construction by Contractors

Name of Road	Miles Contracted	Contract Price	Miles Completed, 1956–57	Actual Expenditures, 1956–57
1. Naver Creek Road[1]	10.23	$348,998.10	3	$163,055.80
2. Naver Creek Bridge	.....	28,690.25	....	29,231.93
3. Willow River Road South	10.3	289,680.00	*Nil*	50,621.44
4. North Willow River Bridge	.....	.....	(2)	.....
5. South Willow River Bridge	.....	.....	(3)	.....
6. Willow River–George Creek Road[4]	.....	.....	....	.....
7. Willow River–Pitoney Lake Road	.....	.....	....	.....
8. White River Road first section	20.5	470,314.40	11	153,733.52
9. White River Road rock work				
10. Fly Hills Road extension	3.6	54,453.50	*Nil*	8,569.20
11. McGillivray Lake Road extension	7.1	141,950.00	*Nil*	5,047.50
	51.73	$1,334,086.25	14	$410,259.39

[1] Contract awarded January 18th, 1955. Some work completed during 1955–56 and partial construction of remaining mileage in excess of 3 miles completed included in 1956–57 expenditure.

[2] Cancelled.

[3] Postponed.

[4] Included in contract for Willow River Road south (*see* No. 3).

TABLE 152—*Continued*

New Road Construction by Forest Service Crews

	Miles Constructed	Cost
1. Willow River Road east and branches	*Nil*[1]	
2. Extension of Morice River Road	9.0	$207,724.80
3. Swift River Road	4.0	130,629.33
4. Willow River Road west	5.3	118,445.07
	18.3	$456,799.20

[1] Postponed.

Road Maintenance by Forest Service Crews

72 miles	$36,993.57

Summary

New road construction by contract	$410,259.39
New road construction by Forest Service crews	456,799.20
Road maintenance by Forest Service crews	36,993.57
Total	$904,052.16
Deduct for bridges, maintenance, and other expenditures	130,463.64
Leaves for the actual construction of 32.3 miles of road	$773,588.52

In order to implement a programme of expenditure totalling the $2,200,000 voted, it would require the professional services of about twenty-one engineers, eleven instrument-men, and seventy-five other survey personnel. Probably the main reason for the failure to carry out the proposed programme was that these men were simply not available.

It will be noted that of the fifteen road-construction projects undertaken, eleven of these were contracted out and only four were built by Forest Service crews. The Service is reluctant to operate a public works department and to use its own crews in an extensive road-building programme, and, I think, rightly so. Whether the implementation of the ambitious road programme outlined by the Government in its presentation to the Gordon Commission should be the responsibility of the Department of Highways rather than that of the Forest Service I leave to the Government to decide. Should the Department of Highways be eventually charged with the fulfilment of this obligation, it is, of course, essential that a very close co-operation be maintained between the Forest Service and this Department.

Forest Service roads are built to varying standards deemed necessary to support the volume and character of the traffic moving over them. They are divided into seven classes according to specifications diminishing in quality, as follows:—

Class	Minimum Specification in Feet			
	Surface Width	Subgrade Width	Ditch Depth	Right-of-way Width
1	24	34	3	90
2	20	30	2	80
3	18–20	24	1½	80
4	14	20	1½	66
5	12	16	1	66
6	10	12	1	40
7	----	10	----	---

The following table summarizes the road programme for the fiscal years 1950–51 to 1956–57:—

TABLE 153

FOREST-DEVELOPMENT ROAD PROGRAMME, 1950–51 TO 1956–57

Forest District	Forest or P.W.C.	Name of Road	Class of Road	Miles of Location		Road Built (in Miles)	Road-construction Cost	Yearly Expenditure on Road Construction
				Main Road	Branch Road			
1950–51 Fiscal Year								
Kamloops	Salmon Arm	Fly Hills	4	10.1	.....	1.0	$7,959	
Prince George	Aleza Lake	Bowron River	.....	3.5	.....	.....	.....	
Totals	.....	.....	.....	13.6	.....	1.0	.....	$7,959
1951–52 Fiscal Year								
Kamloops	Salmon Arm	Fly Hills	4, 5	.....	.....	9.1	$49,542	
Kamloops	Nisconlith	McGillivray Lake	3	12.0	.....	2.0	22,444	
Prince George	Aleza Lake	Bowron River	3, 4	3.5	.....	7.0	92,107	
Nelson	Timber sale	Wild Horse Creek	5	2.0	.....	.....	.....	
Totals	.....	.....	.....	17.5	.....	18.1	.....	164,093
1952–53 Fiscal Year								
Kamloops	Salmon Arm	Fly Hills	4, 5	3.4	7.7	.....	.....	
Kamloops	Nisconlith	McGillivray Lake	3, 5	7.1	3.9	10.1	$107,950	
Prince George	Naver	Naver Creek	2	13.0	.....	(1)	60,600	
Prince George	Naver	Stone Creek	2	14.5	2.6	(1)	51,239	
Prince Rupert	Morice	Morice River	2	19.5	.....	.....	.....	
Totals	.....	.....	.....	57.5	14.2	10.1	.....	219,789
1953–54 Fiscal Year								
Nelson	Upper Kootenay	White River	3, 5	20.7	16.0	.....	.....	
Prince George	Naver	Stone Creek	2	.....	.....	8.0	$152,998	
Prince George	Naver	Naver Creek	2	9.7	.....	5.0	199,027	
Prince Rupert	Morice	Morice River	.....	8.0	.....	.....	.....	
Totals	.....	.....	.....	38.4	16.0	13.0	.....	352,025

1954–55 Fiscal Year								
Prince George	Naver	Stone Creek	3		12.3	4.0	$133,016	
Prince George	Naver	Naver Creek	2			7.2	200,700	
Prince George	Willow River	Willow River	2, 4	20.4	4.6			
Prince Rupert	Morice	Morice River	2			3.0	107,220	
Totals				20.4	16.9	14.2		440,936
1955–56 Fiscal Year								
Prince George	Naver	Naver Creek	2			3.0	$156,964.55	
Prince George	Naver	Stone Creek	4			2.5	36,217.71	
Prince George	Willow	Willow South	2	7.0				
Prince George	Willow	Willow–Pitoney	3	2.4				
Prince George	Willow	Willow River	2			7.0	245,183.79	
Prince Rupert	Morice	Morice River	2	14.7		13.4	242,877.56	
Nelson	Upper Kootenay	White River	3	15.0				
Totals				39.1		25.9		681,243.61
1956–57 Fiscal Year								
Prince George	Naver	Naver Creek	2			3.0	$163,055.80	
Prince George	Cottonwood	Swift River	3	10.4		4.0	130,629.33	
Prince George	Willow	Willow River	2, 3, 4	13.7		5.3	118,445.07	
Nelson	Upper Kootenay	White River	3			11.0	153,733.52	
Prince Rupert	Morice	Morice River	2, 5, 6	8.9		9.0	207,724.80	
Vancouver	Chilliwack	Chilliwack	3	18.0				
Kamloops	Similkameen	Lawless	5	8.1				
Kamloops	Upper Adams	Finn	4	2.0				
Totals				61.1		32.3		773,588.52[2]
Grand totals				247.6	47.1	114.6		$2,639,634.13

[1] Clearing.

[2] This total represents an expenditure for actual road construction completed and does not include moneys spent on road maintenance, bridge construction, and clearing operations. In the fiscal year 1956–57, for instance, $29,231 was spent on bridge construction, $36,993 on road maintenance, and $64,237 on clearing and other expenses incident to road construction, a total of $130,461.

STATUS OF ROADS AND USER

This subject proved to be a controversial one and not free from some misunderstanding. The right to use access roads was confused by some witnesses with the right to enter upon forest lands for hunting, fishing, and other recreational pursuits.

The grant of a forest management licence or a timber sale on Crown lands within or without a public working circle, or any other form of temporary tenure, does not, as far as I am aware, vest an exclusive right of use of those areas in the persons having the right to manage, cut, and remove timber therefrom.

Section 33 (2) of the " Forest Act " provides that " the Minister may enter into an agreement, to be described as a forest management licence, with any person for the management of Crown lands specified in the agreement and reserved to the sole use of the licensee for the purpose of growing continuously and perpetually successive crops of forest products. . . ." Thus the licensee has sole use of the area under management for a specified single and sole purpose, that is, growing forest crops. Other forms of temporary tenures, including timber sales, are merely, in essence, a grant of cutting rights.

It follows in consequence that the forests are open, subject to closure by the Forest Service, to any persons who choose to exercise the right to enjoy the recreational benefits thereof, whether for hunting, fishing, ski-ing, or merely hiking, without fear of being regarded as trespassers.

The difficulties arise when access roads built by forest management licensees or by the holders of temporary forms of tenure are used by strangers to reach the more inaccessible lakes and hunting-grounds. Conflicts of interest thus immediately arise.

Section 53A of the " Forest Act " defines these roads as private property and reads as follows:—

> " 53A. (1) Where, for the purpose of removal, carriage, or transport of timber or products of the forest, any road is built on Crown lands by a licensee of Crown timber or by any person authorized under the ' Forest Act ' or the regulations, the road shall be deemed to be the private property of the licensee or person authorized as aforesaid during the currency of his licence or duration of his authority.
>
> "(2) On the expiry or sooner termination of the timber licence or authority permitting the building of the road, the road shall revert to the Crown, and thereafter shall be subject to section 162 of this Act, and no person shall be entitled to any compensation or have any claim against the Crown in respect of such road.
>
> "(3) While any road lawfully built on Crown land is deemed to be private property as provided in subsection (1), the public shall be entitled to use the road, but the owner thereof may:—

"(*a*) Require any person to obtain, from the owner, permission to use the road:

"(*b*) Restrict the use of the road or close the road to public use by means of gates or by notice posted on the road if material damage may result from such use, or if such use may endanger life or property:

"(*c*) Remove, at the expense of the owner thereof, any vehicle or animal unlawfully using the road.

"(4) When permission to use a road is unreasonably withheld by the owner, the person applying for use of the road may appeal to the Minister, and the Minister may grant the right to use the road on such terms and conditions as he sees fit, and the Minister's decision shall be final.

"(6) Any person making unauthorized use of any private road or roads as described in subsection (1) shall be guilty of an offence under this Act." (1953 (2nd Sess.), c. 9, s. 4.)

It follows from this section that a hunter, for example, cannot travel upon one of these roads without permission of the owner any more than he could use, unless by consent, any of his other facilities, such as a cook-house, bunk-house, or logging-truck.

Dr. James Hatter, Chief Game Biologist in charge of the Game Management Division of the Game Commission, in presenting the submission on behalf of the Game Commission, dealt with this matter succinctly. He said in part:—*

" In considering effects of forest management licences or any method of timber removal upon fish and game it is evident that forests must be cropped by one means or another. We naturally accept logging as one of the factors to be considered in the management of our sport fish and game resources. Fortunately, the impact of logging on wildlife has, in the long run, a pronounced beneficial influence as can be demonstrated by deer and grouse populations on Vancouver Island and possibly deer and moose in sections of the Interior. On the other hand, fur-bearing animals, such as marten, may suffer directly due to removal of mature timber and trout populations may at times be adversely influenced by removal of forest cover as this affects insect populations and stream flow.

" In sustained-yield logging, as contrasted to the extensive clear cutting practises of the past, we see a closer fulfilment of good land use principles which in turn are conducive to maintenance of stable wildlife and fish populations. Inasmuch as management licences are comparatively new it is not possible to draw upon examples to illustrate the effect upon wildlife resources and the following discussion, of necessity, will centre about general principles and what might be expected to result as

* Transcript, pp. 4710 *et seq.*

shown from experience with former logging methods. Logging practises affect the wildlife and sport fisheries resource mainly through modifying or changing the means of access and through alterations of the environment.

"Access to lakes, streams and hunting territory is considered an important problem facing the sportsmen and game administrator in managing the wildlife resource for maximum yield. Wildlife in particular is a 'perishable commodity' and must be harvested. It cannot be 'stockpiled' and the surplus stored up for future use. When the annual surplus is not taken, it seldom remains for use in the next or ensuing years.

" Over much of the Province logging operations are increasing steadily at higher elevations. This increases the diversity of cover types and may contribute to a progressive lateness of deer and moose migrations to lower levels as a result of increased food supplies created away from the winter ranges. In order to be able to utilize deer populations and other big game animals, hunters must have adequate access. Logging operators on Vancouver Island, in particular, realize the benefits of encouraging hunters to harvest the deer population which periodically may damage newly planted forests and naturally regenerating stands of Douglas fir and cedar. The hunter may thus materially assist the operator in safeguarding his growing forest.

" Under the forest management licence, the public working circle or the simple timber sale, the hunter is permitted access on foot or horseback. Vehicular traffic, on the other hand, may not be allowed. Under Section 53A of the ' Forest Act ' it is stated that all roads constructed by timber operators are considered private roads for the duration of the licence or use by the builder. Roads in public working circles that are constructed by the Forest Service are likewise deemed to be private roads in the meaning of this same section 53A as also are forest protection trails.

" It is evident that the regulations governing the rights of access over roads are virtually identical regardless of the type of tenure, except for the length or duration of ownership. Under management licences the tenure will be perpetually in the hands of the operating company; under working circles the main roads will be perpetually in the hands of the Crown (Forest Service), and the subsidiary roads under the operator for the duration of his operation. Under timber sales the roads will be in the hands of the operator for the duration of his operation and henceforth in the hands of the Forest Service.

" Hunters, fishermen, campers and woods-travellers may complain at times that they are not permitted over a certain road which has recently been completed by a logging operator. In reality, however, they still have the same right of access as existed before the road was constructed. At times the situation is not viewed altogether objectively

by the critic who, for some good reason, is refused access. Ultimately he may have something to gain in improved access and is not exactly being deprived of this. However, slight differences in policy will undoubtedly arise due to individual judgment of the owner or person responsible for maintenance of the respective road. Herein lies the distinct possibility of the sporting public being temporarily, at least, deprived of access that rightfully belongs to them and evidently this possibility was contemplated in the formulation of section 53A, clause (4). Hunting, in particular, is a short term activity and some of the game seasons last only a few days, perhaps only one weekend. In instances such as this the season may well be over before an appeal can be made to the Minister and the necessary report received from his field representatives. Herein lies the feature of the forest management licence about which the hunter is most apprehensive.

"All reasonable assurance that the privileges of the hunter, fisherman, and trapper will be respected and perpetuated is embodied in the forest management licence. It is clearly stated that this licence shall not be considered to limit the use of the lands at the discretion of the Government for other purposes such as mining, trapping, hunting, hydro-electric development or any use that does not materially prejudice the rights granted to the licensee to employ the lands for the growing and harvesting of timber.

" Forest management licences affect sport fishing as a resource in two ways: firstly, by modifying public access to lakes and streams; secondly, by changing the nature of aquatic environments.

" The forest management licence principle has for the most part improved access to wilderness lakes since it has encouraged permanent road construction into areas that otherwise would only be accessible from time to time as logging was conducted. Since sport fishing is not a short season pursuit like hunting, there has not been much of a problem in access through management areas during fire seasons. Also, there exists less urgency in obtaining permission to use roads than in the case of hunting due to the greater length of the fishing season.

"Access to streams and lakes is assured by the wording of the management licence which states that any rights under this agreement in respect to Crown lands do not include any riparian rights or foreshore rights.

" Logging practises generally have a beneficial effect upon wildlife except in the case of certain fur-bearers. Sustained-yield logging under forest management licences should be advantageous to fish and game through maintenance of a more stable environment.

"Access to game populations is a primary concern of game management. It is important that hunters and fishermen be allowed access into logged areas in order to realize a harvest of the fish and game resource.

Although this is provided for in the Act, it is the feeling of sportsmen that they cannot always depend upon the unbiased judgment of the owner of a logging road."

This last comment sums up the present situation from the sportsman's point of view. It is undoubtedly true that some operators look with disfavour upon any user at all of their forest roads.

One witness in this category said:—

"While steep and tortuous roads are in use by logging-trucks, there should not be other uncontrolled traffic on them. If John Q. Public comes on that road at his own free will, he will probably get killed, not to mention a similar fate for the unfortunate truck-driver and the destruction of valuable equipment. For our legislators to court popularity by magnanimously welcoming so-called 'sportsmen' is scant favour to them and maybe to their widows and orphans.

"Maintenance of roads is an expensive item. There are periods when the logger would not drive his own car over the road. There is no good reason why the fisherman should rut up his road at break-up. The logger should have every right to padlock his own road so long as he is using it to haul logs. Sneak thieves use the logger's road to rob the logger."

This rather extreme but understandable point of view, shared by others as well, is based upon the existence of several factors:—

(*a*) The danger of fires caused by hunters careless with camp-fires and cigarettes.

(*b*) The danger of road accidents. A number of these access roads are narrow, and a truck with an overhanging bunk carrying 50 tons of logs at 50 miles per hour on a gravelled road cannot be stopped within a few feet—neither can it pass another car. Insurance companies are naturally reluctant to insure equipment using access roads upon which there is also other vehicular traffic because of permitted public use.

(*c*) The destruction, usually by gun-fire, of expensive equipment by vandalism.

(*d*) The deterioration of roads by persons driving over them when soft.

These are the main items as I recall them; there may be others.

Other private-road owners, while freely alive to the dangers inherent in having strangers hunting and fishing, camping and lighting camp-fires in areas in which they are at present under obligation to fight fires, are willing within reason to keep their roads open for public use, subject to obedience to rules regulating their use as avenues of access to forested areas under their management.

The conditions to be complied with which were drafted by a forest management licensee in the Interior under the enabling provisions of the

" Forest Act " may be regarded as typical. They contain references to the following subjects:—

(1) Regulation of the speed of vehicles and the type of vehicles using the road.

(2) Erection and maintenance of suitable signs notifying conditions of use of the road.

(3) Specification of rules of the road. These cannot well be the same as on a public highway, since on a road cut in a sidehill, for example, a loaded logging-truck has to pass, for safety reasons, on the side nearest the cut face.

(4) Regulation of the extraordinary traffic which uses the roads from time to time, particularly at those times when risks to life and property are high.

(5) Regulation of access of all classes or of certain classes of vehicles as necessary for the construction or protection of a road.

(6) Regulation of access during periods of high fire-hazard or other emergency (for example, when a fire is in progress).

Mr. H. R. MacMillan outlined what is, in general the co-operative policy of those holding, in one form of tenure or another, large areas on the Coast. He said in part:—

" There are about 471 miles of MacMillan & Bloedel Limited logging and access roads in the forest management licences contracted to MacMillan & Bloedel Limited in the Alberni area. About 100 miles of new logging-roads are built therein each year. Every new mile of road is an added fire risk.

" The Company co-operates with the Fish and Game Associations to allow fishing and hunting on Company lands. Access by hunters to MacMillan & Bloedel Limited forest lands, by arrangement with local Fish and Game Associations, is now in its third year. Our first agreement was made with the Alberni District Fish and Game Association, and it has been followed by others on the east coast of Vancouver Island, on areas between Chemainus and Campbell River.

" The agreement with each local Association provides for entry by club members on passes issued by the Association, which also undertakes to set up check points and patrols. Passes are issued for week-ends and holidays only. Entry is denied during the regular work-week owing to the traffic-hazard and the danger of shooting accidents in an area of active logging operations.

" But the principal danger is fire, hence the passes become invalid upon declaration by the Company that weather conditions are too dangerous for travel in the woods.

" Officials of Fish and Game Associations with which the Company has agreements have carried out their responsibilities in a most exemplary manner. A very few infractions of the rules by a small number

of people have not spoiled the record of many thousands of shooting-trips in our timber lands characterized, on the part of pass-holders, by sportsmanlike behaviour and a proper respect for the good health of the forest.

"In the course of this co-operative arrangement, within the past twelve months (1955–56) the Company has counted 2,674 hunters into a portion of the cut-over land, plus 675 fishermen to one stream and its tributaries in the spring of 1955. Berry-pickers and campers were, in addition, estimated at 1,300. These persons were counted into one area tributary to Alberni.

"The total travellers into Forest Management Licences Nos. 20 and 21 in one season are conservatively estimated to be 6,000 to 7,500. The trend appears to be rapidly upward."*

This extensive forest use, as Mr. MacMillan then goes on to establish, contributes a grave fire-risk imposed on the licensee. It seems to me, as I pointed out earlier in this Report, some modification of the burden of fighting fires now imposed on forest management licensees should be alleviated.

Mr. MacMillan has another well-founded complaint, and although it is not solely attributable to the public use of access roads, it is parallel thereto. He said:—

"Government has up to now refused to delay the opening of the deer and grouse seasons so as to keep hunters out of the young forest if the regular date for opening the hunting season comes before the fall rains.

"This year (1955) forest-owners in Vancouver Forest Districts learned from the press August 3rd that the grouse season would open daybreak September 3rd, almost two weeks before the usual date. It was one of the driest Augusts since 1901. There was no sign of a change in weather. Most of the logging operations closed that week of the opening because of fire-risk, leaving no crews in the woods to fight fires.

"There was no consultation with the Industry before announcing the opening date. Those who fixed the early opening date ignored the risk to vast values of Crown and private property. An immediate 'No' was the answer Forest Industry received to its appeal to postpone the grouse season and to impose a very necessary closure on entry into the forest.

"Our experience on one logging operation at the opening of the hunting season is typical of what occurs. Several camp or lunch fires were started by hunters. Fires were lit up to a thousand feet from water on a hot windy day in young forests. The Company watchman who killed the fires found that the hunters considered themselves within

* Transcript, p. 8752 *et seq.*

their rights because they held camp-fire permits, issued weeks before in another district and good for the season.

" The only exception to the validity of these camp-fire permits was that they could not use them during closure or in an area placarded by the Government, but the Government doesn't do much about placarding areas to prohibit the use of camp-fire permits.

" It does not seem fair to the timber owner or operator that anyone seems to be able to get from a Forest Officer or from the police a permit which in effect entitles him to light a fire at any time other than during a forest closure, and there are not very many forest closures.

" Company employees were able this year to extinguish all the fires. It would be folly to depend upon such perfection another season.

" Such indifference to the enormous values involved surely borders on recklessness. As long as such dangerous decisions can be made, our co-ordination of knowledge, judgment, responsibility, and authority leaves much to be desired."*

It seems to me that a close liaison should be maintained between the Forest Service and the Game Commission so that the opening of the hunting season should not be permitted at a time of extreme fire-hazard. The education of the public to appreciate relative values would appear to be indicated and a programme of general enlightenment would tend to minimize the conflicts that are bound to arise when sportsmen seek to use private access roads for the purpose of penetrating forested areas to hunt, camp and light fires at a time when every logger is practically walking on tip-toe for fear of striking a spark.

As Dr. Hatter said in his evidence, access roads built by the Forest Service are also private roads, but the Service, because moneys have been expended in their construction, has never sought to curtail their use by the public except by forest closures. I think that such a policy is subject to criticism because of the dangers inherent in indiscriminate use of such roads. The Service has power to pass regulations restricting or forbidding their use by the public, but none has been promulgated.

Some criticism was directed to the phraseology of the quoted section 53A of the " Forest Act," and in particular to subsection (4), which for convenience I reproduce again. It reads:—

"(4) When permission to use a road is unreasonably withheld by the owner, the person applying for use of the road may appeal to the Minister, and the Minister may grant the right to use the road on such terms and conditions as he sees fit, and the Minister's decision shall be final."

That section has been construed to mean, and probably rightly so, as extending to a circumstance of single instance where, for example, an individual hunter is turned back at an entry gate. It is thought unreason-

* Transcript, p. 8754.

able that this disgruntled hunter should retrace his steps to the nearest point of communication and endeavour to persuade the Minister to reverse the decision of the guardian of the gate. I doubt if it was ever the intention of the Government to saddle the Minister with the responsibility for decision in such relatively minor and isolated cases. It seems to me that if section 53A is retained in the "Forest Act," it ought to be construed as empowering the Minister, upon complaint, to determine whether or not the regulations imposed by the owner for the use of his roads, pursuant to subsection (3), are unnecessarily restrictive and in appropriate cases to direct their amendment to allow for a greater latitude of access. There no doubt are instances where a controversy may arise between the gate-keeper and a man who wishes to use the road, and the section might well be amended to authorize the nearest available Forest Service official, such as the local Ranger, to act as the final arbitrator in such a dispute.

In a review of the access-road problem, as it was developed in the evidence, discussion by the witnesses and counsel was restricted to the relevant provisions of the "Forest Act," and with the exception of one short reference no mention was made of the impact of the "Industrial Transportation Act" upon this controversial issue. In consequence I have so far directed my attention solely to the "Forest Act," but the matter cannot be left there.

I have examined the "Industrial Transportation Act" (S.B.C. 1955, chapter 36), which was assented to on the 15th day of March, 1955, and brought into operation by Proclamation dated the 10th day of November of that year, and find it of such importance that a reproduction of its main provisions affecting access roads is, I think, essential.

The first of these provisions are definitions, as follows:—

> "'Industrial road' means any road which is constructed or exists for the transportation of natural resources, raw or manufactured, or the transportation of machinery, materials, or personnel by means of motor-vehicles, and includes all bridges, wharves, log-dumps, and works forming a part thereof, but does not include a public road, street, lane, or other public communication; a privately owned road used by a farmer or resident for his own purposes; roads used exclusively for the construction and maintenance of electric-power lines, telephone-lines, or pipe-lines; roads and yards within manufacturing plants, industrial sites, storage yards, airports, and construction-sites; tote-roads, cat-roads, and access roads as herein defined:
>
> "'Access road' means a road of a temporary nature used to reach sources of material or parts of a construction project, or for fire protection in timbered areas, . . .
>
> "'Cat-road' means an unsurfaced road of a temporary nature over which logs or materials are dragged by any means:

"'Equipment' includes all rolling-stock and vehicles, log loaders and dumpers, loading works and transfers, hoists and cranes, and other machinery used in the operation or construction of an industrial road:

"'Company' means a natural person, partnership, or two or more persons having a joint or common interest, or a corporation which constructs, owns, or operates an industrial road:

"'Road' means a graded strip of ground, appropriated for travel by the use of motor-vehicles, which is not on the right-of-way of a public highway:

"'Tote-road' means an unsurfaced road of a temporary nature over which construction materials and supplies are moved by any means:

"'Minister' means the Minister of Railways."

"Section 19. The company [*as defined above*] may, subject to the provision of this Act, make by-laws, rules, or regulations respecting:—

"(*a*) The mode by which and the speed at which any vehicle operating on its industrial road may be moved:

"(*b*) The weights which vehicles may carry on its industrial roads:

"(*c*) The over-all width, size, and weight of vehicles used on its own roads:

"(*d*) The travelling upon or using of its roadway:

"(*e*) The special rules of the road required by the company in the operation of its industrial road:

"(*f*) Blocking off traffic on any portion of its road:

"(*g*) Placing of stop-signs where deemed necessary:

"(*h*) The carriage of freight on its roadways:

"(*i*) The carriage of passengers on its roadways:

"(*j*) The governing of vehicles other than its own using its roadways; and

"(*k*) The governing of all traffic on its roadways.

"Section 20. All by-laws, rules, and regulations, whether made by the directors or the company, shall be reduced to writing, be signed by the chairman or person presiding at the meeting at which they are adopted, and have affixed thereto the common seal of the company.

"Section 21. (1) All such by-laws, rules, and regulations shall be submitted to the Minister of Railways for approval.

"(2) The Minister may, by certificate under his hand and seal of office, sanction such by-laws, rules, and regulations, or any of them or any part thereof, and may from time to time rescind the sanction thereof or any part thereof.

"(3) No such by-laws, rules, and regulations shall have any force or effect without such sanction.

"Section 22. Such by-laws, rules, and regulations, when so approved, shall be binding upon and shall be observed by all persons, and shall be sufficient to justify all persons acting thereunder.

"Section 24. If the violation or non-observance of any by-law, rule, and regulation is attended with danger or annoyance to the public, or hindrance to the company in the lawful use of the roadway, the company may summarily interfere, using reasonable force, if necessary, to prevent such violation or to enforce observance, without prejudice to any penalty incurred in respect thereof.

"Section 26. Signs shall be placed at the junction where every public road or highway enters upon any industrial road warning the public or the drivers of vehicles that they are entering upon a privately owned industrial road, and that, if they are permitted to enter, they must govern themselves according to the rules set forth governing such roads."

Penalties are provided for trespass upon the "industrial roads" and breach of approved regulations.

It will be seen at once that section 19 and other provisions of the "Industrial Transportation Act" are more extensive than parallel provisions of the "Forest Act." Which of these Acts is to prevail when in conflict is a field of interpretation upon which I do not propose to venture as Commissioner. It is manifest, however, that the co-existence of these two Statutes can only lead to confusion and a conflict between the Minister of Lands and Forests exercising the jurisdiction conferred upon him by section 53A of the "Forest Act" and the Minister of Railways in administering section 19 *et seq.* of the "Industrial Transportation Act."

It seems to me that the Government will have to decide which Act is paramount and amend both Acts as may be deemed appropriate to carry out their intention. I cannot see how both can live on the Statute books together. They are not complementary, but mutually exclusive, in relation to the user of access roads.

Basically the answer to the access-road problem, apart from necessary action in the legislative field, lies in the establishment of an understanding of the multiple-use aspects of our forest land and an endeavour of those whose interests may conflict to find a mutual and harmonious solution satisfactory to each. This does not seem an impossible goal if the Forest Service, Industrial groups, the Game Commission, the responsible Fish and Game Associations, and now the Department of Railways work together to achieve that objective with the undoubted assistance that could be rendered by the Provincial Advisory Council.

RESEARCH

Forestry research in this Province is carried on by four different agencies—the Federal Government, the Forest Service, the Faculty of Forestry at the University, and many of the large forest industries. Each of these is fulfilling functions with objectives more or less limited and distinct in character but with a certain degree of overlapping in related fields of study common to all.

My primary obligation is, I think, to examine into the administrative functions of the Forest Service, and while it is of interest to record, shortly, what is being attempted and accomplished by other agencies in the field of forestry research in this Province, it is not my responsibility to assess their activities and make recommendations in relation thereto, which could not in any event be implemented by the Provincial Government because beyond its legislative competence.

Turning then to research as conducted by the Forest Service, it was pointed out in the section of this Report dealing with Administration that the Research Division is primarily, if not solely, engaged in "applied research."

Dr. Orchard expressed his views on this aspect of his administration when questioned by Mr. Locke, as follows:—*

> "Q.—I take it, then, that the policy of the Forest Branch is directed towards the applied or practical research of which you have been speaking? A.—Yes, as a matter of necessity. We have no policy that I have ever heard expressed to the effect that the Forest Service shall not or should not embark on pure research. We just haven't had the staff or the money, and I have some doubts as to whether we ever will, to enter into pure forest research on a scale that would be worth while. It takes a lot of staff, it takes a lot of money, and it takes years and years to arrive at any results. Maybe the Dominion Government, for example, or the University, are better adapted for that kind of work than the Forest Service.
>
> "Q.—I am looking forward to the day when there will be many millions of acres in this Province administered under public working circles by the Crown, and from my knowledge which I have acquired in the course of this Commission, it seems to me that you must have a great deal of knowledge, and continually growing and added to knowledge. It would seem to me that now might be the time to make such a plan for long-term fundamental and applied research. Now, do I take it that you think that that day might never come when the Crown will embark on such a programme? After all, you are the manager, or will be the manager, of very large parts of timber in

* Transcript, p. 1587 *et seq.*

British Columbia. A.—No, I have just finished saying that there is nothing I know of in any Forest Service policy that forbids us to enter into that kind of research. But I have some doubts as to whether we will for some time, for reasons which I have explained. There is another very cogent one, that we fall so far short of what we would like to be doing and should be doing in what is called 'applied research,' that my opinion is that we ought to build that up before we think of going into the fundamental research, and that takes quite a while.

"Q.—I may say from the evidence which I have heard, it seemed to me that the research carried on by the Forest Service, whatever the reason, is woefully inadequate. A.—I quite agree. There is no question we could spend to the utmost advantage double the money that we are getting for forest research and that wouldn't begin to fill the need that exists.

"Q.—I am just wondering how it is proposed in the future years to meet the problems with which you will be faced in managing the large areas of Crown timber? A.—Of course, the Forest Service is sufficiently conceited that we have the answer, all we need is more money. We will find the men, then. But we are limited to the funds that are voted by the Legislature. If we get enough to hire five men, we can't hire six.

"Q.—When the votes go to the Legislature, do they go with a recommendation from the Forest Service as to which funds should be allocated to what purpose? A.—No, they go with the approval of the Department of Finance. They don't get before the Legislature without the approval of the Department of Finance. Certainly, I think we should have more funds for research, but I don't allocate the funds. Normally a department, I don't think I am disclosing any secrets, when it comes time to make up estimates, normally every department is told of the Government's policy with regard to expenditures for the next fiscal year. That is, 'You shall not spend any more than you spent last year,' or 'You will be approved 10 per cent less,' or you might be approved 10 per cent more. Then there is no use, there is just no use of a department making up its estimates outside of those limits."

Mr. R. H. Spilsbury, when giving his evidence, stated:—

"The greatest need is for assurance that adequate provision will be made for sustaining long-term comprehensive programmes. Unpredictable cuts in funds destroys all efforts at planning and encourages a day-to-day policy of expediency with emphasis on short-term studies which may not be as urgent as a more fundamental silvicultural study requiring several years to complete. Research cannot be carried out on a feast or famine basis."

Dr. Orchard was asked if he subscribed to that statement, and he answered, " Yes, very much so."*

In 1945 I said on the subject of research:—†

" One of the difficulties I have experienced in reaching conclusions from which recommendations would follow is that no single solution of common forest problems can be compressed into an all-embracing formula. Problems arising in different areas may have a number of factors in common and superficially would appear subject to the same solution, but circumstances differ so widely from area to area that each problem in each area must call for the application of a technique special to that area.

"A general over-all scheme or policy may, however, be formulated outlining the external boundaries of that policy within the framework of which, and subject to the purpose of its design, solutions of specific problems may be found from time to time as they arise. I have endeavoured to chart the broad outlines of that policy.

" That brings me to another difficulty: A forest policy should be erected upon a solid foundation of factual knowledge. Many questions yet call for an answer, and to-day the information we have concerning basic forest problems is far from complete. In truth, in relation to many subjects the evidence disclosed that the necessary data thereon are unavailable.

"A glance at the table of expenditure by the Forest Service discloses that the ten-year outlay (1933–34 to 1942–43) on research has averaged 0.94 per cent of total forest expenditures during that period—which probably explains the absence of this factual information so essential to the formulation of even a broad policy.

" In many of the matters under review I have had to rely upon testimony which, to a degree, was based on speculation, conjecture, or just plain guessing. Because of this I have recommended a Royal Commission review the whole subject ten years from now.

" In the meantime I cannot stress too strongly the necessity of a vigorous programme of research to be undertaken by the Forest Service, either alone or in conjunction with the Dominion Government and industry. There is much to be learned concerning regeneration, and the logging methods best suited to ensure it, rates of growth or yield on different sites, the effects of intensive silvicultural methods, fire-protection—including slash-burning—utilization, and a host of other related and unrelated subjects.

"Although ten years is a very short space of time in forest chronology, nevertheless, with a programme of research adequately financed and with a ten-year dead-line to which to work, I am sure much more

* Transcript, p. 1595.
† 1945 Report, pp. 157–158.

information than we now have will be available to guide the conclusions of the Royal Commission sitting in 1955."

While it is true that much has been accomplished by the Forest Service during the last decade in the field of applied research, I feel impelled, upon the evidence, to agree with Dr. Orchard that the programme has been and is still " woefully inadequate." Contrary to my quoted recommendation, not enough money has been allocated to this most important function of the Service over the past ten years, so vital now and in the future to the proper management of the Crown forest areas. Mr. Spilsbury emphasized this point in his evidence. He said:—*

" Q.—Has the introduction of sustained-yield forestry in the Province of British Columbia increased the need, the need for research? A.—Unquestionably, yes. Sustained yield presumes a knowledge of maintaining regeneration, of managing forests, to their best advantage, and until such time as we have that information, then there is a very great need for obtaining it as rapidly as possible.

" Q.—In other words, the management units are in danger of working without sufficient basic research information? A.—One of the unfortunate parts about research is that you can survive without research quite well for a good many years, and the effects of not having adequate studies and knowledge will not make themselves felt until after the damage to the forest unit is complete, so I am quite sure in my own mind that there is this need for increased and continuous research of silviculture in management units."

Moneys allocated to the Forest Service for research projects over the past ten years and the percentage relation thereof to total forest revenue and forest expenditures are shown in the following table:—

* Transcript, pp. 434–435.

TABLE 154

EXPENDITURE FOR RESEARCH AND PERCENTAGE RELATIONSHIP TO TOTAL FOREST REVENUE AND EXPENDITURE

(1) Year	(2) Total Expenditure, Projects	(3) Total Forest Revenue	(4) Per Cent, Columns (2) to (3)	(5) Total Forest Expenditure	(6) Per Cent, Columns (2) to (5)
1946–47	$22,809.00	$4,880,233.00	0.47	$2,149,819.00	1.06
1947–48	13,894.00	7,010,039.00	0.20	2,961,018.00	0.47
1948–49	25,076.00	7,977,676.00	0.31	4,002,521.00	0.63
1949–50	29,716.00	8,331,497.00	0.36	4,764,070.00	0.62
1950–51	29,341.00	10,089,885.00	0.29	4,770,096.00	0.62
1951–52	73,105.00	13,703,715.00	0.53	6,749,922.00	1.08
1952–53	81,013.00	18,016,025.00	0.45	7,745,362.00	1.05
1953–54	57,609.00	17,578,625.00	0.33	7,724,876.00	0.75
1954–55	55,964.00	19,130,835.00	0.29	7,847,531.00	0.71
1955–56	55,977.00	23,867,706.00	0.23	9,033,336.00	0.62
1956–57	154,639.00	.....	.....	13,385,137.00	1.2
Ten-year average, 1946–47 to 1955–56	$44,450.40	$13,057,623.60	0.35	$5,774,855.10	0.76

It will, I hope, be noted that the money spent on research projects in relation to total forest revenues and expenditures has been steadily diminishing over the years instead of increasing. I would also draw attention to the fact that for the fiscal year 1955–56 project expenditures fell below the ten-year average. I repeat that Dr. Orchard said in his quoted evidence the Service could spend " to the utmost advantage double the money that we are getting for forest research and *that wouldn't begin to fill the need that exists.*"

I would emphasize the fact that since the Report of 1945 the demand for growth and yield information has been most pressing, due largely to its use in calculating the allowable cut in forest management licences, public working circles, tree-farms, and farm wood-lots, which are to be managed with an objective of continuous production. Unfortunately this information cannot be obtained quickly. It is estimated by Mr. Spilsbury that a programme in the order of 30,000 to 50,000 permanent plots under observation for twenty years would be necessary to provide reasonable answers to current management problems.

At the present time there are about 1,500 plots under observation. These are scattered throughout the Province on Crown land, some included in and others without public working circles. While the routine measurements of growth and other related records might be considered to fall within the scope of duties assigned to divisions other than Research, the initial selection of the plots is, in my understanding, the exclusive function of the Research Division. Such a task in itself is of considerable magnitude, requiring expenditure of time, funds, and personnel not now available.

The Research Division has a problem, probably peculiar to itself, in relation to personnel. Mr. Spilsbury explains it as follows:—*

"At the 1945 Royal Commission the Chief Forester pointed out the inadequate salaries received by research men and the lack of promotional opportunities. Subsequent to this brief the Civil Service Commission reorganized the salary schedule. To-day all technical foresters are graded and paid according to a scale that runs from foresters-in-training (recent graduates) to forest assistant chief. No distinction is made between foresters employed in research and those engaged in management or other spheres of activity. . . . (In consequence) the opportunities for promotion into senior grades needs clarification.

" Those who enter the Research Division soon feel that they are entering a blind alley. After a very few years they are unable to compete in open competition with other foresters for vacancies in the Forest Service that offer promotional opportunities because their training and experience is alien to the more administrative fields in district and headquarters organizations. Again advancement within the Research Division cannot be based upon the responsibilities of different positions. The junior research man has no less responsibility than the more senior man when both are engaged upon separate projects. The basis for promotion must be seniority and accomplishment. It is here that an unfortunate comparison is made between district or other division organizations where all positions are graded according to administrative responsibilities, and the top positions are automatically limited to a forester in charge and his assistant. In research, senior positions of forester grade should be available to research men of outstanding training, ability, and accomplishment in addition to the senior administrative officer and his assistant. The apparent lack of opportunity for advancement according to research ability is an important factor prejudicing bright young men against a career in research; it discourages those presently employed from taking postgraduate studies and it is a source of frustration to younger men who see their classmates in the administrative field progressing step by step through the service toward senior grades. The solution might be a modification and expansion of Professional Group Class 14 of the Civil Service schedule, whereby research men would be classified as 'Research Assistant' or 'Forest Research Assistant' in a classification parallel to Class 5 of the Professional group. A change of title would thus serve to distinguish research and administration foresters, and permit an independent rating of research positions based upon personal ability."

* Exhibit 20, pp. 21–22.

Mr. Spilsbury's suggested solution appears to me to be rational and practical, and I see no reason why it should not be implemented.

The Research Division is also handicapped by lack of office and laboratory facilities. Office accommodation at Victoria consists of space in an old building which was formerly a private residence. No laboratory facilities are presently available, although consideration is being given to the construction of an addition to or alteration in the back portion of the so-called office building. This can hardly be more than a makeshift arrangement at best.

There is an undoubted immediate need for proper permanent office and laboratory accommodation. Mr. Spilsbury suggests as an alternative to the allocation of suitable space in a Forest Service building—if one is constructed—that the establishment of a Forest Research Centre near Victoria would be desirable. Sufficient acreage could be secured to enable office accommodation to be combined with other essential facilities, including greenhouses, lath-house, planting-out areas, workshop, and storage facilities. The office accommodation would include a properly equipped laboratory and a well-stocked library. This seems to me a sensible evaluation of what is required and, in my view, should be implemented.

Two Experimental Stations are maintained—one on the Coast at Cowichan Lake and one in the Interior at Aleza Lake near Prince George. It is not the intention of the Service to acquire or develop any additional Stations of this nature. Mr. Spilsbury pointed out that Experimental Stations are costly to maintain and they generally are of somewhat restricted value; that is, they do not contain sufficient ranges in site, type, age-groups, and other conditions to sustain a variety of studies.

It is his thought that demonstration plots could be selected in areas covered by forest management licences, public working circles, and on other Crown lands and reserved for study. These sites would include every conceivable forest type and varied growing environments. These selected areas would thus furnish a much greater diversification in ecological factors than is possible to obtain in limited experimental stations. They could, in a sense, be regarded as substations for experimental purposes.

For the past few years at the Cowichan Lake Experiment Station the aim has been to widen trails, build culverts and bridges, and generally improve accessibility to different parts of the Station so that there will be a greater measure of fire protection. The primary objective, however, of this improved road system is to permit various forest-improvement measures to be carried out. For instance, a large amount of downed cedar has been salvaged, and thinnings and wind-thrown trees extracted for fuel and saw-log purposes. About three years ago a 30-acre block of decadent timber was sold, and this logged area is now available for plantation studies. The remaining area is covered by a 40-year-old Douglas fir stand. Mr. Spilsbury hopes that in a very short time, with extraction roads, a management plan

can be implemented whereby a regular thinning regime may be economic; that is, will pay for itself. The Station should then constitute a valuable demonstration of a managed second-growth forest.

In 1949 the Aleza Lake Experiment Station was reopened.

The main purpose of this Station, on a reserve of about 20,000 acres, of which 17,000 are productive, is to conduct studies on cutting methods applicable to certain subalpine boreal spruce-balsam forests. This forest type occurs very extensively throughout the Interior of British Columbia. It is a type that is associated with many silvicultural and economic problems. It is planned to put into practice a number of established European silvicultural cutting methods by means of timber sales. From time to time various modifications may become practical due to technological advances, more intensive utilization, and higher values of the raw material. In the early days of the Station there was insufficient interest in the timber to put this plan into operation. Since 1947, however, four timber sales have been made, and there is hope that a sustained logging operation will now make possible the implementation of these plans. The annual allowable cut on a sustained-yield basis is about 6 million board-feet.

Mr. Spilsbury also pointed out the need for a seed-orchard development programme to assist in studies leading to seed improvement. This will require from 50 to 100 acres of land in an area carefully selected for site quality and climate and with the necessary appurtenant facilities, at an estimated initial investment of approximately $50,000. It seems to me this investment is justified by the need for more extensive investigation in this field.

There appears to be a need for more fundamental research in this Province, but so far as the Forest Service is concerned, that apparently must lie dormant for the reasons given by Dr. Orchard I quoted above.

In conformity with the present policy of the Service to limit its Research Division, due to lack of funds, to applied research only, that Division is prepared to undertake studies in the following specific fields:—*

"*Factors of environment*

"(*a*) studies on soil and water conservation, erosion, effects of burning.

"(*b*) silvics—the study of the life history and general characteristics of forest trees with particular reference to reproduction and environmental factors.

"(*c*) ecology—the study of forest associations in terms of site quality, species succession, soil conditions, climate and effects of disturbances such as logging or burning upon the associations.

* Exhibit 20, pp. 5–6.

" *Silviculture*

"(*a*) silvicultural systems — the study of methods for harvesting forests with the objective of obtaining maximum yield with regeneration of desired species.

"(*b*) regeneration studies—preparatory measures to obtain natural or artificial regeneration including studies on nursery practice.

"(*c*) tending of immature stands including studies on thinning, pruning and improvement cutting methods.

"(*d*) seed improvement studies—the application of genetic principles to the selection of parents, the testing of progeny and the production of seed of improved quality.

"(*e*) mensuration—studies dealing with methods of determining volumes, growth, increment, sampling techniques and methods of analyzing data for the construction of tables.

" Other fields of study could be undertaken if provision can be made for employing personnel experienced in such studies. Consideration is now being given to initiating fire hazard studies." [I commented upon the need for this when dealing with fire protection generally.]

In carrying out the functions of the Research Division there are, in addition to the Forester in Charge, fifteen foresters on the permanent staff and one temporarily employed. One of these foresters is assigned permanently to the Kamloops District and one to the Nelson District. Two others are assigned seasonally to the Prince George District to conduct studies in silvics and ecology in the spruce-balsam forests of that District. The resident research foresters in Kamloops and Nelson have many and varied duties in the field, and it seems to me they must of necessity spend too little time on each project under their care.

This concept of developing regional or district research centres is, I think, fundamentally sound, but, as Mr. Spilsbury was frank to admit, such a programme is yet " in its infancy."*

The personnel strength for the years 1946 to 1956, inclusive, is as follows:—

Year	Foresters on Permanent Staff	Foresters Temporarily Engaged	Total
1946	5	....	5
1947	7	....	7
1948	10	....	10
1949	12	1	13
1950	11	1	12
1951	11	1	12
1952	13	2	15
1953	14	2	16
1954	14	1	15
1955	14	....	14
1956	15	1	16

* Transcript, p. 2414.

It will be noted that there has been a threefold increase in personnel since 1946, which is an improvement, but I am, in this connection, reminded of an experience I had some years ago when travelling in the Interior of the Province. We came upon the weather-beaten remnant of what was once a thriving mining community, now a ghost town because the mine had long since closed down. In this deserted place I met an old man who told me, with evident pride, that the population of the town had doubled over the last five years. " Yes," he said, " five years ago there were two of us living here. Now there are four."

There is a marked degree of informal co-operation between the various research agencies in the Province and the Research Division of the Forest Service.

Mr. Spilsbury said of this:—*

" During the past few years a conscious effort has been made to seek co-operation and co-ordination with other research agencies wherever joint efforts seem desirable. This has always been on an informal, voluntary basis in which two or more organizations get together to discuss a program and agree to carry out separate phases, or to assist in various ways according to their respective policies, facilities and funds. This arrangement has worked well.

" In connection with our direct seeding and rodent control studies, the whole program hinges on the Denver Laboratory of the U.S. Fish and Wildlife Bureau who alone have the laboratories and facilities for acquiring and initially testing candidate repellents and rodenticides from all over the world. The B.C. Forest Service is one of a dozen organizations in North America co-operating in making field tests. Foresters of Western Forest Industries, MacMillan & Bloedel, B.C. Forest Products and Canadian Forest Industries are co-operating in these tests.

" In the Bolean Lake cutting study a preliminary survey indicated the stand to be highly defective. It was also the centre of a small spruce bark beetle epidemic. As a result of a conference of interested parties it was agreed that the entomological section of the Forest Biology Division of Science Service, Ottawa, would undertake special studies on the bark beetle problem in this area; pathologists of the same Division agreed to make a study on decay organisms and the incidence of infection in the stand; the Forest Products Laboratory of the Dominion Forest Service agreed to make time, waste and breakage studies according to the different cutting methods practiced, and also milling studies on the highly defective balsam; and finally the licensee of the experimental timber sale, the Vernon Pine and Box Co., co-operated in timing their road building and logging schedule to our study requirements."

* Exhibit 20, p. 13.

It is possible that a formally established co-ordinating committee might be advantageous — something similar to the Advisory Committee on Research which, to a degree, guides the activities of the Federal Forest Products Laboratory at Vancouver. While the present informal means of co-operative enterprise seems to be working satisfactorily, it could be improved. The means of co-ordinating the work of the various research agencies ought to be made the subject of further study by the Provincial Advisory Council.

It is abundantly clear to me that during the ten years which have elapsed since the 1945 Report and the resultant necessity for an expanded research programme because of the implementation of my basic recommendation that our forests must be managed on a sustained-yield basis, the Research Division has not been developed as fully as the need warranted.

I feel sure that if the shareholders of a large company which controlled and was charged with the management of millions of acres of forested land of incalculable actual and potential value were advised that the company's research division was being starved for funds and as a consequence was "woefully inadequate," they would consider their interests were being seriously jeopardized.

The staff of the Research Division are not to blame for this situation. They are doing a very worth-while job with the tools with which they have to work.

All I can do is to recommend again to the Government as I did ten years ago that, in the public interest, the Research Division should be adequately housed, equipped, and financed to perform its duties efficiently so that the next Commission ten years hence, and the Forest Service in the interim, could be better served by vitally needed information on matters germane to the proper management of our forest resource.

RESEARCH BY THE FEDERAL GOVERNMENT

The Forest Service does not carry on any research in matters relating to forest insect pests and diseases. This important aspect of research has been accepted as the responsibility of the Federal Government.

In 1944 forest entomological work in British Columbia was carried out by Federal laboratories at Vernon and Victoria, reporting separately to the Chief of the Forest Insect Investigations Unit, Division of Entomology, Science Service, Department of Agriculture, Ottawa. Forest pathological work was carried out by the Laboratory of Forest Pathology, Victoria, reporting to the Head of the Forest Pathology Section, Division of Botany and Plant Pathology, Science Service, Department of Agriculture, Ottawa. To assist in the co-ordination of the forest entomological work in the Interior and Coastal sections of the Province, the Vernon Forest Insect Laboratory was made responsible to the Victoria Forest Insect Laboratory in 1948.

Further co-ordination of the forest insect and disease programme in British Columbia resulted from the formation, in 1951, of the Forest Biology

Division as the functional unit of Science Service responsible for the forest insect and disease surveys and research activities of the Department of Agriculture in all parts of Canada.

Dr. Prebble, Chief of the Forest Biology Division, outlined the policy of his Division as follows:—*

> " The primary functions of the Forest Biology Division in British Columbia, as in other parts of Canada, are to conduct research and to carry out comprehensive surveys relating to the insects and diseases affecting trees, with the ultimate aim that losses due to these factors may be reduced or prevented. In addition to its primary functions, the Division has contingent functions pertaining to technical and advisory services. These are essential in the extension of the Survey, and in programs of appreciation and control undertaken by provincial government departments and industrial firms. There are no hard and fast lines separating the primary Divisional functions of conducting a program of surveys and research on forest insects and diseases, the contingent functions of providing technical and advisory services, and the application of results in large-scale control programs—the latter being clearly the responsibility of the Provinces and the forest industry. Sound control programs are absolutely dependent upon adequate surveys and thoroughly reliable research. It is, therefore, Divisional policy that the conduct of surveys and research should be the dominant activities of its staff throughout Canada; that research projects should be concerned with the more important problems in the territories served by the regional laboratories; that while research workers should maintain close professional liaison with co-operating groups at all times, they should not become so pre-occupied with extension services that the continuation of research methods and standards must be maintained regardless of the degree of economic urgency of any specific problems.
>
> " Small-scale experiments in the direct and cultural control of forest insects and diseases are carried out by the Federal Forest Biology Division, to provide data upon which to judge the feasibility of more extensive commercial control operations. In co-operation with the Biological Control Unit of the Division of Entomology, Department of Agriculture, Canada, and the Commonwealth Institute of Biological Control (with representatives in Europe and other countries abroad), the Forest Biology Division undertakes widespread biological control projects aimed at reduction of hazard from forest insects through the importation and release of parasites, predators, and micro-organisms causing disease in forest insects. Biological control projects, and small-scale experiments in direct and cultural control, can usually be carried out effectively by the technical and scientific staff of the Division with a

* Exhibit 82.

minimum of material assistance from the provincial forestry departments or the forest industries.

" Large-scale control projects involve many problems in fiscal relations and personnel organization, and frequently the construction of facilities such as access roads, buildings, airstrips, etc., in addition to the biological problems. Effective organization of large-scale projects, therefore, requires skills and services which the provincial forestry departments and companies are best qualified to supply and to direct."

On examination Dr. Prebble continued his explanation of policy as follows:—*

" Q.—In short, then, you say the function of your Division is to find the infestation, locate it, decide what control measures can and should be taken, and then advise others and co-operate, of course, giving the benefit of your research from time to time. But the mechanical aspects of stamping out the infestation, or of perhaps deciding what measures shall be taken, such as to spray or otherwise, are up to somebody else? A.—I wouldn't accept that statement in its entirety. In general it is correct, but there are at least two clauses that I think that I would state differently. The first one is the reference, remaining with the Division to decide whether action shall or can be taken. That is a problem which goes far beyond biology. There are problems there of economics, accessibility, and the practicability of amassing the equipment and funds in time. And that decision is, essentially, the decision of the administrative and organization units such as the Province and the industry. I am afraid I can't give you the second one now. There was another clause.

" Q.—It was rather a long question. You had better read it back, Mr. Reporter, would you mind? (Reporter read back previous question.) A.—Yes, it is the last phrase. My answer there is in the reverse direction. I think that we have a responsibility to assist and in deciding what measures can be taken. In other words, I don't think it is reasonable to expect the Provincial organizations or the industry to be sufficiently familiar with the past records and the research to know which is the best method of going at it. We take that responsibility.

" Q.—Now, in British Columbia to-day, there is, I understand from the previous evidence, no formal machinery of any description for dealing with these insect outbreaks after it leaves your hands, except in so far as the Forest Service may deal with it, as we have heard to-day and as is evidenced right there? A.—Well, that situation is essentially the same in all parts of Canada. There is no formal machinery set up in any of the Provinces, with the exception of Ontario, and we have rather special circumstances in the Province of Ontario.

* Transcript, pp. 3996–3997.

" Q.—From your knowledge, as far as trained entomologists under Provincial authority, are there any in British Columbia? A.—Not that I am aware of. I think not."

In addition to research and control projects, as Dr. Prebble pointed out, as a corollary service, the Forest Biology Division carries out a comprehensive survey of forest insects and tree diseases throughout Canada. Its main objectives are: To locate and report incipient outbreaks of forest insects and tree diseases; to collect and report information on the yearly population trends of major forest insects; to provide information on the immature stages, life-histories, habits, and natural control of forest insects; to establish and record the distribution of diseases affecting forest trees; and to classify, interpret, and record the significance of insects and diseases that affect forest stands throughout the course of their natural development.

A general summary of forest insect and disease conditions throughout Canada is published annually in the Annual Report of the Forest Insect and Disease Survey. In addition, regional monthly reports are submitted, during the course of each field season, to District Foresters and industrial representatives.

The Forest Insect and Disease Survey is a national project but is organized on a regional basis. The necessary national integration is provided through a co-ordinator at divisional headquarters. In British Columbia, technical direction, supervision of field and laboratory staff, and research related to survey problems are carried out by seven research officers. Five of these are concerned with the insect survey (three at Victoria, two at Vernon) and two with the disease survey (Victoria). The field detection aspects of the survey programme are the responsibility of eighteen Forest Biology Rangers who are assigned to specific territories or " ranger districts," of which there are sixteen in the Province, organized as groups within the British Columbia Forest Service districts. A Senior Forest Biology Ranger is assigned to each Forest Service district for regional co-ordination, and the entire field organization in the Province is supervised by the Chief Forest Biology Ranger, located at Victoria.

Seasonal field headquarters are located as close as possible to permanent district establishments of the Forest Service. Nine stations have been constructed by the Forest Biology Division during the past five years, the majority of them on building-sites provided by the Forest Service. Ranger stations are not required in several districts immediately adjacent to Victoria and Vernon. Coastal districts that are accessible only by water are surveyed by means of a motor-launch, the " Forest Biologist."

Extensive field collections of insects and disease material are made by the Forest Biology Rangers, and by many co-operators in the Forest Service, the industry, and other agencies. The total number of collections approximates 8,000 per annum. All tree-disease material is handled at Victoria, and insect collections are divided between Victoria and Vernon,

depending on point of origin. Insect collections are reared and identified, and data recorded on life history, natural control factors (parasites and diseases). Samples of tree diseases are cultured and identified.

The forest insect and disease survey organization provides a valuable detection service, but its contributions go considerably further than this. It contributes directly to the fund of information on the biology and ecology of forest insects and diseases, and establishes a broad background for the development of intensive investigational projects, and, in the case of control operations, it gathers evidence on which decisions can be reached regarding assessment of hazard and delineation of areas requiring treatment.

A summary of personnel engaged in forest insect and disease studies in British Columbia in 1944 and 1955 is shown in the following table:—

TABLE 155

	Forest Insect Studies		Forest Disease Studies
	Victoria Laboratory (Coast)	Vernon Laboratory (Interior)	Victoria Laboratory (Coast and Interior)
1944			
Research officers	3	4	3
Sub-professional assistants—			
(*a*) Full time	....	....	....
(*b*) Seasonal	2	....	1
Clerks, stenographers (full time)	1	1	....
1944 totals	6	5	4
1955			
Research officers	11[1]	5	10
Sub-professional assistants—			
(*a*) Full time	5	2	3
(*b*) Seasonal	12	8	11
Forest Biology Rangers	8	10	....
Forest Biology Assistants	....	....	4
Clerks, stenographers (full time)	5[2]	2	1
1955 totals	41	27	29

[1] Includes one seasonal research officer.
[2] Administrative routine performed on behalf of Forest Pathology Laboratory.

It will be seen that in 1944 the total was fifteen, including ten research officers; in 1955 the total was ninety-seven, including twenty-six research officers. Increases in sub-professional staff have resulted in more intensive insect and disease surveys, and in a better balance of effort in the investigational programme, but despite the growth in research staff and assistants, the staff is not adequate to permit work on all important problems concurrently.

This means that priorities in the work programmes have had to be established, with a consequent lag in research on problems regarded as important but not of sufficient urgency to demand a priority listing.

The essential features of the staff organization in British Columbia are as follows:—

(1) The Officer in Charge, Forest Zoology, Victoria, is responsible for forest-insect investigations in British Columbia. Responsibility for certain activities in the Interior of the Province is delegated to the Officer in Charge of the Vernon sub-laboratory.

(2) The Officer in Charge, Forest Pathology, Victoria, is responsible for forest-disease investigations throughout the Province.

(3) Forest-insect surveys are carried out from the Forest Zoology Laboratories at Victoria and Vernon. The research officer in charge of insect surveys is stationed at Victoria; he directs the insect surveys in the Coastal area, provides general supervision of the insect surveys in the Interior (which are the direct responsibility of a research officer of the Vernon laboratory), and co-ordinates the field programme requirements of the insect and disease surveys in so far as they involve the staff of Forest Biology Rangers.

(4) Forest-disease surveys are the responsibility of a research officer of the Forest Pathology Laboratory, Victoria. This officer works in co-operation with the head of the insect survey in relation to field programme involving Forest Biology Rangers.

(5) Basic studies in bioclimatology are carried out by a research officer stationed in Victoria, who is also head of the divisional section of bioclimatology and directly responsible to divisional headquarters for broad aspects of his programme in British Columbia and other parts of Canada.

(6) Administrative responsibility for the operations of the Victoria and Vernon laboratories lies with the Officer in Charge, Forest Zoology, Victoria, as the senior divisional representative in British Columbia.

EXPENDITURES

The total expenditure on insect and disease surveys and investigations in 1944 was approximately $22,000, made up as follows:—

Forest entomology—	
Vernon	$10,000
Victoria	6,000
Forest pathology, Victoria	6,000

Expenditures increased considerably in the late 1940's and early 1950's, owing to staff increases, improved salaries, and rising costs in general. Sample years are shown in the following synopsis:—

	Forest, Vernon	Entomology, Victoria	Forest Pathology, Victoria	Total
1947–48	$38,065	$53,800	$42,090	$133,955
1949–50	66,100	85,950	101,644	253,694
1951–52	79,250	115,850	96,698	291,798
1953–54	92,000	149,600	109,573	351,173
1954–55	107,363	160,457	112,803	380,623
1955–56	101,460	150,075	121,590	373,125

The above synopsis does not include the cost of laboratory and office quarters in the Federal Building at Victoria. The Federal Department of Public Works has assumed the capital and maintenance costs of this accommodation. For the sake of comparing personnel in this Province with other areas of Canada, the following table is of interest:—

TABLE 156

DISTRIBUTION OF DIVISIONAL STAFF AMONG HEADQUARTERS AND DIVISIONAL SECTIONS, AND REGIONAL LABORATORIES, AT MAY 12TH, 1955, FOREST BIOLOGY DIVISION, DEPARTMENT OF AGRICULTURE, CANADA.

	Full-time Staff			Part-time and Seasonal Assistants (Students, Labourers, etc.)	Total
	Professional	Sub-professional	Maintenance		
Divisional headquarters, Ottawa	8	8	—	—	16
Chemical Control Section, Ottawa	4	—	—	1	5
Genetics Section, Sault Ste. Marie	4	(1)	—	(1)	4
Insect Pathology Section, Sault Ste. Marie	11	14	8	5	38
Bioclimatology Section, Calgary and Victoria	2	(1)	—	(1)	2
Sub-totals (staff exclusive of regional laboratory functions)	29	22	8	6	65
Atlantic Provinces	22	28	5	51	106
Quebec	10	11	—	14	35
Ontario	38	55	6	51	150
Manitoba-Saskatchewan	20	24	2	20	66
Alberta	11	17	—	15	43
British Columbia	25[2]	40	1	31	97
Sub-totals (staff on regional laboratory functions)	126	175	14	182	497
Totals	155	197	22	188	562

[1] Assistants provided by regional laboratory at which the section is located.
[2] Includes one seasonal research officer.

Summary

	Per Cent
(1) Regional staff in British Columbia as percentage of total Divisional staff	17
(2) Regional staff in British Columbia as percentage of total regional staff	20
(3) Professional staff in British Columbia as percentage of total professional staff of the Division	16

FACILITIES

Substantial increases in facilities and equipment have accompanied the growth of staff and programme since 1944. This is shown in synoptic form below:—

	1944	1956
Laboratory Accommodation		
1. Forest Entomology, Vernon	2 rooms in Court-house	2-story laboratory building. 1½-story survey building, with attached insectary.
2. Forest Entomology, Victoria	2 rooms in Central Building	Approximately 6,700 sq. ft., fourth floor, Federal Building, plus about 1,800 sq. ft. for joint use (administration, library, photography, etc.).
3. Forest Pathology, Victoria	3 rooms in Central Building	Approximately 4,600 sq. ft., fourth floor, Federal Building.
Field Accommodation		
1. Forest Entomology, Vernon	Trinity Valley field laboratory	Trinity Valley field laboratory. Forest biology ranger stations (seasonal quarters) at Wasa Lake (E. Nelson), New Denver (C. Nelson), Christina Lake (W. Nelson), Williams Lake (W. Kamloops), Prince George.
2. Forest Entomology, Victoria	Cowichan Lake field laboratory	Cowichan Lake laboratory enlarged and improved. Langford survey building (insectary, workrooms, living-quarters). Langford garage, ecology room, and storage. Forest biology ranger stations at Kye Bay (Vancouver Island), Cultus Lake (S. Vancouver), Babine Lake (E. Prince Rupert), Lakelse Lake (W. Prince Rupert).
3. Forest Pathology, Victoria	Cowichan Lake field laboratory	Cowichan Lake laboratory enlarged and improved.

The co-operation between the Forest Biology Division and the Forest Service is apparently close and satisfactory, although Dr. Prebble considered it could be strengthened. He said:—

> "To prepare for eventualities and to ensure that no important developments in forest insect and disease problems are overlooked, it would be advantageous to the Provincial Forestry Department and to each of the major forest industrial firms to assign at least one permanent member of these agencies to keep abreast of the survey, research, and experimental work on the important insect and disease problems of the region. These representatives would be able to interpret developments in insect and disease problems in terms of the policy and operating plans of their parent organizations, and to bridge the gap between the processes of securing research and survey data and the processes of application on specific forest properties. Representatives given such assignments should also be capable of assuming organizational and directional responsibilities when large-scale control operations are necessary."

This suggestion, which is based on the presently existing arrangement in effect in Ontario, seems to me to be a sound one, and unless the Provincial Advisory Council, after study, can formulate a better method of correlating activities in this field, I think it should be implemented.

The Forest Biology Division is making a very valuable contribution to our knowledge of the forest resources of this Province, and in another section of this Report I have dealt in a limited way with the problems with which they are confronted in their unremitting attack on insect pests and tree diseases. I have also expressed my appreciation for the valuable assistance rendered to this Commission by Dr. Prebble, who came from Ottawa to give his evidence, and to Mr. Richmond and Dr. Foster in an earlier section of this Report when dealing with the subject-matter of their activities.

The Federal Government, acting through the Forestry Branch of the Department of Northern Affairs and National Resources, operates two Forest Products Laboratories—one in Vancouver and one in Ottawa. At both Laboratories, research work is undertaken in respect to the mechanical and physical properties of Canadian woods and the application of the resultant data to the use of wood as structural and building material; the utilization and determination of the properties of veneers, plywood, and adhesives, and the development of techniques for fabricating non-structural products by means of glued laminated construction; the determination of the properties of new preservatives and techniques for applying preservatives so as to increase the service life of wood; the study of wood-destroying and wood-staining fungi active in forest products and the determination of their effect on wood and methods of reducing losses; the chemistry of wood and its chemical composition, with experiments on chemical utilization and the development of new products from wood waste; investigations on the various factors involved in the harvesting of timber and its manufacture into the finished product, and studies of techniques for the reduction of wood waste; the theory and technique of the drying of lumber and other wood products; the micro-structure of wood and its relation to the properties and behaviour in service of wood. (The Laboratories do not undertake research pertaining directly to the manufacture of paper and paper products. This is regarded as a function of the Pulp and Paper Research Institute of Canada at Montreal.)

In addition to the foregoing activities carried out at both Laboratories, the Ottawa Laboratory undertakes research on the various factors involved in the design and use of boxes, crates, etc.; on the painting and coating of wood, including fire-retardants; and also on the utilization of wood waste by microbial methods. The research programme of these three activities includes problems of direct interest to British Columbia.

Mr. K. G. Fensom, Superintendent of the Vancouver Forest Products Laboratory, in presenting a brief,* said in part:—

" New problems of wood utilization are constantly being created as markets expand, and these problems must be solved if the forest products of B.C. are to continue to be acceptable in world markets.

" Firstly, there is the problem of the adaptability of British Columbia woods. British Columbia forest products are exported to many parts of the world. British Columbia has neither sufficient population nor enough industrial diversification to absorb more than a comparatively small percentage of its total production, and without export there would be no flourishing trade in these products. It is accordingly all-important that there be maintenance and expansion of export markets. This objective cannot be realized unless a product is so produced that it is appreciated and wanted by the consumer, and unless the consumer can be so advised regarding its properties and performance that he will be satisfied that he is using it to the best advantage. Much can be done, and is being done, by Industry in the categories of standardization and improvement of product and trade promotion, but much of the information on which these trade practices are based must be obtained through the medium of forest products research. And in planning this research it is necessary to keep in mind the fact that British Columbia forest products have an extremely wide range of use application in different parts of the world, and that knowledge of these many conditions of use must be accumulated before there can be any appraisal of the range of reactions of the wood or wood product. This problem of acquiring knowledge of adaptability under varying conditions of service is complicated in British Columbia, where there is only limited use of wood products in conditions which are probably not exactly duplicated elsewhere.

" Then there is the problem of trying to anticipate industrial development by doing such forest products research as will provide information concerning the increasing amount of wood which will come from second-growth stands of timber because of the decreasing availability and occurrence of stands of virgin timber. The properties and characteristics of wood coming from second-growth timber do not necessarily coincide with those of the older mature wood which has constituted the bulk of the material tested at the Vancouver Laboratory up to the present.

"A very marked trend on the Coast during the past ten years has been the great integration of wood volumes, and more and more companies are organizing on the basis of diversified all-purpose, rather than single-purpose, production. Because of this kind of reorganization, vast quantities of wood substance, formerly wasted or burned for fuel, are

* Exhibit 236.

now being more profitably utilized. In the Interior, the trend is in the direction of new forest products industries in localities contiguous to adequate supplies of merchantable timber. Industrial surveys and investigations have been, and are being, made by consulting engineers, and it can be expected that new industries will be established using species of wood hitherto considered to be of minor importance, wood volumes not previously thought to be convertible into any kind of economic production, and some of the extractives of wood that have been identified at the Vancouver Laboratory Although product development in respect to these new processes and techniques is not a function of the Vancouver Laboratory, this is a tremendous continuing field for forest products research with reference to the determination of the characteristics of new products.

"All forest products research can be said to be of direct application and value to the lumber and wood-using industries, because both fundamental and applied research produce data that are important to the effective and economic utilization of Canadian timber species. And, in the processes of research, work in the laboratory often needs to be complemented by field studies under actual operating conditions. To this end the Forest Products Laboratories Division plans and undertakes field studies at selected logging operations, sawmills, and furniture plants. These studies sometimes suggest improved manufacturing methods and uses for materials now wasted. They also contribute towards closer integration of various wood-using industries. The willing and close co-operation of Industry has been, and continues to be, an indispensable factor in rendering these field studies possible, and has been productive of a large store of valuable information.

" Close relationship with the timber industries and the large users of timber is essential in the planning and conduct of research investigations. One method of doing this is achieved by means of the Advisory Committees on Research—with their various Technical Sub-committees—which have been organized at both Laboratories. The Advisory Committee on Research of the Vancouver Laboratory was organized in the spring of 1954, and its purposes are to advise in respect to problems of industry requiring the application of research for a solution, and to act as a liaison between the Laboratory and Industry.

" The members of this Committee, which is strictly advisory in function, were invited to serve by the Minister of Northern Affairs and National Resources in May, 1954. Three meetings have been held to date at which the Program of Work was discussed and information supplied by the senior members of the staff regarding the technical details of the various specialized projects. There was a feeling that the resultant discussion created additional understanding of forest products research at the Vancouver Laboratory."

The project activity of the Vancouver Laboratory is carried on by special units, each directing its attention to some form of delegated research.

The Timber Engineering Unit tests the mechanical and physical properties of British Columbia woods.

The Plywood Unit directs its attention to the bonding properties of glue and related subjects of interest to plywood-producers.

The Wood Preservation Unit, as its name implies, carries on research into wood preservation. A study, for instance, was undertaken by this unit to determine some of the reactions which occur in the process of injecting hemlock logs with creosote under pressure.

The Wood Pathology Unit has as its main objectives the establishment of the rates of decay in small logs and other material left on the ground after logging and the identity of the organisms causing the decay, since each type of rot has special characteristics which may affect the pulping quality of logging residuals, and this determines whether salvage operations are justified. I had occasion in an earlier part of this Report to deal with this subject from information largely gleaned from material filed by Mr. Fensom.

The examination of decay in standing timber is not the function of the Laboratory. That problem is related to tree diseases and falls within the jurisdiction of the Federal Forest Biology Division.

The Wood Chemistry Unit.—This project is confining its research primarily to the utilization of western red cedar and the tremendous volume of waste resulting from sawmill and shingle production. An investigation of the chemistry of this important species was commenced as far back as 1949 for the purpose of ultimately providing data concerning its chemical constituents and properties leading to its greater utilization for pulp and such other new uses that might be developed.

The Wood Utilization Unit.—This unit has made many informative contributions to the usage of logging and sawmill residuals in this Province. I have dealt with this subject in other sections of this Report and have been greatly assisted in this regard by the material furnished me by the Laboratory.

The Seasoning Unit.—This unit has for many years conducted valuable investigations and research into the techniques of kiln-drying of timber, which has as its objective the reduction of the moisture content of green wood to prevent checking and warping, to reduce shipping weight, and to render the lumber less subject to stain, decay, and insect attack, and to increase its strength and stiffness in use.

The Sawmilling Unit.—The processing of logs involves many variables, all of which have a bearing on their ultimate use. These variables are diameter, length, species, age, site, and log quality. In addition, there are many different types of machine and machine combinations used in sawmills to break down the log into many diverse lumber sizes. This project was undertaken for the purpose of studying the effect of these factors on

the yield and quality of lumber recovery. Included in these studies were such diverse matters as the damage caused by ambrosia beetles and its reflection in lumber and plywood values and the effect of whole-log barkers on lumber production.

The Logging Unit.—This unit or project study is directed to ascertain the causes and sources of the breakage of trees when harvested in logging operations causing, as a result, a heavy percentage of wastage. Several studies have been carried out in the field, from the standing tree to the completion of loading, and much data have been accumulated, upon which I have drawn when dealing with logging waste generally.

When the Vancouver Laboratory was first established in 1917, on the old Fairfield campus of the University of British Columbia, it began with a staff of seven. Up to about 1945 no marked increase in personnel was provided, but from that year up to 1951 the staff was greatly increased to about forty, and has remained virtually the same since, with some additions thereto in the summer months.

Mr. Fensom, when questioned on this matter of personnel, said:—*

> "Q.—Have you got more work now than you can dispose of? A.—Oh, definitely. Right now we are spread thin on the projects we have. We have about forty projects you will see in our programme of work, and we are spread so thin that some of those projects can be given very little attention. And I could give you now a list of things that we should do that we are not touching; we haven't got the personnel. You need specialized personnel for certain kinds of jobs, of course. We haven't got that specialized personnel for certain kinds of jobs, so all those things are in the future."

When the campus of the University was moved to its present site to Point Grey in 1925, the Laboratory moved with it, and there is now in the process of construction a new and well-equipped laboratory on the campus estimated to cost approximately $1,000,000. The budget of the Laboratory has increased from about $36,000 in the year 1945–46 to approximately $200,000 in 1955–56.

The relationship between the Laboratory and the Forest Service is a friendly but informal one. Mr. Fensom said:—

> "We have conversations with key personnel in the B.C. Forest Service. We have undertaken some of the projects as a direct result of those conversations. We maintain those contacts."†

The liaison between the Vancouver Laboratory and Industry is supplied through the Advisory Committee on Research, numbering about sixteen

* Transcript, p. 10563 *et seq.*
† Transcript, p. 10557.

members and consisting almost wholly of representatives of industrial organizations engaged in the manufacture of forest products. Technical sub-committees have been established to discuss details with the Laboratory concerning the projects under study by its various units. These sub-committees are usually headed by technically trained men employed by Industry.

It was this Advisory Committee on Research, together with its technical sub-committees, that I thought should be regarded as a general sub-committee of the Provincial Advisory Council and carrying on its functions in conjunction therewith.

Mr. Fensom, when asked how his Advisory Committee on Research did actually function, said:—*

> " This is what happens: Along about April-May of each year, we sit down and we start to plan for the coming year in terms of project work. Of course, a lot of these are continuing projects. Some of them have been going on for years, and a very few of them for months. We sit down and we start planning: How much more work have we got to do on this project? Are we on the right track? Should it be revised? So on and so forth. What kind of new projects can be adopted? Finally we get a draft out of a tentative programme for the coming year. That draft, then, before we send it to Ottawa or have it adopted by our own Department, that draft goes to every member of this Advisory Committee, and we ask them would they be good enough to look at this draft programme; this is the work job that we are proposing to undertake. Will they look at it and criticize it. Do they like it? Are there any improvements that can be made in it, and so on and so forth. Then we have a meeting. The main discussion at the meeting is to discuss this programme. They will want explanations, of course, that they are entitled to ask any question at all on any of this programme, which they do, and it gives us an opportunity to clarify things that perhaps aren't too clearly set forth in this programme. That is how we operate with this Advisory Committee, and that is our standard procedure every year.
>
> " Q.—You feel, then, you keep in close touch with what Industry wants you to do in the programme that you are actually doing? A.—I feel so. I feel that if we went, for instance, to this Advisory Committee and they said, ' Now, look, this project so-and-so, we don't think that is a worth-while project,' and they were able to list logical reasons, I can't see that we would do anything but take their advice if those reasons were sound. We are not obligated to, of course, it is purely advisory, but we certainly would pay very considerable attention to any representation of that kind."

* Transcript, p. 10565 *et seq.*

RESEARCH AT THE UNIVERSITY OF BRITISH COLUMBIA

The primary responsibility of the Faculty of Forestry at the University is the teaching of graduate and undergraduate students, and research must, in consequence, be a secondary consideration, although it is generally recognized that an important function of any university is to conduct fundamental research for the advancement of knowledge in various fields.

The Faculty of Forestry, in spite of the limitations imposed on the staff by their teaching duties, has not been remiss in this regard. Over the years many valuable research projects have been undertaken and brought to completion. The following list is illustrative of this phase of the work done by this Faculty and covers the current subjects of research being conducted by it or under its direct jurisdiction:—

A. Forest Management, Silviculture, Mensuration

(1) Studies of coniferous-tree seed. Germination behaviour; treatments to hasten and improve germination; development of standard tests; improvement of quality and reduction of losses and damage in processing.

(2) Thinning of second-growth stands. Effect on growth and crown expansion; effect on ground cover; effect of damage by wind.

(3) Growth and yield on the University Forest, using systematically placed permanent sample plots.

(4) Relation between site quality and soil moisture during the growing season.

(5) Relation of board-foot volume of cedar logs to their yield of shakes.

(6) Volume estimation from air photos; determination of height and crown width; species identification; choice of camera and flying altitude for best results; development of photo volume tables.

(7) Development of improved Douglas fir planting stock; comparison of trees grown in place with trees transplanted from a nursery.

B. Wood Technology

(1) Second-growth wood quality. Specific gravity, proportion of spring and summer wood, proportion of sapwood and heartwood, and fibre length, related to conditions of growth.

(2) Maceration of woody tissue.

(3) Fibre identification key; separation of woody pulps by morphological characteristics.

(4) Microscopy of unstained pulp fibres.

(5) Fungicidal toxicity of certain extraneous compounds of Douglas fir wood.

(6) Quantitative distribution of taxifolin in Douglas fir.
(7) Chromatographic examination of colour changes associated with incipient decay caused by *Fomes laricis*.
(8) Hardboard technology. Variation in specific gravity and thickness; swelling and growth behaviour, tensile profiles; separation of partial polymerization products by chromatography in co-operation with the Forest Products Laboratory.

It seems to me that the Faculty of Forestry is to be commended for its research programme, including therein its management of the University Forest. It is, however, as I have said, primarily a school, and to quote Dean Allen again:—*

> "If the Government and (or) Industry feel that the University could and should undertake a more intensive basic research programme to augment the more applied types of research that they are doing, then it would be necessary to expand both the professional and the non-professional staff. Otherwise, research must continue to be a secondary consideration in the work of the Faculty of Forestry; this in spite of the fact that there are few basic problems that could not be solved by the group of scientists and experts available in the various departments, schools, and faculties of the University, given the necessary time and funds."

I am not qualified to assess the validity of the last sweeping assertion by Dean Allen, but I am sure he would not have expressed such an optimistic opinion unless he felt fully justified in so doing.

Dean Allen finds support for his comment concerning the need for further funds to finance more extensive research by the Forest Faculty in the evidence of Dr. J. Miles Gibson, Dean of the Faculty of Forestry in New Brunswick, and concurred in by Professor L. R. Seheult, of the same University. Dean Gibson said:—†

> "It is strongly urged that an endowment fund of not less than $300,000 be set up jointly by the Federal and Provincial Governments and Industry for the carrying-out of fundamental research in forestry at the University of British Columbia. Not only is the University, with its experts and facilities in the several sciences, a most appropriate place for this research, but this type of work in turn promotes the best kind of training at the University."

It is of interest to note that Mr. H. R. MacMillan said in relation thereto:—‡

> "We enthusiastically support Dean Gibson's recommendation to create a $300,000 fund for Forest Research at University of British Columbia. MacMillan & Bloedel Limited will gladly pay its share."

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* Exhibit 84, p. 23.
† Transcript, p. 6858.
‡ Exhibit 206, p. 63.

Research by Industry

The large integrated forest industries in this Province are very much alive to the necessity of unremitting research in relation to forest management and the quality and diversification of the products manufactured in their conversion plants.

Every pulp and paper plant has established its own well-equipped and adequately staffed laboratories, which are engaged in a continuing effort to control and improve if possible the already high standard of their products. In addition, these highly trained technical staffs are seeking the recovery of higher values and the development of new products.

Those companies with American affiliations gain valuable assistance from research conducted in very large privately owned laboratories in the United States, notably those of the Crown Zellerbach and Rayonier Corporations.

Industry has also contributed generously to the funds of the University to assist in this endeavour.

Research is vigorously pursued not only by organizations with forest management licences, but also by those who have not been awarded licences.

As an example of the studies undertaken by a company without a management licence, I would mention the activities in this field carried on by the Canadian Forest Products Company. In the main their research projects are of a practical or empirical nature, although some might fall within the definition of fundamental research. Over the past several years twenty-one projects have been undertaken. At least fifteen of these had relation to forest management problems. These may be listed as follows:—

Growth studies.

Breakage and utilization studies, including the banding of cedar-trees to prevent falling breakage.

New methods of site determination.

Fire-weather research.

Thinning studies.

Direct-seeding studies, in which eleven different methods were made the subject of experiment.

Analysis of the development of old-growth timber, including therein decadence studies.

Volume table compilations.

Ambrosia-beetle damage, estimated to cause a loss to this company of approximately $250,000 annually.

Bark-beetle damage.

Experimental planting, including Scotch pine and *Pinus radiata* (a tree of New Zealand origin).

Study of rate of deterioration of burned timber.

Hemlock site-index charts.

Pruning experiments.
Yellow cedar study.
Establishment of an arboretum and experimental planting of fourteen different exotic tree species.
Seed-provenance studies in co-operation with the Forest Service.
Weed-control and tree-poisoning.
Study of survival in plantations.
Intensive study of superior old-growth timber. (Site 175: Fir tree, 305 feet tall; hemlock, 243 feet tall; both the highest yet recorded.)

I made reference to research conducted by companies with American affiliations. The activities of the Alaska Pine and Cellulose Company may be taken as illustrative of this development. Mr. Walter Koerner, president of this company, said in this context:—*

"We have our own forestry staff, and in our woods division employ fifteen graduate forest engineers and foresters. We have directed our efforts in forestry research on reforestation, yield studies and waste recovery.

"It is our aim to achieve the maximum possible integration and to improve our plants and properties continuously. To achieve this objective more quickly and effectively, with the use of the best available research facilities, and to bring in the capital necessary for future developments which we foresee in British Columbia, we joined with Rayonier Incorporated late in 1954.

"Rayonier is a world leader in chemical cellulose production and wood research. I mention this, Mr. Commissioner, because I believe that by this move we have initiated expansion, research development and possibilities which cannot yet be imagined. Given a favourable climate for effective competition in world markets, I venture to say that our Province may one day assume a position as one of the world's leading centres for cellulose chemistry. The future of the forest industries of British Columbia depends to a great extent on technical progress in solving basic problems—full utilization of the forest resources, and improvement of the products therefrom not only to meet growing competition from other materials, but also to increase the financial return from each acre of forest. We believe our present organization is particularly well equipped for this purpose.

"Before the association of the two companies we had a research laboratory at Vancouver. It employs twenty-four research technicians, and our annual expenditures at present represent about one-third of the total devoted to private research by the forest industries in British

* Exhibit 252, p. 6 *et seq.*

Columbia.* This does not include costs to support our technical control activities at the plants. The work of this laboratory is now being expanded and has been integrated with the extensive research activities already being carried on by Rayonier.

"The work is carried on in three divisions. The Alaska Pine research division at Vancouver will be devoted to research in the fields of wood utilization and forest products development. A second division at Shelton, Washington, is the research centre for the development of new processes for manufacturing wood cellulose and silvichemicals. The third division is at Whippany, New Jersey, where the newest laboratory, now under construction, is designed to be the nucleus of a much larger unit planned for the future. Here is centred the research on new uses for wood cellulose and the improvement of existing products made from wood cellulose.

"The combined research staff at all divisions includes over sixty scientists and engineers, with a total of well over two hundred persons. The annual research expenditure exceeds two million dollars. The benefit of all this research is now available to Alaska Pine and Cellulose Limited.

"One of the first fruits in British Columbia of our alliance with Rayonier is the solution of a hitherto unsolved problem, the economic utilization of hemlock bark. We are now constructing a plant in Vancouver at a cost of $1,000,000, the first of its kind in the world, to utilize hemlock bark for the manufacture of a chemical named 'Rayflo.' This is a silvichemical product for use in oil well drilling as an additive to oil well drilling mud, and will be sold to the oil industry throughout the world. At our Vancouver plant the whole log will be used including the bark."

Typical research carried on by MacMillan & Bloedel Limited, a company within the forest management licence scheme, is outlined in its submission,† as follows:—

"A Research Laboratory has been built at Harmac pulp mill, staffed with scientists and equipped to meet their needs. This scientific institution is expanding and probably always will be growing in some direction to meet new problems. The staff is charged with the constant study of our operations and of what is being learned or tried out elsewhere. The intent is that our processes will be improved, our products more nearly reach perfection, and any possible recovery of higher values, of existing or new products from any source within our command, will be picked up by some tireless and brilliant brain so that the

* This figure totals about $350,000 per annum, which is in excess of one-third of the expenditure on research in British Columbia by the integrated companies of the pulp and paper industries, estimated by this group to approximate $850,000 annually.

† Exhibit 206, p. 75 *et seq.*

Company may hold or improve its place in the highly competitive fields of Forest Industry.

"A ten-year post-war campaign to eliminate waste is reaching perfection. Log barkers have been installed in all permanent log-using mills. Bark and sawdust are used for fuel. More valuable uses for these, the lowest-priced items, are being studied.

" Our Forestry Division consists of nine Foresters.* We need more. They all live in the towns on Vancouver Island adjoining our Forest operations. They spend their time in our logging operations and the extensive areas of new Forests we are establishing and protecting. They conduct field examinations the year round. They visit and study what Foresters have accomplished during the past 40 years under similar conditions in neighbouring Northwestern States.

" We are conducting experiments with trace elements to learn if our slower rate of growth can be improved at acceptable costs.

" Sample plots are established in different sites and types in the Company's Forests to learn what we may expect from the future crop.

"A Tree Farm of 25,000 acres is maintained and kept under observation. It is a field laboratory including all age classes, seedlings to mature trees, also an area requiring restocking. This Tree Farm has been managed for perpetual yield from 1954 onward. The experience gained by the professional Forestry staff from this experiment over the years will be a guide in methods and cost of managing Forest Management Licences.

" MacMillan & Bloedel Limited's yearly spending on silvicultural research equals 30 per cent of the total expenditure for that purpose by Provincial Forest Service.

" MacMillan & Bloedel Limited brought aerial seeding to British Columbia (and conducted studies relating to rodent control and other relevant factors incident to this type of seeding). A minimum of 1,500 acres is planted or aerially seeded yearly.

" Forest Fire Protection is no longer a rule-of-thumb business, nor can we afford to meet it head on, on an emergency or surprise basis like Civil Defence. Studies made over several years of fire risks and protective equipment and practices have vastly improved our prospects of preventing and suppressing Forest fires before they get away.

" Over and above all expenses for overhead, for salaries of administrative officers, and of the selling staff, the scientific, market and research work costs the Company several hundred thousand dollars yearly."

In addition to these subjects mentioned, I understand this Company is carrying on extensive and successful experimentation leading to increased cone and seed production resulting from the application of chemical stimulants to the tree-root systems.

* There are forty-two foresters employed by this Company.

In the United States research on forestry projects and in the related fields of forest products is conducted by the Federal Government, Industry, and other agencies.

As a matter of interest and comparison, I reproduce a table showing the details of these expenditures in the United States for the year 1953:—*

TABLE 157

UNITED STATES EXPENDITURES FOR RESEARCH IN 1953 BY SUBJECT-MATTER, FIELD, AND AGENCY

Major Fields of Forestry Research	Federal	Accredited Forestry Schools	Other Public and School	Industry and Private	All Agencies	Per Cent of Total
Timber production—						
Sciences	$550,000	$160,000	$655,000	$135,000	$1,500,000	3.3
Management	3,250,000	475,000	825,000	1,250,000	5,800,000	12.8
Protection	1,700,000	85,000	600,000	115,000	2,500,000	5.6
Totals	$5,500,000	$720,000	$2,080,000	$1,500,000	$9,800,000	21.7
Forest products and utilization	2,750,000	550,000	1,150,000	26,550,000	31,000,000	68.2
Forestry-related management—						
Wildlife	150,000	180,000	2,150,000	20,000	2,500,000	5.5
Range	770,000	144,000	275,000	11,000	1,200,000	2.6
Watershed	520,000	7,000	69,000	4,000	600,000	1.3
Recreation	10,000	79,000	196,000	15,000	300,000	0.7
Grand totals	$9,700,000	$1,680,000	$5,920,000	$28,100,000	$45,400,000	
Per cent	21.3	3.7	13.0	62.0	.....	100.0

* Source: "Forestry and Related Research in North America," p. 56, published in 1955 by Society of American Foresters.

It will be noted that of the total of $45,400,000, 21.7 per cent thereof was spent on matters relating to forest management and 68.2 per cent on forest products research. It is also worthy of comment that of the total expenditure 62 per cent was spent by Industry and private agencies and 21.3 per cent by the Federal Government.

In the same publication* (p. 221) in an article approved by a committee of the Canadian Institute of Forestry it is estimated that Canadian expenditures in 1953 "by all agencies on 'forest research' amounted to $3,500,000 and expenditures on 'forest products research' to $6,900,000 or a total of $10,400,000." The article continues:—

> "These figures do not include capital expenditures but they do include expenditures by the pulp and paper industry in 'development work.' In considering their adequacy it may be noted that the expenditures on 'forest research' were equivalent to 0.7 per cent of the net value of primary forest products (saw logs, pulpwood, etc.) and those on 'forest products research' to 0.6 per cent of the net value of production of the wood and paper products industry."

I do not know what is included in the expression " development work," and no breakdown of the $10,400,000 total is attempted; neither is there any analysis of expenditure by " agencies."

If the amount of money spent on various forms of research in this Province by the different agencies I have mentioned is any criterion for the rest of Canada and even after making a speculative assumption of research expenditures in the Eastern Provinces by the large pulp and paper companies and the Pulp and Paper Research Institute of Canada, concerning which I have not been informed, it would seem to me that the $10,000,000 estimate, which excludes capital expenditures, might be considered as somewhat on the high side. In any event it is of significance that this estimate indicates that about three times the amount of money is spent on product improvement than on forest development and management research. The same pattern is apparent in the United States. The emergent conclusion, at least as it applies to Canada, would seem to indicate that the Federal and Provincial Governments, which are directly interested in the development of the forest resource as such, are expending far less in relation to the perpetuation of this resource with its incalculable values than is being spent by Industry in research affecting manufactured wood and wood products.

To compare the amount of money spent on product research in terms of percentage of net annual value of that production with the amount spent on the forestry resource in terms of net annual value of primary forest production does not, in my opinion, take into sufficient account the enormous future values that can be expected from the intensive forest management of our forest capital asset. Unless our forest resource is protected and managed in accordance with the knowledge gained from fundamental and applied research projects, the annual production of primary products will decrease instead of increasing as it should, and our capital values will suffer impairment. It seems to me that the capital value and potential production of our forests should be considered as well as the annual income value when assessing the adequacy of forestry research programmes.

So far as this Province is concerned, I can only repeat that in order to maintain our forests on an intelligently managed and sustained-yield basis and to ensure that the products thereof can be processed here and sold at competitive prices on the markets of the world, it is essential that the fullest knowledge of our forest resource, in all its aspects, from the growing tree to the finished product, be ascertained by increasing and expanded research programmes. The Forest Service, responsible for management of the Crown forests, should in this endeavour play a leading and not a junior role as now.

Before closing this section I would add that there is in this Province an organization known as the British Columbia Research Council. It is in

receipt of a Provincial Government grant which in 1956 amounted to $180,000. The research services of this Council are available to industry generally at a price which covers the cost of the project. This group was not represented before me, and no evidence was led as to its activities, but, upon request, I have been advised that its research activities over the last ten years, in so far as they are relevant, have extended to the following subjects:—

Teredo damage and effects of poison to offset this.

Sawmills studies relating to motion and timing of carriages and headrigs. Causative factors of metal breakages in sawmill machinery.

Gluing studies relating to the joinder of lumber.

Utilization of cedar waste.

Studies designed to prevent fungus stains on wet lumber.

Pulp-mill studies: Projects designed to reduce odour and recover chemicals. Pulp-mill effluents. Corrosion in digester linings. Examination of the nitric acid and glycol pulping processes.

These various projects have been conducted by the Council at the request of various segments of industry interested in the problems presented and no doubt have contributed to their solution.

PROBLEMS OF THE INTERIOR

The questions raised during the Inquiry relative to problems peculiar to the Interior may be roughly divided into two categories: those relating to the Interior forests as such and those concerning areas of conflict arising from multiple forest uses such as grazing.

In previous sections of this Report I had occasion to consider a number of the Interior problems falling within the first classification, such as inventory, sustained yield, methods of stumpage appraisals, scaling, forest management licences, public working circles, and timber-sale policies under these specific headings. There remain in this first category some aspects not yet dealt with, such as selected tree-marking.

TREE-MARKING

In all timber-sale contracts, whether in public working circles, sustained-yield units, or unmanaged Crown lands, clauses are inserted therein as a condition of the sale designed (*a*) to secure natural regeneration, (*b*) to prevent avoidable damage to reserved stands, (*c*) to prevent avoidable waste, (*d*) to secure maximum utilization, (*e*) to provide for slash-disposal, (*f*) to designate trees required to be cut by a tree-selection method—to name the most important items. Each sale may present specific problems of its own, and contract provisions are designed from time to time to conform to conditions on the ground with, however, the primary objectives throughout of maintaining our forests in a productive state with an increasing quantity and quality of the forest yield. Tree-marking as a silvicultural requirement is a term inserted only in Interior timber-sale contracts, and then only when it is deemed a desirable practice in the type of stand sold. Its main silvicultural purposes are to remove defective and the older larger trees in the stand, reserving the younger healthy growing stock for future harvesting, the improvement of spacing in the residual stand, and to ensure residual and adequate seed sources.

Mr. J. S. Stokes, in giving his evidence, explained the policy of the Forest Service in this regard as follows:—*

> " The method most commonly used in past years for designating trees to be cut has been the diameter limit at breast height or stump height. This arbitrary method has been proved to be unsatisfactory for the most part as its application does not provide sufficient flexibility to the forester or silviculturist in the selection of those trees which he wants cut or left; as, for example, for such reasons as seed source purposes, pathological considerations, reserve stand purposes, proper spacing for maximum growth increment and seed dissemination.
>
> " While there is still a limited place for this method of ' diameter limit ' for designating trees to be cut, it is being gradually supplanted

* Exhibit 40, p. 9 *et seq.*

by the 'tree marking' method of designation, particularly where selection cutting is desirable. This method of designating trees to be cut or left is a most flexible tool in the hands of the silviculturist as it permits him to select only those trees for cutting in order to fulfil any one of a number of selection cutting treatments depending upon the silvicultural objective, which in turn is dependent upon the condition of the stand being treated, taking also into consideration the limitations determined by the marketability of the stand.

"Its application, however, is a complex process and can only be successfully carried out if there is available the necessary trained personnel, such as silviculturists, marking foremen and marking crews to:—

"(*a*) Determine the correct silvicultural objective.

"(*b*) Select the silvicultural treatment to accomplish that objective.

"(*c*) Carry out the actual marking for the silvicultural treatment selected.

"(*d*) Properly assess the merchantability of the stand under consideration so as to be able to correlate the silvicultural treatment finally selected with the economics of the logging operation so as to permit a reasonable operating profit to the logger.

"In marginal stands, of which there are many, this will mean a compromise; nevertheless the practice of silviculture must be practical. However, as the stands improve in quality and volume, so will the acreage of marginal stands show a steady reduction.

"The 'marked sale' usually requires that considerable quantities of presently merchantable timber be left standing and consequently has been the target of pronounced criticism of Forest Service policy, particularly on the part of smaller operators. It has been charged that marking is an untried experiment and an ill-considered and hastily adopted innovation of the B.C. Forest Service, it is urged that a diameter limit has served our purpose well and that marking should be abandoned in favour of a return to diameter limits.

"On the contrary, the forestry profession everywhere long ago repudiated the diameter limit as not only useless but seriously damaging to any forest estate. Marking, far from being an experimental innovation of the Forest Service, has for generations been the only accepted method of designating the cut in selection forests in the older countries and is fifteen years old in B.C.

"Tree marking has been used by the Forest Service as a tool for designating trees to be cut or left as the case may be, commencing about 1939 in the yellow pine-Douglas fir stands in the Kamloops Forest District, followed soon after in the same type in the Nelson

Forest District. Tree marking was extended in 1943 to the spruce-balsam stands in the Kamloops Forest District. Since then the practice has gradually been extended until at the present time it is being used in all Forest Districts in various stand types with the exception of the Vancouver District. While statistics are not available for the earlier years, the following table indicates the trend in the application of tree marking for designating trees for cutting:—

Year	Number of Sales	Acreage
1946	28	5,296
1947	14	3,937
1948	18	2,539
1949	27	3,605
1950	41	7,096
1951	63	14,090
1952	94	16,199
1953	134	21,805
1954	224	53,430
1955	287	58,316
1956	363	78,500 "

Mr. Stokes' comment that the " marked sale . . . has been a target of pronounced criticism of Forest Service policy " and that " it has been charged that marking is an untried experiment and an ill-considered and hastily adopted innovation of the B.C. Forest Service . . . " was borne out by the evidence given by a number of witnesses from the Interior both appearing as individuals and as representing such organizations as the Northern Interior Lumbermen's Association.

Operators in the Prince George Forest District were the most outspoken in their expression of dissatisfaction with the tree-marking policy. The late Mr. J. D. Gilmor, in presenting the views of the Crooked River Forest Protection Association on this subject, strongly opposed selective cutting and said in part:—*

" Primarily this region is a spruce country. This was overlooked when the methods found workable in parts of Kamloops and Nelson Districts were lifted bodily into this different type of stand. These other Districts, where the method of periodic partial cuttings was first (and successfully) tried out, are predominantly Ponderosa Pine, Western Larch and Douglas Fir. The same method had been applied earlier to similar stands in the United States.

"Any silviculturist who arrived in the Prince George Region should have seen immediately that this stand required altogether different treatment. Yet the same method was introduced, not on a justifiable small experimental scale, but on a large and increasing scale over several years."

He stressed the extra logging costs involved, the danger of wind-throw in the residual stands, and continued:—

" The climate in the region also is against periodic partial cutting.

* Exhibit 164, p. 9 *et seq.*

The ground is close to saturation point at many times in the year; falls of wet sticky snow often put a heavy burden on the tops of conifers, especially on the spruce due to its form of branching; and periodically there are heavy winds. Such a combination of conditions renders this system of logging a completely hopeless proposition, doomed to certain failure. In this case, zeal far outran knowledge, and it is most regrettable that in spite of continuing protests, and the mounting evidence before everyone's eyes ever since partial cutting was started, this method has been continued right up to the present. Foresters in the District are still marking the trees to be cut on timber sales. This is a wanton abuse of power because someone will not, even now, admit that a mistake was made, and that methods must be changed. Professionally, this is the only correct thing to do.

"Having condemned outright all proposals for the marking of trees in the Prince George Region, an alternative must be recommended. Both as a silvicultural problem, and as an economic matter, the solution now is to take out all the merchantable timber without regard to size; and without any restrictions concerning the areas which may be logged at one time."

The Interior Lumber Manufacturers' Association, speaking through Mr. A. B. Recknagel, was less emphatic and not opposed to the principle of stand management through the instrumentality of tree-marking, but considered that the Forest Service was not sufficiently armed with knowledge and experience to justify the application of this technique to the Prince George area. Mr. Recknagel said in part:—*

"As previously indicated, the forest conditions of this region are varied and treatment, even with extensive knowledge and experience, is difficult. In view of the small amount of study done to date, the lack of technically trained personnel in the field and the many basic problems still to be solved, it is surely unwise to establish firm policies or prescribed treatments. Yet there is no admission by Forest Service personnel that these policies and methods today are experimental."

In view of the international reputation and wide experience of these witnesses—Messrs. Gilmour and Recknagel—it is, I think, essential that the history of this development in the Prince George area be considered at some length. This is to be found in a presentation prepared by Mr. J. S. Stokes and his assistant forester, Mr. D. R. Glew (Exhibit 158).

I propose to reproduce the text of this submission in which references are made to studies conducted by various foresters. These are as follows, numbered as mentioned in the text:—

(1) *Barnes, G. H.:* The Development of Uneven-aged Stands of Engelmann Spruce and Probable Development of Residual Stands after Logging. For. Chron. 13:3:417.57. 1937.

(2) *Pogue, H. M.:* The Regeneration and Growth of White Spruce after Logging. B.C.F.S. Tech. Pub. 29. 1946.

* Exhibit 151, p. 14.

(3) *Fraser, A. R.:* Logging Damage to Advanced Growth in the Spruce-Balsam Type. B.C.F.S. unpublished report. 1948.
(4) *DeGrace, L. A.:* The Effect of Tree Length Skidding on the Residual Stands. B.C.F.S. unpublished report. 1949.
(5) *McKinnon, F. S.:* Correspondence with Dr. C. D. Orchard. B.C.F.S. files. 1948.
(6) *Northern Interior Lumbermen's Association* brief submitted to the Honourable E. T. Kenney, Minister of Lands and Forests, on cutting practices in the Northern Interior. 1949.
(7) Miscellaneous correspondence, *F. S. McKinnon*, Prince George District. B.C.F.S. files. 1950.

His submission follows:—

" Crown timber was first auctioned in the Prince George Forest District in April, 1914; under the terms of the first Timber Sale contract all trees over 10 inches in diameter could be cut, provided more than 50 per cent of their volume was suitable for the manufacture of lumber of any grade. The terms of the first sale set a pattern for the harvesting of timber in the Northern Interior, which has continued unbroken for forty years. During the intervening years the Forest Service have been amassing information on the management of the Spruce-Balsam type, almost without exception relevant studies have emphasized the necessity for conserving the advance growth and leaving an adequate residual stand.

" In the period prior to the conclusion of the Second World War the majority of operations logged with horses, so that despite the virtual clear cutting of logged-over areas the damage to the residual stand, which resulted from logging, was small. Studies of the early logged-over areas were initiated in 1926; these have shown that despite the condition of the stands after logging the majority of stands could support a second cut in 120 years (Barnes (1) Pogue (2)). This was found to be possible due to the effect of release growth on the residual Spruce, and the great recuperative power of individual sites. However, these studies were on areas which had been horse-logged with a minimum amount of damage; furthermore, it should be emphasized that a fixed cutting diameter on a variable stand results in a range of conditions. It was this factor which influenced Pogue (2) to suggest that marking to a flexible diameter limit would provide better results in terms of the residual stand.

" However, the problem of managing the Spruce-Balsam type was changed by the advent of heavy machinery. It now became possible to extract whole trees instead of portions thereof, as had been hitherto necessary in the case of horse-logging. Moreover, since the ' cat ' was a relatively new machine and the post-war boom was creating a boom in lumber, the new mills, which were rapidly springing into being, had to draw on an unskilled woods population for assistance. In terms of the stand left after logging, the result of heavy machinery in the hands of unskilled operators was disastrous. Immediately studies were initiated to determine the effect of the problem, and Fraser (3) in 1948

and DeGrace (4) in 1949 found that up to 65 per cent of the reserve stand was liable to be destroyed in logging, as compared with a possible 65 per cent survival after horse-logging, instanced by Barnes (1). The results of these studies concluded that while tree-length logging, as presently carried out, was extremely destructive, if adequate operational planning and supervision were available the results should be comparable to horse-logging. Nevertheless, the results of logging since these studies have not shown any appreciable change in either method, planning, or the resultant destruction of the reserve stand. In line with the conclusions outlined with these studies, the Forest Service introduced the submission of a logging plan as a condition of the award of a Timber Sale; in many cases this has effected an improvement in logging methods and operational planning. However, many operators still regard the submission of a logging plan as another irritating regulation, and having submitted the minimum requirements, proceed to operate in their own way with the same disastrous consequences noted by Fraser (3) and DeGrace (4).

" McKinnon (5) was the first to evaluate the damage caused by tree-length logging, and it was his analysis which led to the studies by Fraser (3) and DeGrace (4), and as an interim measure a restrictive clause was placed in Timber Sale contracts sanctioning only logging in 32-foot lengths unless permission in writing was granted by the District Forester. This restriction raised a storm of protest from the Industry, with the result that the Forest Service agreed to accept tree-length skidding and instead to initiate cutting practices to compensate and provide for an early second cut (N.I.L.A. brief, 1949 (6); B.C. Forest Service correspondence, 1950 (7)).

" The next step was to raise the diameter limit to which the stand could be logged. As far as possible it was sought to treat each stand on its individual merits so that by 1951–52 the average cutting diameter on a Timber Sale was 15 inches d.b.h., though individual sales were awarded with 17 inches and 19 inches d.b.h. limits. Naturally, the residual stands following logging contained a better stocking than the previous logging pattern, which had high graded all merchantable Spruce to a 12-inch-diameter limit. There was, however, still the point raised by Pogue (2) the effect of a fixed diameter limit on a variably stocked stand, as before sometimes the results were extremely gratifying, but in the main there was room for considerable improvement. Pogue (2) had previously emphasized that a uniform distribution could only be achieved by marking to a flexible diameter limit. In his bulletin Pogue states, ' It was observed that over-cutting has an adverse effect on the residual stand, and on regeneration. It seems safe to estimate that an average of thirty-five Spruce trees per acre have been logged. However, the fact is that the forest is not uniform but is

patchy with small openings and groups of large Spruce trees. It is apparent that the degree of cutting has been very heavy, inasmuch as the scattered trees within, and surrounding the openings, are removed, undoing the effort of the forest to close the gap. Furthermore, the groups of large Spruce are entirely cut out, thereby creating openings. In these places the degree of cutting approaches 100 per cent and this is largely responsible for lowering the average stocking below satisfactory levels.' It was, therefore, decided to initiate marking, since, as Pogue observed, 'Adequate restocking of cut-over areas was found to be the result of a well-distributed residual stand, rather than any other factor or combination of factors. On the average the virgin stands are patchy areas of well-developed uneven-aged, selection forest. The openings and the clumps of large Spruce trees create a special problem in applied silviculture which has not been taken care of by standard cutting practice, with the result that fail spots have been left and the degree of restocking lowered below that required for satisfactory regrowth.

" ' It is thought that these problems could be overcome largely by marking the trees to be cut, in combination with a flexible diameter limit. Marking seems necessary to handle the special problems presented by the openings and groups, while an increase in the cutting limit will serve many useful purposes, such as raising the standard of restocking to a satisfactory level and improving the residual stand by diminishing the slash and blowdown, protecting advanced growth and preventing the development of dense underbrush. In addition to attaining the required growing stock for a second cut in less time, it is expected that the method recommended will reduce the spring flash hazard by providing a uniform degree of shade and prevent the sudden drying out of slash and dead vegetation before the appearance of the new leaves.'

" In the earlier sales in 1951 and 1952 only the major species, Spruce and Fir, were marked; minor species, Lodgepole Pine and Balsam, being logged to a minimum merchantability of 12 inches d.b.h. Also, the relationship between the economics of logging and the requirements of the individual stand were not equitably balanced, inasmuch as the marking tended to favour the harvest at the expense of the residual stand. Consequently, many of the early attempts at stand treatment were not too successful. The next step was to adjust the balance between the stand requirements and the economic requirements. However, in order to sweeten the pill, minor species were still cut to a diameter limit. Naturally, the results were still in accord with Pogue (2) and eventually it was realized that all species must, perforce, be marked if a relatively uniform canopy is to be preserved.

" It has been frequently stated by the Industry that the present policy of marking Timber Sales is an experiment. In point of fact it is far from that; it is a logical step in a progressive sequence. Forestry is dynamic, marking is merely a stage in its evolution.

" In the early logging examined by Barnes the damage to the residual stand was limited; however, the mechanization which followed the Second World War has increased damage to the residual stand to the point where a second cut within 120 years, under a minimum diameter limit, is extremely doubtful. Thus it was that the designation of trees to be cut by marking was instituted, and subsequently a marking manual was drawn up for the use of all field officers.

" Stand treatment is a difficult problem to assess in absolute values since there are always innumerable variables which require careful consideration. Economic factors often preclude the most suitable treatment and often the only workable solution is to be found in a compromise. In marking a stand for harvesting, economics are a prime factor; however, in terms of treatment, the removal of a proportion of the deformed smaller stand is desirable. This is an economic problem since the Industry shows a grave reluctance to harvest minor species such as Pine and sound Balsam, claiming that it is not economic due to the incidence of rot and the poor quality of lumber produced. Therefore, in effecting the treatment, the pressure brought by Industry often forces a compromise which is in effect wholly unsatisfactory, and, in some cases, little short of disastrous. These are serious limitations, but despite these handicaps it is felt that time and education will solve many of the difficulties which result from an inevitable resistance on the part of human nature to change in any shape or form.

" To date, the emphasis has been on the designation of the trees to be cut by marking; however, this does not mean that all stands are suitable for such treatment, nor is such treatment desirable in all cases. Spruce-Balsam as a type has a wide range, and of all the different forest types its successful management is a difficult problem; even in countries with considerable experience in this type, Foresters seldom agree on its treatment. In a Province the size of British Columbia, the range of conditions under which this type occurs is diverse, and ultimately each will require separate treatment. Such is the picture in terms of silviculture; in terms of management there is the dual problem of access and the conversion of the virgin stands into manageable forests. Therefore, the policy has been that of trying to secure the maximum benefit in terms of both management and silviculture, in what is a transition period from exploitation to crop management, by effecting a maturity selection. This should result in the removal of the overmature values, the opening up of remote areas, and the creation of a skilled woods population. It is not by any means a final

answer since this must be the result of research which is an integral part of the present program. First, the different types must be isolated, then the different treatments tested for each site to discover the most practical solution; meanwhile, Industry must be supplied with raw materials, nor should the constant demand for raw materials force us to sacrifice our forests for present gain. The present policy aims at fulfilling all these objectives; that it is a logical development has already been demonstrated.

" In conclusion, it should be emphasized that only a flexible policy can cover all the varying types of stand; and, furthermore, it must be sufficiently flexible to adjust itself to the dictates of experience. Experience has already shown that certain types of stands require a different treatment, and the necessary adjustments in stand treatment policies have been made. It will be some years before all the answers can be obtained; in the meantime, the present policy appears to be the only equitable solution to the requirements of both the forests and the Industry."

I am satisfied that the charge that selective tree-marking was introduced " as an ill-considered and hastily adopted innovation of the Forest Service " cannot be accepted. The evidence on this subject generally has led me to a contrary conclusion, although it is undoubtedly true that it will be some years—if ever—before the complete answers to all the problems involved may be found. This is true in relation to almost all the many enigmas facing foresters when dealing with such a complex and slow-growing entity as a forest.

Wind-throws.—Both Mr. Gilmour and Mr. Recknagel stressed this point as an argument against selective cutting.

Mr. Gilmour said:—*

" The spruce stands in the Prince George Region normally are made up of a large number of stems per acre. There is the old-growth overstory, and usually much advance growth of all sizes from seedlings up to trees approximately 30 feet high. The old stand consists of tall trees, many of them very tall in proportion to their root systems and their basal diameter. These trees grow tall because in a dense stand they reached up towards the light; and they have been able to stand there until now only because they are protected by their many neighbors. Among the spruce there are a considerable number of balsam, which have helped also to support their neighbors, but these are dying rapidly so that the protection they afforded in the past will soon be removed. Owing to defects, few are removed in logging but nature is rapidly taking care of the remaining members of this species. The only deeply-rooted trees are Douglas Fir, but their numbers per acre are

* Exhibit 164, p. 10.

few, and many of them, not merchantable, are now dying so that their protection too will soon disappear. The roots of spruce are close to the surface; due to tough competition for root-space the circle made by overturned trees, even the largest ones, is only 15 to 18 feet in diameter. The form of the tree itself, and its rooting habits, make it a most unlikely candidate for long survival after its neighbors are gone." Mr. Recknagel said:—*

" In consequence of this variability in diameter distribution of spruce and balsam, there is throughout the type an ever-present danger of windfall. The individual trees are not only shallow-rooted, but usually occur in dense clumps where each tree literally leans on its neighbor for support. Under such circumstances, windfall is almost inevitable and indeed it has proved to be the number one problem wherever spruce occurs, in Europe as well as in North America. Years ago, a German forester in the famous Black Forest said: 'We spend much time burying the dead.' "

He then referred to a number of supporting authorities, including a study by Mr. J. H. G. Smith contained in a thesis leading to a degree at Yale University. This related to windfall damage in an Engelmann spruce stand two or three years after having been selectively logged and 50 to 70 per cent of the original volume removed. Windfalls accounted for 7.8 per cent of the trees and 15.8 per cent of the volume of residual spruce in the stand, and for balsam 15.3 per cent of the trees and 21 per cent of volume respectively.

Mr. Smith's quoted conclusions are of considerable interest, wherein he said " light single tree selection, salvage-group selection and clear cutting in alternate strips holds most promise of success." These are alternative methods of management cutting, and he apparently favours single tree selection as it is his primary choice provided it is done with some discretion.

Mr. Stokes shares this view and said in this regard:—

" In determining the application of any silvicultural system, one of the many factors which require careful consideration is the probability of heavy losses resulting from wind damage. Opponents of selective cutting always charge that losses caused by wind damage offset any additional growth in the form of increment. Such statements are generally unsubstantiated or based on a *few* isolated cases without regard to the overall picture. In view of the criticism directed against selective cutting, several cut-over areas have been subjected to careful examination.

" Single tree selection has only been practised in the Prince George Forest District on a wide scale since 1952. During the intervening period, field observations have led to many changes in technique

* Exhibit 151, p. 4.

which will minimize future losses. In the initial stages it was considered sufficient to designate only the major species and to cut the minor species to a minimum diameter limit; experience has since shown that in order to prevent the canopy from being opened up in an irregular fashion it is necessary that all species be marked.

"A further misconception which has required adjustment is the idea that the spacing of the residuals is of paramount importance, even to an extent that to preserve regular spacing, " superdominants " would be retained. Experience, however, has indicated that spacing must be tempered by the need to preserve a regular canopy.

" This fact has now been appreciated, and marking techniques have been adjusted accordingly.

" During the collection of field data on wind losses it was repeatedly noticed that losses were generally confined to localized areas, and that often such areas would be in the Devil's Club vegetation type; in the light of these observations the marking of single trees in this type has been modified and the treatment changed to selection in groups or patches as dictated by the topography.

"Another factor which has received attention is the importance of windbreaks on certain aspects, especially where the topography exerts a funneling effect upon wind behaviour. These are but a few of the more important changes which have been instituted in an endeavour to improve field techniques.

" It should be stressed that the effect of wind is variable, both in cut and uncut stands.

" The following table is a summary of the information collected during an extensive study covering some 1,300 acres.

"TABLE 158

"SUMMARY OF LOSSES ATTRIBUTABLE TO WIND DAMAGE IN TERMS OF NUMBER OF STEMS PER ACRE AND VOLUME PER ACRE, TREES 12" D.B.H.+ IN CUT AND UNCUT STANDS.

Area	Type of Stand	Type of Cutting	Acreage Involved	Number of Stems Lost per Acre, 12"+	Gross Volume Lost in Cu. Ft. per Acre, 12"+
Crescent Spur	Uncut	*Nil*	50	90.8	3,680
X50668	Cut	13" d.b.h. S. diameter limit	152	2.5	70
X53652	Cut	15" d.b.h. S. diameter limit	100	17.5	535
X58860	Cut	Marked all species	70	0.1	5.4
X60604	Cut	Marked all species	55	0.13	5.3
X51246	Cut	Marked all species	40	0.45	30
X59667	Cut	Marked S. only	76	0.54	29.5
X58218	Cut	Marked S. only	78	0.6	38.1
X45835	Cut	Marked F.S. only	200	1.28	26.34
X63033	Cut	Marked all species	60	2.7	106.5
X53651	Cut	Marked all species	110	2.87	132.17
X44147	Cut	Marked S. only	98	3.0	126.85
X59394	Cut	Marked all species	100	3.6	181.1
X53759	Cut	Marked all species	45	6.40	285.8
X62145	Cut	Marked all species	20	21.45	591.5

"The above table clearly illustrates the variability of loss attributable to wind; however, it cannot be concluded that because one virgin stand at Crescent Spur suffered a loss of 3,680 cubic feet per acre, all virgin stands are liable to similar losses, nor, conversely, can it be concluded that because one stand which was cut under a single tree selection suffered a loss of 591.5 cubic feet per acre, all stands so treated are liable to similar losses. Indeed, considerable caution is necessary when interpreting wind losses since an apparent severe loss in one stand may not be as catastrophic as was feared when evaluated in terms of the undamaged residual stand; thus, in the case of X50668 and X53652, which were harvested to a fixed diameter limit, the volume loss was only 70 and 535 cubic feet per acre, but in terms of the residual stand 12"+ this represents a loss of 100 per cent and 81.39 per cent, whereas in the case of X63033 and X62145, which were harvested under a single tree selection, the loss of 106.5 and 591.5 cubic feet per acre represents only a loss of 3.12 per cent and 22.42 per cent. Moreover, it should be evident that since wind damage is the result of a natural phenomena its periodicity and effect are variable and unpredictable, in addition to the data presented, many stands harvested under a single tree selection have suffered no damage just as have the majority of virgin stands.

"However, one factor is self-evident, and that is that all stands suffered natural losses, of which wind damage is a significant factor.

The table reproduced below depicts the mortality occurring in a virgin stand over a 20-year period, and is of considerable value in interpreting the figures quoted in Table 158.

" TABLE 159

" MORTALITY OCCURRING IN AN UNCUT SPRUCE-BALSAM STAND OVER A PERIOD OF 20 YEARS IN TERMS OF THE VIRGIN STAND 12" D.B.H.+ STEMS AND VOLUME PER ACRE PER YEAR.

Mortality	Species	Period 1928–38	Period 1938–48
Number of trees	S	0.57	0.30
	B	1.20	0.52
	All species	1.77	0.82
Number of trees as percentage of residual stand	S	0.94	0.5
	B	4.68	2.26
	All species	2.05	0.99
Volume, cu. ft.	S	32.7	28.6
	B	53.3	22.2
	All species	86.0	50.8
Volume as a percentage of residual stand	S	0.81	0.66
	B	4.93	2.16
	All species	1.67	0.95

(Based on growth and yield plots, Aleza Lake Experimental Forest.)

" It is also variable in its effects on stands logged on a single tree selection, even to the damage caused by the same storm on adjacent stands. This is illustrated by Table 160.

" TABLE 160

"AN ILLUSTRATION OF THE VARIABILITY IN LOSSES SUSTAINED IN AREAS CUT UNDER A SINGLE TREE SELECTION EXPOSED TO THE SAME WIND-STORM, CROOKED RIVER FOREST, JULY 7TH, 1954.

Timber Sale No.	Loss per Acre, No. Stems 12"+		Loss per Acre, Cu. Ft. Stems 12"+	
	Before Storm	After Storm	Before Storm	After Storm
X58218	0.087	0.6	8.87	38.1
X58860	0.025	0.1	1.0	5.4
X59394	0.016	3.6	0.83	181.1
X59667	0.34	0.54	22.85	29.5
X60604	———	0.13	———	5.3

" Thus it would appear that while losses occur in both cut and uncut stands, and while losses are such that in isolated areas they can

be classed as severe; nevertheless, it does not appear either reasonable or justifiable to evaluate a cutting method on the existing data. Moreover, it is the contention that while wind damage is a factor which requires long term assessment before positive conclusions can be formulated, the present evidence points to the fact it is not the grave problem that critics of the selection system lead one to believe."

I am of the opinion that the foregoing observations of Mr. Stokes demonstrate that the Forest Service is fully conversant with the danger of windfall losses being aggravated by selective cutting conducted without regard thereto in areas in which this is a more likely occurrence. It is also apparent to me that to condemn this principle of stand management for this reason is much the same idea as the old story of throwing the baby out with the bath water.

Marking Done by Inexperienced Men.—When listening to some of the complaints concerning the manner in which the actual tree selection was carried out in the forested areas, the impression was left that this important function was carelessly executed by a crew of casual youngsters entirely devoid of any training or skill in this technique.

Mr. Recknagel said for example:—

". . . Of all procedures, the marking of a forest for cutting requires a perception and skill which taxes even the best foresters. No European forester would think of surrendering this 'Act of Finality,' the results of which will effect the forest for decades—yes, for centuries to come.

"We need not stress the appalling consequences of leaving this work to scantily trained, inexperienced youngsters."

In view of this expression of opinion, echoed by other witnesses as well, I deem it advisable to examine the validity of this contention also at some length, not only in fairness to the Forest Service, but also to give some assurance to operators in the Prince George area that their apprehension, in this regard, is, in my opinion, based on a lack of factual knowledge.

Mr. N. V. Mason, a graduate forester with degrees from the Faculties of Forestry of the University of British Columbia and Oregon State College, is the district silviculturist for the Prince George Forest District and as such is charged with the responsibility of tree selection in that area.

His evidence is as follows:—*

"All the sales within public working circles are automatically referred to me, and each one is studied, aerial photographs are examined, stand tables are examined, and where there is any doubt whatever, we have a subsequent examination, or, as we call it, a pre-treatment examination, either by myself or with the Ranger or with the head of Man-

* Transcript, p. 7558 *et seq.*

agement (Division), or if neither of us are available, at least the marking supervisor will go out and examine the area, submit a report, before the treatment is prescribed. Now, for the sales outside the working circles, we rely on the head of Management (Division) for his assistance to bring to my attention any of the sales which may have some silvicultural problem that may require my attention.

" Q.—Please start at the beginning. A man puts in an application for a timber sale and the decision is made that it must be marked. Now, tell me please, the mechanics, and I want you to tell us and the Commissioner who says what tree is marked, and mechanically how it is done. A.—The decision is made whether a timber sale is to be marked or not to be marked, and after that is made the written instructions as to exactly how it should be marked, on what basis, what flexible diameter limit is to be applied, and any other pertinent information is written and discussed with the marking supervisor.

" Q.—Now who writes those instructions? A.—I write the instructions.

" Q.—For every timber sale that is marked you give written instructions?

"A.—Not to every timber sale, as a matter of fact, probably a small number of them because a lot of the timber sales are adjacent to areas that have been previously marked or are quite straightforward. There is only the sales which have the exceptional or some feature which hasn't come up before.

" They are all discussed with the marking supervisor, who in turn draws up or instructs his clerk to get all the information from the timber-sale file—that is, from the cruise and all the available information—compile it into data sheet showing the location of the sale, boundaries, the type maps, showing the different types, the stand tables for each type, the number of stems in each of those stand tables. All this information is compiled and the crew foreman is then briefed. These instructions are handed to him. If there are any unusual features of this particular treatment, why the supervisor, or at least the assistant supervisor, will go out with the crew and initiate them, show them in the field just what is the technique to be practised.

" The marking foreman, once he is oriented as I said, goes around the area, locates his corner posts, traces the boundaries of the sale, lays out his strips, 10 chains apart—that is, they are just guide lines for them to orient themselves on each timber-sale area.

" While they are laying out these strips, they are taking notes to make sure that the conditions that they encountered are the same as those conditions on which they were instructed, and if they run into any deviations, such as the occurrence of a patch of immature that was perhaps missed by the cruising crew or the Ranger or whoever cruised

the area, and which wasn't covered in the instructions, a note is made of that and he comes back, or leaves that area until it is convenient for him to consult the supervisor what he should do about that particular area.

" Once these lines are blazed in, they will go ahead and start marking, three men abreast, and the foreman in front of them. Now, according to the rules that they have been given, there are a lot of trees that come out, as a matter of fact, or are obvious—that is, trees over a certain diameter, let us say trees over 20 inches, just taking a figure at random—those trees automatically come out and there is only a certain range in there between, let us say, 20 and 14, in which they really have to decide. There are certain features or certain characteristics of the trees that help them to decide whether to mark or not mark.

" The number of trees that are actually controversial are narrowed down considerably and the marking crew foreman is right there on the spot to tell them whether to leave it or take it. After a man has marked for a year or so, he really doesn't need too much guidance. He could make his own decisions, having been briefed properly by the marking crew foreman.

" Very often before they start marking a sale, they try to get the bush foreman or the logging foreman out on the area to orient them, to show them where they intend to put the logs if a logging plan is not already on the ground, or if one already is, they will go over it with him and discuss the logging features of the marking. That is, if the roads are already on the area, have either been bulldozed or even so much as blazed or staked or indicated in any other way, it makes it very very handy for the crew then because they know which way the trees will fall, where they could intensify the marking, where they could go lighter to more or less fit with the requirements of the logging.

" Q.—How often will your crew consult with the logging foreman? A.—I couldn't say how often. But they are instructed in all cases to try and do that. That is part of their job, and I think as time goes on, perhaps the logging foreman will realize that it is to our mutual advantage to co-operate with us and actually make a point of going out there and showing the crews what his desires are in the way of logging.

" Q.—I have no doubt it makes it much easier for the logging operator if in fact he has the opportunity of meeting the marking foreman and showing him how he plans to log the area. A.—Yes.

" Q.—Now, there has been evidence given by Mr. Stokes regarding flexibility of treatment. Now, going to one timber sale, do you necessarily mark all the sale? A.—No, as a matter of fact, we treat each

type on its merits, and very often, in fact in most cases, it is found necessary to, let us say, differentiate between the very wet areas and the dry areas. The wet areas, such as swamps where trees are scattered, very tall, and are liable to be caught by the wind, and easily blown over, very often we have evidence on the ground that progressive windfall has taken place, and we endeavour to have those areas pretty well clear cut and restricting our marking to the more firmer ground with better stocking.

" Q.—How many or what proportion of the timber sales marked will you personally visit? A.—I am out in the field about half the time, so I would probably visit about 100 a year.

" Q.—And in an average year, let's say this year, how many do you think you will mark? A.—To date, as I say, we've had seventy-four.

" Q.—You then apparently will visit the majority of sales marked in any one year? A.—I wouldn't say the majority, I would say I would visit all the areas that presented some problems, a specific problem, and were unlike anything else that had been marked in the past, and which upon examination were found to be all right.

" Q.—Now, your assistants, your supervisor and assistant supervisor, do you regard them for any ordinary marking procedure to be competent to supervise the marking of timber sales? A.—Yes, I believe they are. As a matter of fact, I didn't mention this when I was giving you the information on the crews, and that is that we have a definite training schedule. After a man has been hired and processed through the office, we put him out with the assistant supervisor on these various special jobs, such as orienting the new crew. He is just a helper. He is on with them for about a week or two or whatever is convenient. That is just more or less to give him the feel of the work, after which time he is assigned to a permanent crew. There the foreman takes him under his wing and he is the man that is given most of the guidance, in the field. In fact, he probably tells them which tree to mark every time. Now, after he has been on for about two months and we have a sufficient number of them—that is, four or five new members that have had only about three months' experience—we recall them from the field and give them one week of intensive training. We take them out to Aleza Lake.

" Q.—Have you a syllabus there? A.—I have, actually these are just the notes I have used, but some of the things we cover are such such as Forest Service organization, their attitude, responsibility, behaviour, and esprit de corps as Forest Service personnel. We have a little trouble in that regard because they don't realize what is expected of them, and we have been accused very often of hiring rowdy kids that did not behave like proper Civil Servants. As a matter of fact, these are just notes of interest. I have given them about an hour or

two on the public working circle set-up, just what the objectives are, and all about the terminology, allowable cuts, inventory and so on, the management licences. These are just for their own information. And then we swing right into the actual silviculture, various treatments, the why's and wherefore's of that single tree selection, and teaching them the difference between a healthy and an unhealthy tree, making sure that they know; by this time they usually know all these things, but we try not to leave anything to chance, make sure they know all their species, the various defects, and all the other things that are considered in marking. During these spring break-ups, we take them out, we lay out an area—oh, about an acre—and we tag all the trees and we ask each man to go through the area, give him the objectives of the treatment. They have to go through the area and note the numbers of the trees that they would cut. We then correct their papers, go through the stand and explain the why's and wherefore's of their choice. That's just about the most practical test we can give these men.

" Q.—Your key man, however, is obviously your foreman. A.—Yes, he is the brains out in the field.

" Q.—Are you yourself satisfied that if you went out in a timber sale after one of your foremen and your crew had been through it, that if you marked it that the end result would be much the same? A.—Yes, they may pick, let's say two trees, they may pick a tree that I wouldn't pick, but the over-all result is certainly very close to what I would do.

" Q.—Professionally then, you assure us you're satisfied? A.—I am satisfied.

" Q.—From the point of view of supervision, do you ever find occasion where an area has to be re-marked? A.—Oh yes, that happens.

" Q.—Well, how would you discover that an area should be re-marked? Would that arise from complaints from the operator or from inspection by yourself? Or from both cases? A.—As a matter of fact, the operator always complains, but we endeavour to check the marking where we have any reason to doubt. If the particular stand was, let us say, particularly variable, or we are not in any way sure of the results, we will go out there and examine it and adjust it.

" Q.—Since the operator always complains, is there any occasion when you don't inspect it when he does complain A.—Well, it's just the degree of complaint.

" Q.—So if he wants it re-marked, he makes a vigorous complaint? A.—Maybe I shouldn't say this. But during these complaints, I might add that I try, or at least the supervisor will try, to go over the area that has been marked or was marked and logged with the operator

and try and explain to him, or if there is some obvious error, and errors will arise, as in any other business, I suppose, he is the man who is very often more familiar with the conditions than we are, and if he can point out any obvious errors, we're only too glad to adjust it.

" Q.—Do you feel that your marking techniques and procedures have reached the degree of skill and competence that satisfied you, or do you feel that it can be improved? A.—I think most everything can be improved, and certainly marking or silvicultural treatment in this area can be improved.

" Q.—How would you improve it? A.—One thing, I would like to spend more time training the crews, and perhaps be in a position to offer the very valuable men, let us say, better pay so that they would stay with us and retain that experience. That would result in improvement of the actual results.

" Q.—Would you welcome co-operation from Industry or Industry foresters in connection with submitting plans for stand treatment in these working circles? A.—As a matter of fact, I would. That is being done now in a manner of speaking, because a lot of the foresters in this area, I shouldn't say a lot, several of them, before they apply for any particular area, they have often asked me to go out and examine the area with them to give them an idea of what I thought should be the treatment on the area, and it actually is a sort of a discussion. the ideas of the company foresters certainly are considered and, in fact, very often adopted.

" Q.—Is there any directive under which you operate, written directive? A.—There is no written directive under which I operate.

" Q.—How is the policy determined in your mind? You have to implement it. How do you arrive at what the policy is, by what process? A.—I believe the policy has been established—that is, to treat each area on its own merits, in such a way as to keep the forest land productive.

" Q.—Are those then your instructions? A.—Those are the principles under which I work.

" Q.—Are you free then to decide that in any particular stand that it should be a diameter limit cut or clear cut, or strip logging, or any other stand treatment? A.—I don't decide, I only recommend.

" Q.—To whom do you recommend? A.—I recommend the treatment to the management officer who, in turn, consults either the District Forester or, if necessary, carries it to Victoria. I believe that any treatment that I recommend, whether it be clear cutting, single tree selection, or what, I do that with those principles in mind. It is all aimed at keeping the land productive.

"Q.—Just one further word upon variation of treatment. You mentioned that sometimes you cut to diameter limit, sometimes you decided to adopt patch or group selection, I think, and then single tree selection. In your practice in marking sales in the Prince George District, do you on various sales recommend and have carried out a combination of those? A.—Yes, as a matter of fact, quite a few sales have.

"Q.—You have told us you made recommendations and the recommendations go to Management. Are your recommendations generally accepted? A.—Yes.

"Q.—Is it only the occasional one which is modified or varied? A.—Yes.

"Q.—The next thing is, as far as outside working circles are concerned, do you mark all sales? A.—Oh, no.

"Q.—Is there a lesser proportion of those that you'd mark in comparison to those you'd mark in working circles? A.—It's only a very small proportion. Until very recently there weren't any, I think. Very few anyway."

While Mr. Mason, as district silviculturist, is not limited in the exercise of his own discretion in that behalf by any set and specific rules, marking crews are assisted in their endeavours by a Marking Manual prepared by Mr. G. L. Glew as Assistant Forester for the Prince George Forest District. This is a carefully prepared document of considerable length wherein the relevant factors to be considered are outlined in detail and supplemented by illustrative diagrams.* In a foreword Mr. Glew writes:—

"The following notes and diagrams are intended as a guide, however, nothing can take the place of native intelligence in the application of a few simple principles which may be summarized as:—

"1. Make certain you understand the instructions which apply to individual Timber Sales and that you have all the relevant data, maps and photos.

"2. In actually marking any Timber Sale constantly ask the following questions:

"(*a*) Am I marking the larger trees?

"(*b*) Is the residual stand thrifty and of good form?

"(*c*) Is my spacing uniform and does it leave the stand reasonably windfirm?

"(*d*) Am I giving the operator an economic cut?

"If you can answer these questions to your satisfaction and mine then the job has been well done. Remember, marking is a very important task—you can make or break a stand, or an operator, if you do a sloppy job, also never forget once a tree is cut it can't be replaced."

* Exhibit 161.

It is of interest to note the last quoted sentence is a reiteration and recognition of the thought expressed by Mr. Recknagel that tree selection for cutting is an "act of finality."

I have examined this question of stand management in the Prince George District by selected tree cutting at some length, because, as I said, the attack upon it was spearheaded by such eminent foresters as the late Mr. J. D. Gilmour and Mr. A. B. Recknagel, and, secondly, because the Forest Service has not had or taken the opportunity of acquainting the forest industry in that area of its policy and motivation in that regard.

I am fortified in this last conclusion by the evidence of Mr. De Grace, an experienced consultant forester at Prince George. He said, when giving evidence on behalf of the Ahbau Forest Association:—*

> "Q.—Has there been no explanation given to the members of your Association, or has it not come to your knowledge as a forester practising in Prince George, the reasons behind the present single-tree selection system of the Forest Service? A.—I can only speak for myself on that point. I am not aware of the policy, and I think I should be because I am in very close contact. I think that more publicity of this policy would be appreciated.
>
> "Q.—Have there been any meetings held by the District Forester or by other members of the Forest Service and members of the industry or of the various Associations in which this policy has been explained, questions have been asked and answered? A.—There have been meetings, but, to my recollection, there has never been a comprehensive outline of the policy.
>
> "Q.—You feel, in other words, that if more publicity were given to the aims and objects of the policy that everybody would feel better about it? A.—Operators are not going to feel too good under any circumstances if they lose one-half of the merchantable timber that is at their disposal. But I do think it would go a long way to improving co-operation if the policy was better understood."

Critical comments (as I have recorded) were made concerning the youthfulness of the marking crews. Their work is rigorous, and anyone who has travelled through forested areas with a heavy undergrowth of devil's-club, frequently encountered in the Prince George area, knows it is a task for young men. Add to this the hardships of inclement weather and the weight of the equipment that is carried, it can be readily appreciated that this is not the sort of job that has any appeal to men of mature years.

There are five marking crews in this area, each composed of a foreman and three assistants. These crews are under the direction of a supervisor and an assistant supervisor. The supervisor has had more than four years'

* Transcript, pp. 7660–7661.

experience, the assistant supervisor close to three years. The four foremen range in age from 19 to 33 years. Their experience on marking crews ranges from one year and two months to one year and six months. The crew members are in the 20-year age bracket, with an experience of from two months to slightly over one year.

Upon consideration of the evidence adduced and giving due weight to the extent of the training received by the marking crews, the supervision exercised up the ladder to Mr. Mason and if necessary, on reference, to Victoria, the apparent willingness of Mr. Mason to review personally areas concerning which rational complaints are received from operators from time to time, coupled with the manner in which the Service seeks the co-operation of the logging foreman on the ground, I am led to the conclusion that tree-marking in the Prince George area, while not perfect, is, in general, a well-directed and properly executed endeavour. As it appears that this programme will be progressively extended in the future, more staff is essential and higher pay for the marking crews an indicated necessity in order to keep recruits and trained men on this work.

The following figures show the trend toward an increasing intensity of stand improvement by the selective-cutting method in the Prince George District, although it is manifest that a great number of unmarked sales are being made both within and without public working circles.

TABLE 161

MARKING

Prince George District

Year	Number of Sales Awarded	Area Awarded (Acres)	Number of Sales Marked	Area Marked (Acres)
1950	543	63,213	8	540
1951	737	106,629	8	710
1952	608	108,556	13	2,237
1953	599	96,092	21	2,745
1954	533	96,913	56	8,145
1955	755	161,583	107	15,575
1956	729	193,000	107	19,665[1]
Public Working Circles Only				
1955	91	40,319	39	5,782
1956	115	75,042	65	10,291

[1] This includes only the area marked to date on the sales designated for marking; the total area involved is much larger and the accumulated backlog for future cutting is estimated at about 110,000 acres.

Selected Cutting Increases Logging Costs.—It was submitted by a number of witnesses that costs were higher on a unit basis when logging

marked stands as compared with logging unmarked stands, and that these additional costs should be allowed for in stumpage appraisals. I considered this question when dealing with stumpage appraisals generally.

The Interior Lumber Manufacturers' Association, representing operators located in the Southern Interior region of the Province, said in its representations:—*

> "The question of the marking of timber sales has been the cause of complaints by our members. We have no objection to the marking of sales where the silvicultural requirements of the stand demand it, but are of the opinion that marking should be subject to the following:
>
> "(*a*) Where a timber sale is specified for marking, the marking should be carried out prior to stumpage calculation as the amount of timber to be cut has an effect on the stumpage value. On the other hand, the marking should be carried out expeditiously so that processing of timber sale applications is not unduly delayed.
>
> "(*b*) The need for better trained Forest Service markers is pronounced. We consider that the marker should be a well-trained man since on his work depends the chances of economic success of a logging operation and, in part, the silvicultural result of the operation."

Dealing with (*b*) I am unable to comment thereon as I was not informed, with any degree of particularity, of the training received by marking crews in the Southern Interior.

So far as (*a*) is concerned, a memorandum submitted at my request by Mr. J. A. K. Reid contains the Forest Service attitude in this regard, and I reproduce it in part without further comment:—

> ". . . the present practice is to estimate the volume of timber which will be marked for cutting on the basis of past experience of similar areas. These estimates can be made fairly accurately by a silviculturist familiar with the general region after examination of the stand tables which are customarily submitted with cruise reports. These stand tables show the number of trees by diameter and species. If the sales were marked in advance, a more accurate estimate could be made of the timber volume because a tally is made of each tree marked. Some members of the industry maintain they would be better qualified to bid on the sale if they could first see what trees are marked for cutting.
>
> "I believe it would be desirable as an ultimate objective to have these sales marked before sale, but it would not be possible at this time with the present staff and equipment. In addition to the backlog of marking which would be involved in marking timber to be cut on three- to five-year contracts, there is the fact that some sales would not

* Exhibit 72, p. 41.

be taken up and some of the timber included in contracts may not be cut during the life of the contract.

"In the meantime, under the present system the effect on our stumpage appraisals is not too serious."

CONFLICTS ARISING OUT OF MULTIPLE LAND USES

The tremendous expansion of the timber industry in the Interior of the Province both in relation to the volume of the cut and the extension of geographical areas from which the cut is taken has intensified the need for an early clarification of the rights, duties, and responsibilities of those who are now using the same land areas for varied and different productive enterprises. Unless the problems inherent in this development are realistically appraised and a general pattern established in the framework of which a full measure of protection, as far as may be practicable, be afforded those who seek to use the land for the production of timber, cattle, the extraction of minerals, and the available water thereon for irrigation and other purposes, the accumulating difficulties will create pressures resulting in untoward and unfortunate, although presently avoidable, consequences. These pressures are building up, and need for action in this regard is imperative before the situation worsens and conflicts of interest create an atmosphere of distrust and bitterness wherein the compromises so essential to the success of a co-operative programme become difficult to effect. Should that occur the only alternative would be the imposition of strict Governmental regulations which would be difficult to enforce, and which would probably meet with the general disapproval of those affected by such a policy. It seems to me the simple answer ought to be found in a mutual understanding of the specific problems facing each user of the land and a willingness to work together to iron out their respective differences in a spirit of co-operation. Basically these varied enterprises are not competitive, and there is no reason why they cannot be co-operative, provided each is willing to make some concessions and provided the legislation under which each is authorized to use the Crown land clearly establishes the extent and purpose of that use and the Forest Service exercises a reasonable measure of control to ensure that the intent and purpose of the relevant legislative measures, and the contractual obligations imposed thereunder, are understood and obeyed.

It is chiefly in relation to grazing on Crown forest land that conflicts of interest arise. Interior witnesses were also critical of the manner in which the Forest Service administered the provisions of the "Grazing Act." Because these two aspects more or less overlap, it is, I think, desirable to embark upon an examination of this subject in some detail.

GRAZING

Grazing lands are either open grasslands or forested land with forage growing under the trees, or a combination of both.

There are three different ways of acquiring grazing lands. Grasslands, not classed as forest lands, may be purchased outright from the Crown. Grazing leases are issued by the Lands Branch of the Department of Lands and Forests under the provisions of section 82 of the "Land Act." Such leases are usually granted for long periods, up to twenty-one years, and if the area covered by the lease is not required, at the date of its expiry, for some higher economic use, and all the terms and conditions of the lease have been complied with, the lessee is given a preferential right to renew the lease for such further period as may be determined by the Lands Department. Rental is charged on an acreage basis and the area of the lease is subject to land and school taxes. Only stock owned by the lessee is allowed to browse on a grazing lease. The lessee is obliged to fence the leased area and is required to manage the area in accordance with sound grazing practices. Within this broad delineation of responsibility, all details of management, such as the balance between periods of use and numbers of stock, are left to the discretion of the lessee. Leasehold areas may be inspected by officials of the Lands Branch at any time and are always subject to such inspection before the lease is renewed.

A grazing lease becomes in effect an integral part of the private ranch holdings off the lessee, and the area thereof, so far as the grazing use is concerned, is under his control. There is no relationship between the size of the ranch and the amount of range held under grazing-lease tenure. For instance, the largest ranch in the Province,* which is also the largest in the British Commonwealth, holds only a negligible amount of range under lease.

Before any Crown land suitable for grazing is sold (if not forest land) or leased, the tract applied for by an individual rancher is examined to determine the effect of its alienation upon the management of the remaining Crown range and grazing permittees depending thereon. If the area under examination is found to control important factors, such as water, or is already grazed to capacity under permit, the application to purchase or lease the area is not granted.

That brings me to the third method of acquiring grazing privileges. This is effectuated by a permit system authorized under the provisions of the "Grazing Act." The administration of this Act is the responsibility of the Forest Service, and has been for the past thirty-eight years. As provided in the "Grazing Act" (section 3), grazing districts have been constituted, the boundaries of which coincide with those of the forest districts. Both districts are known by the same name.

Grazing permits, issued annually by the District Foresters, authorize the permittee to graze a specified number of cattle, horses, or sheep on a defined unit of Crown range for a specific grazing period. Specific management practices are required. The permittee has no right or title to the land itself and may be grazing his stock in common with one or more other per-

* Douglas Lake Cattle Company.

mittees. Fees are charged on a *per capita* basis, according to the class of stock involved and length of the authorized grazing period.

The ratio between range held in fee-simple, under grazing lease, or used under grazing permit varies widely from operation to operation, depending on a variety of factors.

In a typical ranching operation a stockman will own outright the arable land on which he produces winter feed and a certain amount of higher-quality open grassland range. He may also hold under grazing lease an additional acreage of high-quality range. Whether he purchases or leases the more productive range land from the Crown will depend on the capital available to him, and whether or not such range is timbered. The Crown-granted and leased range lands will normally be used for early spring and late fall grazing, or to fill some other need for private pasture peculiar to the operation concerned.

In addition, most ranches hold grazing permits authorizing the use of Crown range. The Crown range is largely multiple-use forest land of relatively lower carrying capacity. Extensive acreages are required, and it is mainly suitable for summer grazing use only.

With reference to the apparent overlapping of authority with respect to grazing leases and grazing permits, it is apparent that once it has been determined that a grazing lease can be allowed by the Lands Department without detrimental effect on grazing permittees or other land uses, the Forest Service no longer enters the picture in so far as grazing is concerned, except when any timber on a grazing lease, specifically reserved to the Crown in all such leases, is sold on a timber sale or included in a forest management licence. In that event the Service is responsible for ensuring that the rights of the grazing lessee are not unnecessarily jeopardized by the timber alienation and subsequent logging operations.

There are about 1.5 million acres of open grassland held under private tenure, another 1.5 million acres of similar land classification in Crown ownership, and approximately 8.5 million acres of forested Crown range land. Practically all of the 10 million acres of the Crown range land currently in use lies within the Kamloops and Nelson Forest (Grazing) Districts. Only a relatively minor amount of the Crown range is in use in the Prince George Forest (Grazing) District, and a negligible quantity in the Prince Rupert and Vancouver Districts.

The responsibility for range management, allocation, and improvement is placed on the District Foresters under general direction from the Chief Forester's office. Routine field work required in connection with enforcement of regulations and grazing permit conditions, and range improvement and other miscellaneous inspections are carried out by the Ranger staff under direction from the District Forester. Technical grazing personnel are employed in the Chief Forester's and District Foresters' offices to advise and assist in the direction of range administration.

The establishment for technically trained range-management personnel in the Service has been increased from one at the beginning of 1945 to eight at the present time. These positions are distributed as follows: Chief Forester's office, Victoria, 1; District Forester's office, Kamloops, 5; District Forester's office, Nelson, 2.

All of the present incumbents in the above positions are graduates from the School of Agriculture at the University of British Columbia and are registered agrologists.

In addition to the above, from two to four students from the School of Agriculture are employed on a seasonal basis each year to assist on range surveys and other field work.

Mr. W. C. Pendray, an agrologist with a degree in agrology from the University of British Columbia, is in charge of the Grazing Division. In relation to the adequacy of personnel to cope with the volume of the administrative range management and inspection work required to be carried out, he said:—*

> "There is no doubt that the technical aspects of range management require closer attention than is possible with the existing establishment for technical personnel. However, the problem is not solely a shortage of specialized range-management personnel. The benefits accruing from such features as improved range inventory, refined range-management plans, and range condition and trend studies are largely lost unless backed up by adequate inspections to ensure that approved management plans, seasons of use, and rates of stocking are adhered to by grazing permittees. This phase of range administration does not require highly specialized personnel. It is most efficiently performed by the local Forest Ranger in conjunction with his other duties. Therefore, grazing-control, in common with other phases of forest administration, suffers from the inadequate number of the present Ranger staff in grazing areas."

He continued:—

> "As is the case with any natural resource, an up-to-date inventory is a fundamental requirement in range management. Since 1945 to 1956, inclusive, a total of 7,673,171 acres have been covered by basic range surveys and resurveys. This compares with the total of 2,750,000 acres covered between 1919 and 1945 (twenty-six years). An improvement in the standard of range surveys has also been possible due to the availability of more accurate base maps and aerial photographs as well as the development of improved range-survey techniques. In range surveys, range types and all physical features affecting stock and range management are recorded, and preliminary carrying capacity estimates are made. As with forest inventory, range inventory is a

* Exhibit 32, p. 5 *et seq.*

continuing process, and the basic surveys must be followed up by a programme of utilization, trend, and condition studies on the basis of which allowable rates of stocking and management plans can be adjusted to meet the actual requirements of the resource from time to time. This phase of the inventory programme has also received more attention during the past ten years but requires still further intensification.

"Each range unit should have a complete, easily applied management plan. Such a plan must take into consideration both the capability of the range itself and the needs of the dependent live-stock operators. The increased availability of range-inventory data and more staff during the past ten years has permitted better range-management planning than was previously possible. However, considerable intensification of this phase is still required. Many ranges do not yet have adequate management plans, and all management plans must be periodically reviewed in the light of new range-survey data and changes in the demand for range use.

"The chief problems which have received attention are too early turnout, poor distribution of stock on the range, and overstocking. The first can only be effectively overcome by the rancher providing more and better-quality winter feed or by reducing his live-stock numbers. Both of these solutions pose physical and economic problems, and improvement on this score is, of necessity, slow, but definite progress has been made on most ranges. Improved distribution of stock within many range units has also been achieved by the installation of various improvements and more intensive live-stock management. Progress in reducing overstocking has also been made through adjustments between range units, opening up previously unused range, and, in a few cases, by reducing the permitted number of live stock. On all counts, however, a further improvement is required on many ranges.

"The Grazing Regulations require that all stock on Crown range must be covered by grazing permits, which prescribe the conditions under which such stock may utilize this range. The intensification of the range-management programme has necessitated refinements in practically all grazing permits. In the case of those stockmen using more than one range unit, separate permits are now issued for each unit, with each permit specifying the particular conditions of use for the unit concerned. The number of grazing permits issued and the net amount of stock covered during the years indicated are shown on the following table:—

"GRAZING PERMITS ISSUED AND NUMBER OF STOCK UNDER PERMIT, 1945 TO 1956, INCLUSIVE

Year	Number of Permits Issued	Number of Stock under Permit		
		Cattle	Horses	Sheep
1945	1,378	109,201	5,064	39,235
1946	1,378	106,273	6,025	31,274
1947	1,322	105,723	5,513	25,289
1948	1,444	110,333	6,644	29,444
1949	1,496	101,349	5,029	25,842
1950	1,562	98,484	4,650	23,100
1951	1,561	100,082	4,350	22,282
1952	1,621	104,610	4,040	23,565
1953	1,730	108,894	4,133	23,172
1954	1,750	111,767	3,738	24,909
1955	1,705	121,284	3,575	22,560
1956	1,776	127,182	3,667	22,310

"Grazing fees, which are prescribed by regulation, remained unchanged at the following rates from 1919 to 1949:—

Cattle ..... 5¢ per head per month
Horses ..... 6¼¢ per head per month
Sheep ..... 1¼¢ per head per month

"In 1950 the regulations were revised, placing grazing fees on a sliding scale based on live-stock prices as outlined in Grazing Regulation 3 (4). In brief, the fees formerly in effect for cattle and sheep are made basic fees and are related to 1939 prices for each of these classes of animals. The actual rate charged each year is in the same ratio to the basic fee as prices received by producers in the immediately preceding year are to 1939 prices. The prices used are the yearly weighted average prices of total sales on the Vancouver stockyards for cattle and sheep. The rate for horses is set at one and one-quarter times that for cattle each year. On this basis, fees per head per month in cents have been as follows:—

Year	Cattle	Horses	Sheep
1950	16	20	3¼
1951	22	27½	4¼
1952	25	31¼	5¼
1953	18	22½	3¼
1954	14	17½	3
1955	13	16¼	3
1956	12	15	2¾

"GRAZING FEES COLLECTED FOR CALENDAR YEARS 1945 TO 1956

Calendar Year	Fees Collected
1944	$31,000.34
1945	31,465.28
1946	31,412.24
1947	29,203.74
1948	27,089.74
1949	28,299.94
1950	74,305.08
1951	106,161.36
1952	110,731.32
1953	102,460.00
1954	85,043.96
1955	75,250.32
1956	79,247.61

"Since its original enactment in 1919, the 'Grazing Act' has contained the provision that a sum of money, related to the amount of grazing fees collected annually, be paid from Consolidated Revenue into a fund, known as the Range Improvement Fund, under the control of the Minister of Lands and Forests, to be used for the purpose of the improvement of the Crown range. From 1919 to 1949 the sum paid into this fund was required to be equivalent to one-third of the grazing fees collected annually. The 'Grazing Act' (section 14) was amended in 1949, increasing this proportion to one-half of the grazing fees collected annually.

"The larger proportion of fees being paid into the Range Improvement Fund, along with the increase in fees arising from the revision of the regulations in 1950, has resulted in considerably increased funds being available for range-improvement work in recent years. This has permitted increased activity in the construction of improvements designed to make more efficient use of the range, such as stock-bridges, cattle-guards, drift-fences, mud-hole fencing, stock-trails, and water development. These still constitute the major expenditures from the Range Improvement Fund.

"Increased funds have also made possible the undertaking, on a limited scale, of such practices as range seeding, noxious-weed control, and wild-meadow improvement. Application of these latter practices has been limited not so much by the availability of funds, as the lack of practical and economically feasible techniques. For example, to ensure success, the seeding of open grassland must be carried out virtually on a dry-farming basis.

"Roughness of terrain and the stony nature of the soil render impossible the necessary cultural practices over much of the Crown grasslands requiring rehabilitation. Further, only the most productive sites will yield returns commensurate with costs. In most cases, the rehabilitation of depleted grassland still must depend upon conservative range-management practices.

"On the other hand, the seeding to grasses of exposed mineral-soil areas on recently logged or burned forest range has proven successful, providing improved quality and quantities of forage and helping to control erosion and improve soil conditions. Results to date indicate that the establishment of forest reproduction is not unduly delayed by this practice, and the resulting improvement in soil conditions should ultimately aid tree growth. This type of seeding is now being done more extensively, with 9,000 pounds of grass and legume seed being used for this purpose in 1956.

"The removal of wild, useless, and unwanted horses from the Crown range constitutes another feature of the range-improvement programme. These animals, which would otherwise remain on Crown range throughout the year and increase rapidly in numbers, not only consume large quantities of forage required by useful live stock, but also cause extensive range damage through trampling when the ground is soft during the spring thaw period and by grazing before the forage plants are properly ready for use. It is estimated that one horse on the range throughout the year consumes or destroys forage sufficient to support from four to five head of cattle during the proper grazing season.

"Horse-disposal work is carried out under the provisions of sections 5 and 6 of the 'Grazing Act,' with costs being charged to the Range Improvement Fund. Increased attention has been given to this feature, and a total of 5,932 useless animals have been rounded up and shipped for slaughter or shot on the range by direct Forest Service action during the years 1945 to 1956, inclusive.

"TABLE 162

"EXPENDITURES FROM THE RANGE IMPROVEMENT FUND FOR FISCAL YEARS 1944–45 TO 1956–57

Fiscal Year	Amount Spent
1944–45	$4,486.47
1945–46	7,702.09
1946–47	8,454.21
1947–48	9,456.18
1948–49	17,071.86
1949–50	15,638.85
1950–51	27,778.04
1951–52	39,946.36
1952–53	49,685.61
1953–54	54,129.63
1954–55	46,501.00
1955–56	32,733.32
1956–57	35,752.69
	$349,336.31"

I have quoted at some length from the presentation of Mr. Pendray in order to supply the background against which the criticisms relating to the administration of the "Grazing Act" by the Forest Service can be better

evaluated and also to appreciate the significance of the evidence adduced regarding conflicts between graziers and logging operators. As I pointed out in my opening comments in this section, conflicts in great part are related to Forest Service administration and, in so far as they can be so correlated, may be conveniently dealt with under a comprehensive subject heading.

Lack of Staff.—The graziers complain of the lack of adequate staff for range management and inspection. I have already recorded the views of Mr. Pendray on this subject. Mr. L. Swannell, the District Forester for the Kamloops Grazing District, wherein about 85 per cent of the Crown range is situated, said, when questioned by Mr. E. D. Fulton:—*

"Q.—Do you consider that you have sufficient staff at your disposal to administer adequately both the timber and grazing problems under your jurisdiction? A.—No.

"Q.—Have you received any instructions from your headquarters as to the priority to be given to the work under your jurisdiction? A.—I have. We have been given instructions to give better service in timber-sale cruises.

"Q.—And what has been the effect of compliance with those instructions on attention to grazing matters? A.—Grazing matters increasingly are given less attention by the Ranger staff, not by the headquarters staff, by the Ranger staff.

"Q.—In your opinion, has the actual importance and necessity for the grazing work under your jurisdiction declined? A.—Well, no, because, due to (for lack of a better phrase) the conflict between lumber and grazing industries, there is actually perhaps more grazing work now than there was.

"Q.—Then you are less able proportionately to have it carried out? A.—That's correct."

The lack of a sufficient staff to provide for proper inspections of logging operations in grazing areas is an instance wherein administration by the Service may be said to fall short of preventing situations from developing from which conflicts arise. This is mainly related to grazing leases in the area of which timber is sold. These leases are fenced and the lessee's cattle enclosed therein.

The timber-sale contracts contain the following provision:—

"The licensee covenants with the licensor: That in carrying out his operations under this licence he will in no way block, obstruct, or damage any road, trail, or other property, and any obstruction caused or damage done by him will be removed and repaired forthwith by the licensee at his own expense."

* Transcript, p. 8617 *et seq.*

The gravamen of the cattlemen's complaint is that loggers operating under timber-sale contracts cause damage to their property and cattle in breach of the covenants in the contract and that they are frequently left without any effective means of redress.

The B.C. Beef Cattle Growers' Association, speaking through its secretary, Mr. Julian Fry, said:—*

> " In fairness to those loggers who respect the (timber-sale clauses) which are designed to protect land-owners, leaseholders, and others from interference and damage to their property, we must say that many of our members report satisfactory relations with them. However, in equal fairness to our members we must submit that in many cases (the contract obligations) which require the operator to repair broken fences, blocked irrigation-ditches, and so on are not observed. The (clauses) are good, but failure to enforce them has allowed conditions to develop which are most unsatisfactory. Local Forest Service officials tell us that they have not the Ranger staff to see that the (contracts) are observed. We submit that uncertainty as to whether the regulations designed to protect land-owners, lessees, and irrigationists will in every case be enforced, when applicable, has needlessly aggravated the situation. We believe that the speed with which great damage can be done by the reckless use of modern machinery requires that the remedy should be equally swift, and that those whose property has been damaged should not be told that they must seek redress themselves from the logging operator, as has sometimes occurred.
>
> " In general, grazing leases antedate timber sales on the same ground, it is submitted that the Crown, acting as landlord through the Department of Lands, has a moral responsibility for the consequences of a separate contract made with a third party through the Forest Service.
>
> " The suggestion has been put forward that a fine should be imposed for such infractions of the regulations as we have referred to. We think that this merits consideration because the only penalty now in the hands of the Forest Service—to suspend the operation of the timber sale—is so severe that reluctance to apply it is understandable."

Mr. Fry said in his evidence:—†

> " Q.—First of all, how serious are these matters, for instance, such as broken fences? Does it occur widely scattered throughout the Province, or are they isolated instances? A.—It occurs pretty generally.
>
> " Q.—Just in general, I would just like to know the nature of the transgression and where it was. A.—Yes. I won't give you any details as to who and what. A quarter of a mile of barbed-wire fence damaged, in one place all four strands of wire broken by a bulldozer,

* Exhibit 136, p. 7 *et seq.*
† Transcript, p. 6408 *et seq.*

in order to use old roads. In other places, wire lying on the ground where trees had been cut down, no attempt to replace posts or repair any of the damage. Two men with a truck spent six hours repairing fences and were compelled to remove a portion of the logs in order to rebuild fences. This fenced lease was being conserved for fall pasture, and thirty cattle entered while the fence was broken and ate the grass. It required two men riding for several days to clear out the enclosed area. These four men would have otherwise been doing urgent spring work. Telephoned District Forest office and confirmed complaint in writing on May 13th. His answer, dated May 26th, stated that 'our Ranger has substantiated the statements already told me by you on the phone and confirmed in your letter.' You will notice there was an interval of thirteen days there, and had the lessee not rebuilt the fence immediately, without waiting to see whether the operator was going to do it, the damage would have been greatly increased.

"I have similar ones here also which I can hand to you."

The particulars filed by Mr. Fry of other instances of damages to fences fall within much the same pattern with action by the Forest Service reported in several of these compelling the logging operator to repair the fence within a stated time or his timber-sale contract would be suspended. Another type of damage reported was to water diversion-ditches by logging debris.

It seems to me from the evidence that the damage to fences by logging-machinery does not end there. The results are also of consequence.

If the fenced area of a grazing lease is breached, cattle from any adjoining permit areas are allowed entry into the leased area and have to be rounded up and removed, and the lessee's cattle are likely to stray into the open Crown range and have to be recovered. In addition to the cost of repairing broken fences, the task of rounding up and expelling the trespassing cattle, the forage they consume on the leased area, the necessity of recovering escaped cattle, and the consequential disturbance resulting in flesh-loss all adds up to a considerable financial outlay or loss suffered by the rancher. It is quite apparent that the Forest Service has not the staff to police the range adequately, and some effective means should be found of enforcing contract obligations assumed by the holder of a timber sale in order that these present practices be halted or minimized. In other words, timber-sale operators should not be permitted to conduct their logging in derogation of the grant of grazing leases.

At the present time, only two courses are open to pursue: the Forest Service may suspend or cancel the timber-sale contract, with consequent forfeiture of the deposit in whole or in part to the Crown, and the lessee may sue for the damages he suffered.

Neither of these methods seems to meet the situation. The damage is done before the remedy can be applied, and forfeiture of the deposit to the

Crown does not assist the rancher financially. It appears to me that in the absence of a sufficient field staff to see there is strict compliance with timber-sale covenants, a more powerful deterrent should be evolved to prevent the recurrence of the present wrongful practices. It has been suggested that fines be inflicted for destruction of fences, obstruction of water-ditches, failure to dispose of slash and debris, and other like occurrences detrimental to the interests of the cattlemen. This is a suggestion worthy of consideration, but I doubt if fines would be levied of a severity sufficient to act as a deterrent. I suggest that thought be given to the possibility of empowering the Forest Service, by appropriate legislation, to reimburse the rancher for damage or loss suffered by him from the moneys of the wrong-doer on deposit with the Service, provided, of course, proof of loss and responsibility therefor can be shown to the satisfaction of the Chief Forester and the person charged with the fault is given an opportunity to be heard. As a corollary to this, the Forest Service should suspend the timber-sale contract until the holder thereof adds to the sum on deposit an amount equal to that deducted therefrom and paid to the injured rancher. The mere existence of this power should, in my opinion, encourage logging operators to respect their contractual obligations to a greater degree than some of them do at present. The Forest Service, having awarded the contract for the sale of timber in an existing grazing area, is responsible for its proper performance. In consequence, it should be vested with powers enabling it to discharge that function efficiently and speedily. Whether the method I have suggested for consideration is practicable and workable could only be demonstrated by experience.

Fenced areas held under grazing leases do not exceed 600,000 acres in extent and have remained more or less constant at that figure for a number of years, and I am not unmindful of the fact that timber values in the Interior are far in excess of the live-stock values. Entire live-stock production in the Interior, in great part from range-produced animals, runs to somewhere in the neighbourhood of $9,500,000 a year, while timber production from the Kamloops and Nelson Forest Districts, where the great bulk of cattle are raised, amounts to about $121,200,000 a year. Notwithstanding this great disparity in values, the cattle industry plays a very important role in the economy of the Interior and must be regarded in terms of equality, so far as multiple forest uses are concerned, when compared with the forest industries operating on grazing lands. Each has its own proper sphere of activity and neither should be considered as occupying a dominant or subordinate position in Forest Service administration. However, Mr. Swannell was frank to admit, on the Ranger level at least—and inspections fall within their jurisdiction—the policy of the Service has been to channel their activities more into matters relating to forestry, such as cruising, and less into matters of direct concern to the cattlemen. This is understandable when the enormous expansion of the forest industry in the

Interior and the value thereof is fully appreciated and the shortage of Service personnel is recognized as undoubtedly the sole factor for this allocation of Ranger responsibility. It should not, nevertheless, be regarded as a pattern for future multiple land-use administration, but a temporary policy of expediency forced on the Service by the prevailing circumstances.

Mill-sites.—The evidence discloses that portable mills are sometimes erected on grazing areas either under lease or subject to permit grazing. The mill-sites selected in such instances are either on the open grassland —that is, not under the adjacent forest-cover—and if possible near a supply of water. Contrary to my belief, cattle are nervous, temperamental, and easily disturbed. When disturbed they panic quickly and run or wander aimlessly about without bothering to feed, with a resultant loss of flesh and grade.

When this distress is caused by the operation of a sawmill on a good grazing-site, the owner of the cattle to whom the Crown has given grazing privileges in this area naturally resents this intrusion. This annoyance is further stimulated if the sawmill operator trucks in logs to the mill from areas outside the area of a grazing lease and in so doing cuts through fences and runs his roads through choice grassed areas, causing thereby further dismay to the feeding cattle.

Sawmill-sites on Crown land are leased by the Forest Service to the operator thereof by special-use permits, and this involves an approval of their locations. In this connection Mr. J. H. Dunaway, speaking for the Cariboo Cattlemen's Association, said in part:—*

> " We understand that, in theory at any rate, where mills are located on grazing leases, approval of Forestry Branch officials is required for the site. However, our information is—and this information is backed up by our personal observations—that owing to lack of staff to attend to grazing matters, and the pressure on Forestry staff to deal with timber matters, there is not opportunity to make an on-the-spot inspection, with the result that the approval is a mere technicality and of no practical value or protection to grazing interests. It may be that we have the goodwill of the Forestry officials, but good intentions are nullified by the lack of staff."

He submitted:—

> " That it be provided that permission to locate mills on lands under grazing lease or permit be withheld whenever a suitable location elsewhere is available; and that in any case where no such location is available, the mill site on lands used for grazing be set by the Forestry Branch officials after consultation with the grazing lease or permit holder. This recommendation, and most of the considerations on which it is based, apply equally to grazing leases and permits, and to forest

* Exhibit 199, p. 10.

operations under timber sales, forest management licences, and public working circle."

It seems to me that this is a reasonable request and one that I should accept as sound in principle.

While on this subject of mill-sites and grazing, this might be a convenient place to digress for a moment to consider another aspect of this matter, which has nothing to do with grazing but with mill-sites solely.

Mr. H. B. King, on behalf of the Northern Interior Lumbermen's Association, submitted that the special-use permits under which mill-sites were allocated contain a provision whereby the Minister may, on ninety days' notice, cancel the permit apparently without assigning any cause for his action. This results in an insecurity of tenure which renders it difficult for an operator to finance his mill-construction programme. Mr. King contended that a use permit should not be subject to cancellation during its term at the discretion of the Minister, but only for breach of the conditions therein contained. Mr. Stokes, in his evidence, said in effect that such permits were not usually considered terminable except for some good reason, such as breach of the permit conditions or if the area was required for a higher land use. It seems to me that there is much to be said in favour of Mr. King's argument, and I see no reason why this kind of special-use permit should not be drafted to give a more secure form of tenure to the permittee, with the causes for which it might be cancelled expressly written therein. This would be in accord with present Service policy.

To return to grazing.

Permit Grazing Areas.—Alienation of Crown timber in areas covered by grazing permits creates problems similar to those engendered by the entry of the forest industries into areas held under grazing leases. There is probably one dissimilarity: the permit range is open and not fenced. Drift-fences are constructed, but these serve only as a guide to feeding cattle and not as a means of enclosing or restricting cattle within a prescribed area. Hence destruction of such fences, if such occurs, is not of such moment in permit areas as it is in leased areas. In other respects the disturbance of the range and the feeding habits of the grazing animals follows much the same pattern with the resultant flesh-loss.

Mr. Jack Koster, who grazes about 1,500 head of cattle in the Northern Interior near Clinton, and close to the Fraser River, testified to a situation which is causing him concern. He said:—*

> " Within our grazing permit area there are perhaps 100 square miles of mixed kinds of timber, with a fair percentage being full-grown fir. This timber suddenly appears to be attracting the attention of Coast firms, who intend to float the logs down to their mill-sites by way of the river. Should this become a reality, then we are going to have them cut through our private property in three or more places on way to the

river-shore. These roads are going to wind their way down through our winter grazing, then drop off over a very steep slope for the last half-mile to the shore-line. In making this last steep lip passable to their traffic, they will in turn make it passable to cattle, and this can lead to real trouble. Cattle trying to drink while standing on shore ice will often, through their own weight, cause that piece of ice to break off and carry them into mid-stream. This means total loss, because shore ice, which runs for miles, will prevent them from climbing back to safety."

He also expressed concurrence with the evidence of ranchers in the Kamloops and Nelson Districts concerning the deleterious effect on grazing animals by loggers and others entering upon the range. He said:—*

"The place where loss will be greatest among our cattle will be what is known as flesh-loss. This is where cattle fail to get proper peace and quiet during the fattening season. We contract in good faith for grass, then turn our cattle out to graze upon this range, but unless these animals are left pretty much alone on an open range, they will drift off into fence corners or on to some eaten-off area, and this will mean that they will fail to put on weight to the proper extent. Owing to hunters driving, camping, hunting, and moving about among our cattle on foot during the late summer and fall months, we have watched a situation develop where steers that now get extra rations of grain during winter months don't weigh out as well when shipped as 2-year-olds as did steers with less breeding, who got no grain in former years, when they were left alone during the grazing season. This much is evident to-day. We predict that it will become impossible to grass-finish our steers for market if they are disturbed further by a log harvest, unless it is carried out with full respect shown to our cattle and their grazing rights.

"As we have already established, this timber is on our open grazing area. The only time our cattle are turned out on this land is from May 1st to October 31st. Now, since we are limited to this seasonal permit, and since our rights here have been on this basis, ever since the 'Grazing Act' came into being (in 1919), may we respectfully ask that logging licences, where they are found to conflict with grazing, also be seasonal. That they run from November 1st to April 30th, or a bit shorter if it is found that skidding and hauling is damaging to grazing and roads during April."

The suggestions of Mr. Koster that grazing be permitted at one season of the year and logging activities be restricted to another and different seasonal period was commented upon by Mr. Fry, secretary of the B.C. Beef Cattle Growers' Association. He said, in part:—†

"That suggestion was felt by my committee to be one which could be said to be ideal from the cattlemen's point of view, but they felt

* Transcript, p. 6040 *et seq.*
† Transcript, p. 6386.

that in a brief of this kind, which necessarily had to cover a very large area, in which conditions might be varying to a great extent, that it might be considered that such a suggestion would be extreme in that there might be places where logging could not be suspended during the summer. But it would be a very valuable way of avoiding conflict if it could be carried out."

While it would appear that Mr. Koster's idea of land-use rotation is not without merit, I doubt its practicability. In the old horse-logging era logging was more or less a winter operation in the Interior, but the mechanization of the Industry now permits continuous operations throughout the entire year. There may be areas where such a plan could be enforced by the Forest Service, but the difficulties of administering such a segmented policy would, I believe, prove insurmountable and result in strenuous opposition from the forest industries.

Forest Management Licence Legislation.—The graziers are worried about the possible implications of those sections of the "Forest Act" which relate to the awarding of forest management licences. I can do no better than to let them speak for themselves regarding the nature and reasons for their apprehension. Mr. Fry said in presenting the submission of the B.C. Beef Cattle Growers' Association:—

"There are some features of the grazing lease system which merit further consideration, and which, taken together with the considerations regarding grazing permits, will serve to highlight some of the reasons for the concern felt by this Association for the position of permit and leaseholders under existing forest management licence legislation.

"The main feature of the grazing lease is that under it exclusive use of the grass within the lease area is granted to an individual lessee, usually for a period of twenty-one years. Generally speaking, both grazing lease and grazing permit areas form an integral part of ranching operations, but the leaseholder usually has in addition a very substantial personal capital investment in fencing and other developmental features of his lease.

"Both leases and permits have, in many cases, been in effect for scores of years, having become, as previously stated, not only an integral part of the operation of individual ranches, but also of the whole British Columbia cattle industry itself. This Association must therefore, on behalf of its members, draw attention to certain aspects of forest-management legislation which give rise to concern to Crown permittees and lessees alike, and which, it is believed, can be satisfactorily adjusted by a revision of the legislation along lines which, it is hoped, will recommend themselves to you.

"Section 33 (2) of the 'Forest Act' provides as follows: 'The Minister may enter into an agreement, to be described as a forest management licence, with any person for the management of Crown

lands specified in the agreement and reserved to the sole use of the licensee for the purpose of growing continuously and perpetually successive crops of forest products . . . '

" Section 33 (12), which was amended in March, 1955, now reads as follows:—

" ' 12 (*a*) After a management licence has been awarded and for such time as the Crown lands within the licence area remain subject to such licence, such lands shall be withdrawn from sale and settlement under the " Land Act " and " Taxation Act."

" '(*b*) In respect of the use and occupancy of Crown lands in the licence area under the provisions of any other Act, such use and occupancy shall be subject to the provisions of this Act and the regulations, and shall be in accordance with the principles of sustained-yield forest management.'

" We wish to emphasize that this is a considerable improvement over the previous provision of subsection (12) in that it at least recognizes that there are other uses, including agricultural uses. Nevertheless, the ' sole use ' provisions of subsection (2) still remain, and there appears still to be such a degree of priority given to forest uses, and such a measure of control vested in the forest management licensee, with a corresponding absence of protection to agricultural users, that the legislation itself still creates many uncertainties.

" In the light of the outline previously given of the rights and interest heretofore conferred by both grazing permits and leases on Crown lands, it will be obvious that a provision of this nature, conferring ' sole use,' and the priority given to forestry considerations, must be of great concern to the cattle industry. This concern is twofold:—

" 1. *Possible Effects on* **Existing** *Grazing Use.* — Several of the licences already applied for in this Interior area have included large portions of lands under permit or lease. As the demand for timber increases, and applications for licences increase, it is anticipated that this problem will become more acute. Unless the rights and interests of lease and permit holders are clearly established and protected by legislation, the fears of the cattle industry will be intensified and the conflict of interest will increase.

"Although we have welcomed the enactment of a new subsection (12), it is, we submit, still not clear that when a licensee is given ' sole use ' of Crown lands any real protection can be given to existing grazing interests, especially when such grazing use is made subject to the ' Forest Act,' with its overriding provisions in favour of management for forest purposes. The legal effect of granting a licence in an area subject to either grazing lease or permit is still, we feel, very likely to be that the rights of grazing will be extinguished. But it is not neces-

sary for the present purpose to express a final opinion on that point. It is felt sufficient to point out, first, that the provisions of the sections quoted are sweeping enough to raise a very grave fear that absolute control would vest in the licence-holder even as against the holder of an existing grazing lease; second, that litigation on the point should be avoided if possible; and, third, that leases expire at varying periods up to twenty-one years, so that even if the point should be resolved in favour of the lessee, he is afforded no permanent protection.

" Indeed, with respect to the position of the permittee, who has only a yearly permit, the present provisions of the ' Forest Act ' would seem to leave him with no protection at all, since it is difficult to argue that he could establish any legal interest either against the Crown or against an application for licence.

" 2. *Possible Restrictions on* **Future** *Grazing Development and Use.*—Current progress in the science of range development and utilization justify the belief that timbered areas not now regarded as suitable for grazing may in the near future become so. It would, however, be very difficult to imagine that it would be possible—or desirable—to provide that an application for licence be rejected or prejudiced because of the potential future use of the area for grazing purposes. Yet, as the legislation now stands, it seems to follow quite clearly that once a licence is granted, the ' sole use ' feature would absolutely prohibit the subsequent granting of grazing rights, however desirable the area might later become for the purpose as a result of the developments referred to above.

" It is realized that much of what has been said under these headings must be read subject to the provision that the licence document itself will contain the terms and conditions upon which the licence is granted, and also must be read subject to the changes in section 33 (12) of the ' Forest Act '; and it may be suggested to us that this gives sufficient scope to protect established agricultural interests. But in this connection two points are emphasized:—

" First, the Act itself does not contain any requirement that these interests be recognized, or any guide or criteria by which these interests will be measured and protected:

" Second, the Act does still contain this disturbing reference to ' sole use,' and now contains the new passage giving preponderance of consideration to forest interests.

" We have had legal opinion to the effect that the ' sole use ' feature may make it difficult, if not impossible, for even the most sympathetic administration adequately to safeguard present or future interests of established grazing lessees or permittees. In any event, it difficult to see how, with the current wording, and in the absence of a specific provision in the legislation recognizing the rights to grazing, anything

could be written into a licence in advance which would give any hope for the establishment and enjoyment in the future of grazing possibilities which may now exist only potentially.

" We do not suggest that it is the policy of the present administration nor that it has been past policy—and we certainly do not believe it would ever be sound policy in the future—to ride roughshod over the interests of the cattle industry in awarding forest management licences.

" We recognize, for instance, that in your Report of ten years ago you stated that ' the economic stability of the Interior . . . depends to a very marked degree upon the full recognition of multiple forest uses '—an opinion which we fully share.

" Our concern is that, in the legislation establishing the system of forest management licences, and in the regulations made thereunder, while there is now reference to other use, there is no specific provision for the protection of the rights of other users, and there is no direction that in awarding a licence existing or potential use for grazing purposes shall be preserved, and that, to that extent, control of the land shall not pass exclusively and in perpetuity to the licensee.

" We believe that, generally speaking, sustained-yield grazing and sustained-yield forestry are not mutually incompatible. Although there are—and will probably always be—individual cases of friction and conflict, the general pattern of this area has been that forestry and grazing proceed side by side to mutual advantage. We believe this is the pattern which should be written into the law and the regulations, not exclusive control to the forester.

" Unless this is done, applications for individual forest management licences will of necessity be increasingly opposed by agricultural interests. Conflict and bad feeling, which could easily be avoided, will thus be engendered."

The obverse side of the picture painted by Mr. Fry is found in the submission of the Interior Lumber Manufacturers' Association presented by Mr. Alan Moss. He stated:—*

". . . We are just as touchy about encroachment of forest land by grazing land as the cattle industry is on the encroachment of grazing land by forestry."

Mr. Moss is a registered forester and Woodlands Manager for S. M. Simpson Limited. When speaking on behalf of that Company, he pointed out that on the area comprised in the forest management licence held by his employer (F.M.L. No. 9) " there were in 1951 and still are (in 1955), to the best of our knowledge, approximately fifty-three rights and privileges of various kinds. These consist of eight grazing permits for 1,500 sheep

* Transcript, p. 6448.

with lambs, 229 cattle, and twelve horses. There are ten final and seventeen conditional water licences, fourteen mining claims, two commercial fishing camps, and two trap-lines . . . these are naturally a burden on forest management (and) promise to increase considerably as the Company's efforts to develop the licence continue.

" Concerning grazing we believe that areas allotted for sheep grazing and areas allotted for sustained-yield forestry should be strictly segregated. We believe that sheep greatly reduce the chance of successful natural regeneration."*

There is a lack of evidence concerning the extent to which sheep when grazing adversely affect natural regeneration, and I merely record the submission of Mr. Moss without further reference thereto.

Speaking again for the Association, Mr. Moss stated in part:—†

"1. Over the past decade, a growing recognition has been given to the fact that, sooner or later, the present outdated legislation governing the different forest land uses would give way to a co-ordinated policy. Since 1948, the Natural Resources Conferences held annually at Victoria have further emphasised this point. The problem is one of integrating forest land resources to modern requirements but in such a manner that the individual resources are adequately conserved.

"2. In each area, the classification of forest land uses will vary in number of uses and priorities of these uses. For example, in the Okanagan Valley, water storage will be high on the list of priorities in some areas, since it is the source of essential agricultural irrigation. The failure to properly integrate the land uses in each management unit has led to conflicts between the users. These conflicts are increasing rather than abating, especially in those areas which have the larger populations.

. . . . . .

"6. The relative position of grazing rights to forest management should be defined in accordance with the multiple use classification of the area in question. At the present time we have examples of cattle grazing leases within Forest Management Licences being planted by licensees under the terms of the Management Licence contract.

"7. We suggest that it should become standard procedure for application for claims, rights or privileges of any kind to be referred to the Forest Management Licensee at some stage of processing, preferably prior to granting. The granting of such claims, rights or privileges inevitably raises the costs and increases the administrative work of the licensee and and he should be kept fully informed of his position and be permitted to make recommendations."

* Transcript, pp. 5873–5874.
† Exhibit 72, p. 13 *et seq.*

Mr. Moss, under cross-examination by Mr. E. D. Fulton, counsel for the B.C. Beef Cattle Growers' Association and other interests, explained the position taken by the Interior Lumber Manufacturers' Association in part as follows:—*

"For instance, we have grazing permits on land that we are at the present time required to practise sustained-yield forestry. There is an anomaly that should be straightened out, because if we attempt to practise sustained-yield forestry on those lands, without regard to grazing, immediately there is a conflict. If, on the other hand, the grazier or the person grazing on those lands carries on grazing without attention to forest management, similarly you have a conflict.

"Q.—Do you agree with the point of view implicit in the brief of the Cattlemen's Association that there is no reason in general why sustained-yield forestry and sustained-yield grazing should not proceed on a co-ordinate basis? A.—No, I have absolutely no argument, I believe it can.

"Q.—In order that bargaining and adjustment of details at a local level might take place in a better frame of mind, that it would be helpful if in general the rights and interests of agriculture were recognized specifically in the legislation? A.—Oh, yes. Of course, I think that is the approach of us all, all our problems should be reflected possibly in amending the legislation."

Mr. Fulton read paragraph numbered 6 reproduced above, to the witness and continued:—

"Q.—What is the interpretation which should be put on the paragraph from your brief that I have quoted? Does it mean that you contemplate the subordination of grazing interests? A.—No, we don't contemplate the subordination. There is a problem which remains to be solved, as in this particular licence, the licensee is simply abiding by the terms of his contract. Now, mind you, possibly I should enlarge on that. There are two problems here. One is that in this particular area, so far as—my company is the licensee in this area—so far as we were able to determine, the permits are very loosely defined and we aren't too sure ourselves just where the boundaries lie. The cattle are ranging free. Now, the area under the terms of the contract was forest land. It has been logged on several occasions, and the grazing leases were given there in the early days. Now, the range has been extended by logging, and it is those logged areas that we are replanting. Now, whether we are actually planting a cattle-grazing permit or whether we aren't, I don't know. We are in the general area, if you like. And that is something that needs to be straightened out. We did some planting there, and the cattle are wandering all over the place. There has been some damage, but it remains to be seen how much will be

* Transcript, p. 6440 *et seq.*

done, and it is quite possible that the two might be mutually compatible on that area."

Mr. Fulton then read the first sentence of paragraph numbered 7 to Mr. Moss and continued his cross-examination:—

"Q.—Now, I ask you whether it is not logical to take from that that there would be great danger that the management licensee would be given absolute control of the use to which that land is to be put if these matters were to be referred to him for his decision, is that what you mean? A.—No, I think if you read on it clarifies it. Right at the end, it says 'and be permitted to make recommendations.' Now, the granting of the claim right or privilege would be naturally in the hands of the Government. But one of the problems in managing the forest management licence arises where these claims and so on are granted without the knowledge of the licensee. Perhaps I could explain what we were getting at there. When rights or privileges or claims are granted, and the forest management licensee doesn't know about them, then it can be a very difficult position for all concerned. And our object in asking that was that, principally, we should be kept fully informed. Now, there are certain places where there is such a lot at stake on the granting of one of these privileges, and possibly more than grazing is the question of fishing camps, which is a very serious matter at the moment. In those cases which can drastically affect the whole operation of the licence, that is where we have asked to be permitted to make recommendations.

"Q.—I see. Are you then in this paragraph having reference primarily to the situation which would arise where the licence has been given, and then a subsequent application is made by someone else? A.—Yes, that is right. We are not referring to existing licences. We know all about the existing licences."

It is made manifestly clear by the evidence quoted, supported by the submissions of a number of witnesses, to which I have not made specific reference, that these two large and responsible Associations, representing the views of the Interior forestry industry and the cattlemen, are of the joint opinion that their duality of interests may be carried on in harmony, provided each land use, whether for grazing or logging, is given its full recognition by the "Forest Act."

The first step toward a co-operative sharing of the productive capacity of the land necessitates an amendment to section 33, subsections (2) and (12) (*b*), to remove the existing uncertainty concerning mutuality of use.

It seems to me that the interpretation applied to subsection (2) of section 33 by the complainants may be somewhat wider than what was intended by the Legislature, but it would be wiser to remove any doubts on that score by reframing the section to make it abundantly clear that the

award of a forest management licence does not in itself confer on the licensee the sole and exclusive right of user of the Crown land within the area of the licence except for the purposes for which the licence was awarded.

The second step to be taken to avoid conflict from arising, and one of a more general nature, would be the formation of the Advisory Boards recommended in a previous section of this Report.

The third step is the strengthening of the Forest Service field staff, especially on the Ranger level, to step up inspections of logging operations. Coupled with this would be the suggested deterrent of permitting the Chief Forester to allocate to a rancher suffering damage an amount equal to his loss from the timber-sale deposit of the wrong-doer.

Next, I think the Grazing Division should be under a Grazing Commissioner, responsible to the Chief Forester, and that the field staff of agrologists should be under the control of the Commissioner rather than directed by the District Foresters as at present. In other words, the Grazing Division should be accorded a higher status in the Service than presently exists. A close liaison must, of course, be maintained between those charged with the administration of forested areas as such and grazing officials. Mr. Moss expressed the opinion that "we found between the grazing branch and the management branch administering forest management that there is a very poor liaison relatively speaking."* I trust this is not the general experience of forest management licensees, but it is undoubtedly a trend due to the tremendous expansion of the forestry industry in the Interior.

Finally, and probably more basic than anything else that might be suggested to bring about a spirit of co-operative enterprise would be the sincere desire of those engaged in utilizing the growth potential of the soil, whether it be trees or cattle, to work together, each to his own, but with respectful and due regard to the rights of his neighbour. Neither legislation nor regulation, neither Forest Service nor grazing officials, can create that spirit of goodwill, although each of these agencies in its own field of action, intelligently applied, can do much to remove those causes of apprehension, distrust, and irritation that make compromises appear to stem from weakness and not from strength and thus difficult to effect.

The picture reproduced on the following page is illustrative, in a relevant sense, of the productive capacity of the soil. In the foreground, cattle find nourishment from forage, the raw material from which beef is grown, and in the background are the trees, the raw material of the forest industry.

Range Research.—Research relating to basic problems of range management, and I use that term in this context in its widest sense, has been conducted in the past by the Range Experimental Station near Kamloops. This Station is operated by the Dominion Department of Agriculture. In 1940 its work was discontinued, and in my 1945 Report I said:—

* Transcript, p. 6454.

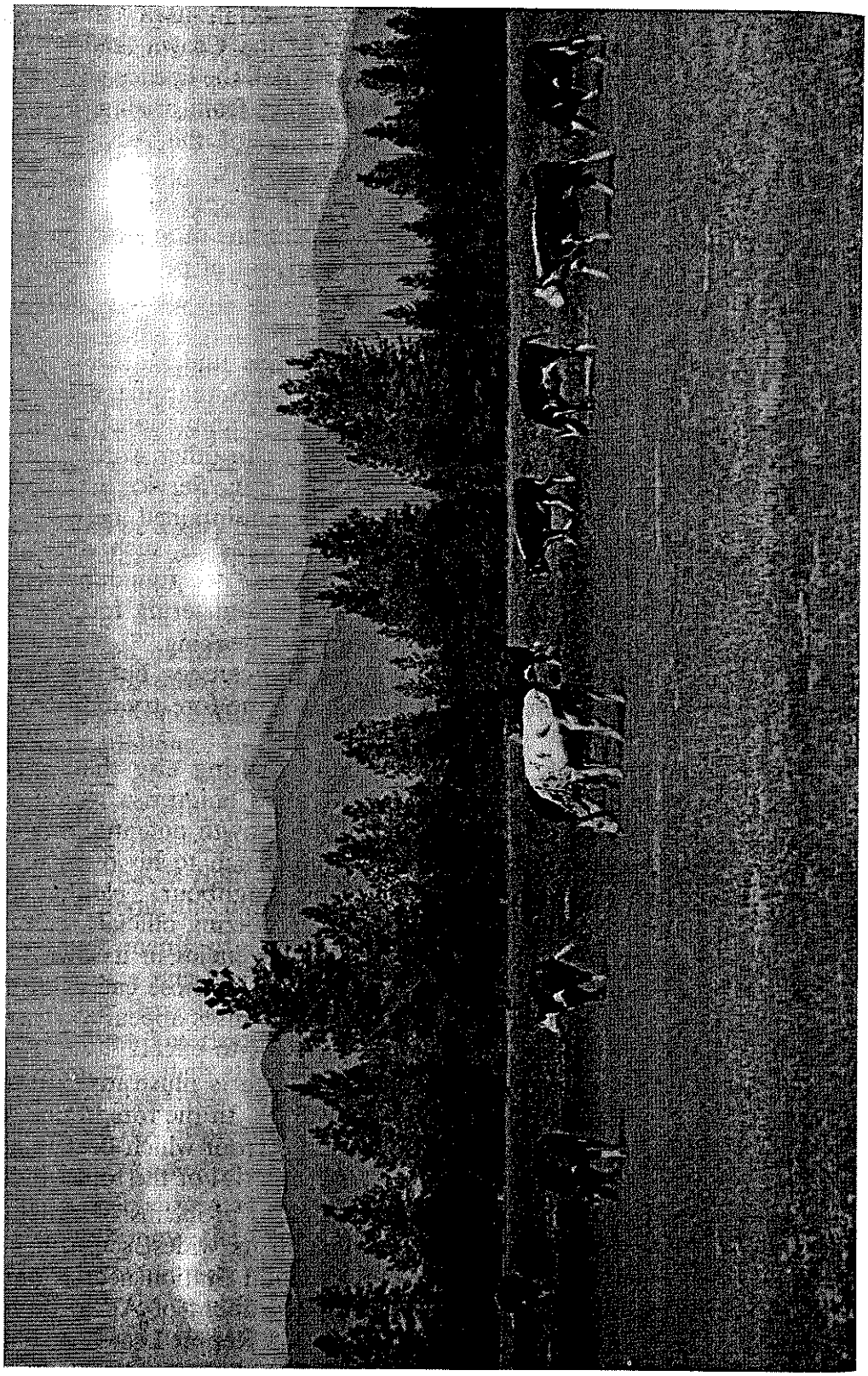


FIG. XII
CATTLE GRAZING IN SEMI-OPEN RANGE

". . . I strongly recommend that an experimental range station be established either by the Provincial Government alone or in collaboration with the Dominion Department of Agriculture. It is to be greatly regretted that the Dominion Range Experimental Station at Tranquille was forced to discontinue its activities in 1940, at a time when, after five years of experimental work, many major studies relative to range problems were well under way."*

In 1947 the Station was again put into active operation and is carrying on projects which should yield very valuable information concerning the integrated uses of forest range land, range seeding, encroachment by tree species, range burning, and other related matters of interest to both the cattlemen and the forest industry. Mr. T. G. Willis, Superintendent of the Station, related that he and his staff have always received the best of co-operation from the grazing officials of the Forest Service and that any suggestion the Forest Service was not applying the results of their research "is not true." He added:—

"I would say that the Grazing Division has been anxious over the years for us to produce information for them and we are endeavouring to do that, but it is a very slow proposition when you are waiting for things biological to give you the answer."†

In 1945 I also stated in this context:—‡

"The stockmen also have another problem in addition to their need for water. Their other problem is the encroachment of the forest on their grazing ranges. Stockmen have been agitating this matter for a number of years, so far without any tangible results. Undoubtedly jack-pine, willow, and alder are steadily reducing available range land. This is due in part to overgrazing, which exposes the mineral soil, thus creating conditions favourable to natural seeding of jack-pine. Alder and willow continue their struggle to cover range land by thrusting up new growth from their root systems.

"The attack on this problem of encroachment must therefore be on three fronts: Overgrazing should not be permitted, the present non-commercial cover should be removed, and badly depleted areas should be reseeded with suitable grasses.

"Overgrazing has resulted from lack of range reconnaissance, supervision, and inspection by the officials of the Forest Service. This was due to lack of personnel . . .

"Then, too, overgrazing has a more serious aspect than merely as a cause contributing to forest encroachment. Overgrazing if continued will render the range useless. Nutritional grasses, like trees in a forest, will not perpetuate themselves if the seed sources are destroyed. Hence

* 1945 Report, p. 165.
† Transcript, p. 6430.
‡ Report, p. 164 *et seq.*

this question of overgrazing presents a problem of immediate urgency calling for the implementation of regulatory controls.

"Seeding of badly depleted areas is necessary for two reasons: As an aid in the prevention of forest encroachment, and, what is of more importance, to ensure a supply of palatable and nourishing forage.

"Returning to the subject of encroachment, the third requisite is the removal of the forest-cover that has succeeded in establishing itself on former open grass land areas. At this point the subject becomes controversial. The question is to burn or not to burn. The answer to that question must depend upon results achieved by experimental burning on Crown or private lands under the supervision and control of the Forest Service."

Encroachment of the forest on range lands is still a problem, and to burn or not to burn the range is still a subject not free from controversy. Range seeding has been very much accelerated over the last decade, and continuing studies are being conducted that will eventually minimize the constriction and loss of range areas to the trespassing trees and brush. Overgrazing is not so serious a problem now as it was a decade ago, except in limited and regional areas.

So far as range improvement is concerned, it seems to me that by dividing the moneys spent from the Range Improvement Fund by the total Crown range acreage, the resultant per acre expenditure seems definitely on the meagre side.

If it is established—and the present state of experimentation seems to point that way—that seeding of logged-over areas to provide forage also results in a better second-growth forest, then it might be advisable to consider to what extent increased stumpage values thus recoverable should contribute to the cost of seeding in these areas.

Taxation.—The cattlemen requested me to make a number of recommendations concerning the taxation burden now borne by them. Generally speaking, their submissions in this respect are not within my province to determine except, I think, in relation to school taxes. It was contended, and with justification, that the stockmen were paying for the education of the children of loggers who were operating on timber sales. The expansion of the forest industry renders this of some moment, and in the section on Finance I dealt with this subject, and reference may be made thereto for my recommendations in that regard.

MINING

The introduction of sustained-yield forestry, and the creation of public circles and the award of forest management licences as devices designed to effectuate this concept, has caused concern to the mining interests. In a primary sense the two industries—forestry and mining—are entirely dis-

similar, yet there are areas in which they may overlap, with the consequent possibilities of conflict.

Minerals of various kinds are to be found under the soil upon which the forests grow, and prospectors wish free and uninterrupted access to forested land, except when closure orders are in effect, to carry out their search for these minerals. When a discovery is made, claims staked, and mining operations begin, timber is required for various purposes.

Mining ranks next to forestry as a source of production values from the exploitation of a basic natural resource. The mining values produced in 1955 amounted to $174,710,000. The average number employed throughout that year was 14,100 persons.

In 1945 total mine production was valued at $63,344,000. Thus in the last decade the values produced have increased by over $100,000,000.

In 1955 the total sums spent on major items of expenditure by the mining industry amounted to $138,484,407, made up as follows:—

Salaries and wages	$51,890,246
Fuel and electricity	5,632,549
Process supplies	24,643,057
Federal and Provincial taxes	23,067,224
Municipal and other taxes	907,645
Levies for workmen's compensation, unemployment insurance, and other like items	1,647,642
Freight and treatment charges, lode-mining	30,696,044
Total expenditure	$138,484,407

Dividends paid in 1955 totalled about $35,000,000, an increase of approximately $25,000,000 over 1945 payments totalling $10,500,000.

The figures I have quoted to indicate the importance of the mining industry and its expansion during the last ten years are, of course, for the entire Province.

Mining in the Interior accounts for about 75 per cent of the total Provincial production. It is for that reason I decided to treat with this subject as a problem of the Interior, but my observations are applicable to the mining industry generally.

Then, too, it may be said that mining relates to multiple land use in so far as surface rights are involved, and for that reason I have included this subject under that general heading.

In this connection it is of interest to note that in 1954 there were 22,166 mining claims in existence, covering a surface land area of 1,145,000 acres or 1,789 square miles. In 1955 an additional 12,567 mineral claims were recorded. These were largely located in Kamloops Mining Division.

There are two large Associations representing different segments of the mining industry.

The British Columbia and Yukon Chamber of Mines advanced a series of recommendations for consideration on the part of the prospectors and the smaller mining companies engaged chiefly in development work.

The Mining Association of British Columbia, representing the large producing companies, also made a carefully prepared presentation on behalf of those Companies.

The interests of these two Associations in their respective fields are parallel and correlative.

The first-named Association, which I will, for the sake of brevity, call the Chamber of Mines, speaking through its Secretary-Manager, Mr. T. S. Elliott, said in part:—*

> " From present indications it would appear possible that in the not too distant future a large portion of British Columbia will be covered by a network of forest management licences and public working circles. It is our understanding that management licences are being granted in perpetuity and that the Government transfers control of all trees contained thereon to the licence holder but does not transfer control of the land on which the trees are grown. The sole interest of this organization is making certain that the fundamental rights of propectors and mine operators are protected in forest management and other such areas. In this matter we are most vitally interested, as we fully realize that unless a sound, clear-cut policy is permanently established to protect the rights of prospectors and miners in forest management areas, then the mining industry in British Columbia will suffer from slow strangulation.
>
> " British Columbia has within its boundaries the largest silver-lead-zinc mine in the world; one of the largest copper mines and one of the largest mercury mines in the British Empire; some of the largest coal fields and one of the most important deposits of high-grade asbestos in the world, discovered only a few years ago. Each year that passes witnesses the opening up of important new mineral deposits, some of which occur in old, well established areas, while others are situated in remote parts of the Province. During the summer, hundreds of prospectors and mining company scouts go out to search for new mineral deposits. An increasingly large number of well financed companies from Eastern Canada, the United States and Great Britain are moving to British Columbia in search of additional supplies of such valuable metals as copper, silver, lead, nickel, uranium, gold, asbestos, mercury, fluorite, iron ore, manganese, tantalum, tungsten and zinc. All these and many more are known to occur in numerous places throughout British Columbia.
>
> " It is a well known fact that the individual type prospector has always been and still is responsible for most of the important mineral discoveries made in Canada. During the summer of each year, hundreds of these men work their way into some of the remotest parts of British Columbia, panning the rivers and streams, climbing the rugged

* Exhibit 212, p. 1 *et seq.*

mountains, examining all rock outcroppings and endeavouring to trace 'float' ore to the source from which it came.

"It should be borne in mind that a large part of British Columbia is covered with overburden and trees and that that portion of the Province is equally as favourable for mineral occurrence as areas where rock formations are exposed. New techniques and scientific equipment are now being used in Canada to locate ore bodies covered by overburden and there is no doubt during years to come, many important mineral deposits will be found in such areas throughout British Columbia. Quite likely some of these discoveries will be made in areas that are covered by heavy growths of timber.

"Apprehension has been expressed among members of the mining fraternity that this Province's very wealthy and powerful forest industry may be more and more inclined to look upon British Columbia as a vast 'tree-farm' and by means of subtle restraint and refusal to co-operate, gradually discourage and destroy the initiative of those men whose difficult task it is to discover and develop new mineral deposits. It is only fair to state that up to the present there have been only a few complaints from prospectors and mine operators about the effects of forest management licences upon their activities. However, this apprehension does exist as it can be readily realized that any powerful logging company, possessing purely selfish motives, could make it very difficult for any lone prospector who might desire to explore that particular area for mineral occurrence."

Mr. Elliott then outlined a nine-point programme designed (*inter alia*) to guarantee prospectors access to and right to propect for minerals upon any areas of the Province, the right to use all roads constructed by forest management licensees, the right to the use of free timber in forest management areas for mining operations generally, the right to construct trails and roads and to secure surface rights and to develop water power in such areas.

In conclusion, at page 6 of the written submission, Mr. Elliott said:—

"We strongly urge that the above-mentioned recommendations be included in appropriate Provincial Government Statutes in order that rights of prospectors and mine operators in forest management licences and such other areas may be made clear to all people. We do not feel that present regulations are suitable nor do we feel that control over matters of vital importance such as this should be left to the discretion of any one individual, or small group of individuals, however responsible they may be. The future of our mining industry is at stake and the rights of free miners must be permanently protected if this industry is to survive."

Mr. Clarence Cooper cross-examined Mr. Elliott at some length on the relevant regulating clauses contained in forest management licences

and the provisions of relevant Provincial Statutes and then the record continues as follows:—*

"Q.—In your last sentence on page 6, you say, 'The future of our mining industry is at stake.' At the present time, you don't think that from your recommendations, do you? A.—No, we don't. There hasn't been that much interference at all. It hasn't been that bad; in fact, I would say it hasn't been bad at all, but as I tried to make clear, I hope I have, it isn't a criticism of the forest-management policy, it isn't a criticism of the logging people to-day in this Province. What we are urging is that we all get together now and set out clearly in the Statutes of this Province the facts, so that all people, prospectors, mine operators, and the large mining corporations that are coming into B.C. from all parts of the world to-day, can clearly understand their position when they are entering the mining business here. We want to have it clarified for all times, we don't want to leave anything to chance, and we don't want it to be written into private contracts that you may grant to these big timber corporations. We would like to see it written right into these Acts, the Statutes of the land. By doing so, we will then have the mining industry on a sound footing and there will be no cause for any friction in the future. That is our whole case."

The Mining Association's brief was presented by Mr. C. H. Mitchell. The emphasis was placed in this submission on the continuing availability of timber-supplies for the producing mining companies which in 1954, in combination, utilized 8.2 million board-feet of lumber and 1.6 million lineal feet of round timbers for lagging, stulls, props, and other mining uses. It was submitted that during the five succeeding years from 1954 onward the yearly consumption of timber for use above and below ground will amount to about 11 million board-feet of timber and 1.7 million lineal feet of round timbers.

Mr. Mitchell said:—†

> "To deprive a presently operating mining company of ready access to adequate supplies of mine timber would be to compel immediate suspension of the operations. Failure to provide for the future timber requirements of tomorrow's mines can only mean discouragement of the search for, and development of, new orebodies and deposits, and the eventual strangulation of the industry.
>
> "It is of equal importance to the mining industry that timber should not only be available, but that timber for mining requirements should be available at the lowest possible cost commensurate with existing economic conditions. It can be demonstrated beyond question that exorbitant costs for timber can result in curtailment of a mine's operating life by rendering uneconomic large tonnages available in marginal

* Transcript, p. 9360–9361.
† Exhibit 213, p. 8 *et seq.*

orebodies. While a limited number of mining companies in this Province supply their own requirements, by far the largest part of these requirements throughout the mining industry are supplied by independent contractors. Under conditions prevailing until the introduction of forest management licences, prices for these products have been established at competitive levels through negotiations between the supplier and the purchaser. There is reason to doubt that these conditions would prevail if the only available source of supply were to be from the holder of a forest management licence.

"In this connection it is of interest to note that many of the mines in British Columbia are operating in areas where mining has been carried on continuously for periods of from twenty-five to fifty years and more. As a result, much of the timber immediately adjacent to the mining areas has been cut and remaining quantities of suitable timber are often located at some distance, necessitating expensive transportation. In the event that interests other than the established mining companies or their normal suppliers obtain control of the remaining timber, whether through forest management licences or public working circles, serious hardship could be caused the long-established mines in the district.

"A related matter of concern to the mining industry is the possibility that forest management licences might be granted in areas where the major markets for forest products, principally for geographic reasons, would be the existing and operating mining companies. In such case the competition for the existing markets which in the past has kept timber prices at reasonable levels would be eliminated, and the threat of exorbitant prices could quickly become a reality.

"In the opinion of the mining industry, careful consideration should be given to the timber requirements of the mining industry on the basis that mining requirements in general have a much higher use value than those of the lumber industry. Men and materials employed per acre of mineral deposit provide a startling comparison of the 'higher-use-value' principle as between the forest and mining industries. The comparatively small annual requirements of the mining industry are essential to that industry. In providing effective guarantees that these requirements of timber will be made available both at present and in the future, those responsible for the control and allocation of the forest resources would be ensuring the maximum benefit from the exploitation of the Province's natural resources directed to this use.

"It is perhaps inevitable that in recent years there has been increasing conflict between the 'free miners' and established mining companies on one side, and the loggers and lumber men on the other. During the early years in this Province the large quantity of timber immediately and easily available was more than sufficient to meet the needs

of both the mining and forest industries. As the Province has grown and industrial activity has expanded, loggers' activities are now bordering on areas which the miners have long considered their own particular preserves. In addition, as the larger and better grade stands of timber are cut the loggers begin to note with interest the holdings on mineral claims. Competition for timber in some areas of the Province has increased steadily over the years, particularly so in recent years when many hundreds of new logging companies have come into existence; many of them in areas where, previously, mining was the only major industry.

"With few exceptions, before the advent of forest management licences, miners and loggers in British Columbia were able to resolve differences arising from time to time with regard to use of roads, access to mineral claims, and prospecting in forest areas. Up to and including the present time, access roads built by mining companies (with or without Government assistance) have opened up very large areas of the Province, and have been of great value to logging companies. At the same time logging roads have often provided convenient access to mineral claims under development and have been of major assistance to prospectors in their work.

"The advent of forest management licences, perhaps coupled with the decreasing availability of timber in certain districts, appears to be influencing adversely the previously good relations between the loggers and the miners. In some areas of the Province efforts have been made to prevent free miners from entering forest areas for purposes of prospecting. Their rights to reasonable quantities of timber for mining purposes on claims located are being restricted. Doubts have been created as to whether surface construction of roads, trails, aerial tramways, dams, power plants, water and power lines, and other installations required for mine development and production will in the future be readily permitted in the large areas of this Province covered by forest management licences.

"The free miner who locates claims in a forest management area has little or no assurance that sufficient timber will be available to develop a mine. Investment capital, essential to the development, could, under these conditions, be reluctant to contemplate the increased expenditures which would arise from hauling timber long distances. The Minister of Lands and Forests has the right to withdraw from a forest management licence any land he considers capable of being put to a higher use, and he can add other timber land to the licence. The protection thus afforded to the mine developer is unfortunately limited. If the claims are located in an area where cutting is taking place, the valuable timber may have been cut before the mine has reached the stage where its timber requirements can be assessed.

"Another point of interest and concern to the mining industry in this connection is that the concept of forest management visualizes sustained annual yield at the determined capacity of the licence area. Under such conditions, therefore, there can be no surplus timber beyond the yearly cut required to supply the plants of the licensee. With forest management areas and public working circles bordering each other, it is difficult to visualize from where the Minister of Lands and Forests could obtain other timber land to compensate a licensee for timber land withdrawn for mining purposes.

"To re-state the proposition, what happens if a large mine requiring considerable quantities of timber should be developed in a forest management licence area? If the licence has been granted to meet the requirements on a perpetual yield basis for a forest industry that has been established at a cost of several millions of dollars, is the licensee being fairly treated if he is deprived of some of his timber to be put to a higher use when it is not possible to replace that timber by adding other timber land to his licence?

"Conversely, is it in the best interest of the Province to create a situation whereby the higher use industry (mining) cannot be developed for lack of mining timber?

"The problem could be even more difficult to resolve if a large mine requiring substantial quantities of timber was found in a public working circle.

"Another problem yet to be resolved is that arising in the case where a mine is found and developed at an altitude above timberline. In the past it has been possible for mining companies operating in such locations to acquire timber as close to the mine site as possible at Government timber sales in quantities to meet their requirements. In the event, as appears probable, that large forest management licences in some sections of the Province would include the timber near mining operations located above timberline, a situation could arise where mining operations would be confronted with serious difficulties.

"Yet another matter of concern to the mining industry is that of reverted Crown grants. In at least two areas in British Columbia in recent months difficulties have arisen in connection with leasing of reverted Crown grants in forest areas. The right of a free miner or mining company to lease a reverted Crown-granted claim has not before been in question. In the opinion of the mining industry, this right should not be open to challenge regardless of whether a forest management licence has been granted covering the area in which the Crown grant was located, and the lessee should be afforded every opportunity to develop the Crown-granted area. This is a matter which, in the opinion of the mining industry, is capable of easy and realistic

resolution by representatives of the Department of Lands and Forests and of Mines.

"The mining industry in British Columbia recognizes and appreciates that there is existing legislation designed to provide the industry with a measure of protection. Further, it is recognized and appreciated that the discretionary powers afforded to the Minister of Lands and Forests can be exercised to protect the interests of the mining industry where the need arises. It is suggested with all respect, however, that the changing conditions arising from the introduction of forest management licences indicate the need for more positive guarantees of the rights of free miners and mining companies. The need for all possible encouragement to prospectors is generally recognized and it is the opinion of the mining industry that the necessary steps should be taken without delay to clarify in the public mind the rights of prospectors under the conditions now obtaining.

"Similarly, it is suggested with respect that there is urgent need for clarification of the position of mining companies. The capital expenditures required to develop a mine prospect to the production stage frequently aggregate many millions of dollars. It is in the interests of the Province to encourage investments of this nature. Some more definite clarification of the rights of mining companies in forest management areas appears to be essential if the industry in British Columbia is to remain active and progressive.

"In the opinion of the member companies of the Mining Association of British Columbia neither the forest industries nor the mining industry should be unnecessarily hampered by restrictive legislation or regulations, but on the contrary should be encouraged wherever and whenever possible in the development and proper exploitation of the Province's two major basic resources.

"It is suggested with respect that:

"A. Forest management licences should not include areas where the most important basic industry is mining. In cases where exclusion of mining areas is not possible, adequate and readily available stands of mine timber should be placed in reserve for the sole use of mining operations.

"B. All forest management licences should clearly define the rights of free miners and mining companies with regard to all matters in which the licensees and free miners or mining companies might be in conflict.

"C. The rights of free miners to prospect, explore, locate, record and develop mineral claims, placer claims, coal deposits, and other forms of tenure for mining purposes, should be re-stated and clearly defined.

"D. The right to construct roads, trails, aerial tramways, dams, power plants (including reservoirs), water or power lines to the place of operations on most economical routes, or to use the facilities already constructed, should be re-stated and defined without restriction of these rights as they applied in the past.

"E. Free miners and mining companies should be assured of the same right to acquire and use timber for mining purposes as in the past, whether the mine be located in a forest management area or otherwise. If the foregoing cannot apply owing to prior disposal of the timber a forest management licensee should be required to guarantee to supply to a free miner or mining company operating within a licensed area adequate quantities of timber for mining purposes at favourable prices, such prices, if in dispute, to be subject to arbitration.

"F. Whether in forest management licence areas or otherwise, and subject to legislation and regulations normally governing such matters, free miners should be assured of the right to deposit waste rock, tailings or effluent in an area that is economical from a mining point of view.

"G. Free miners, whether operating in forest management licence areas or otherwise, should be assured of the right to obtain ownership or the right to the use and occupancy of all lands necessary for mining purposes, including sites for all mining and concentrating buildings and operations, and for living quarters for all personnel.

"The Crown would be entitled to expect and to receive suitable compensation in any of the foregoing instances where such compensation would normally be paid.

"It is respectfully submitted by the Mining Association of British Columbia that the interests of the Province of British Columbia, and thereby the interests of the forest and mining industries of this Province, will best be served through recognition of the multiple-use principle as applied to natural resources. In this connection it is suggested that there should be adequate consultation, full exchange of information, and close co-operation between the Department of Lands and Forests and the forest industry on the one hand and the Department of Mines and the mining industry on the other, to ensure that, in all matters where the interests of the mining industry and the forest industries are affected, including the establishment of forest management licence areas and public working circles, the requirements, rights and privileges of both industries are recognized and reconciled.

"It is the firm conviction of the membership of the Mining Association of British Columbia that these two great natural resource indus-

tries can be developed to the maximum without undue conflict one with the other. The Mining Association believes that, in determining policy, co-existence of development must be assured."

Mr. Locke questioned Mr. Mitchell, and I reproduce a short excerpt from this examination:—*

" Q.—The problems which the mining industry is faced with to-day, I suggest, are not so much the problems of the forest management licence or of the public working circle, but are the product of two things. First of all, competition for available timber, and, secondly, the advent of sustained-yield forestry in the Province of British Columbia. Is that not correct? A.—I would say that that is probably a fair statement, Mr. Locke, yes.

" Q.—Now, supposing you do find a mine under some of the management areas or public working circles, what solution do you suggest? A.—Mr. Locke, we don't know any easy solution. We've thought this over and we've made certain suggestions, but timber must be provided for a higher-use industry in the interests of the Province. It is easy for me to say that we should take it away from these people the same as I said before, as the Government has the power to take it from us and to give them some other. But the technical difficulties we have also recognized in our brief, that the Government may not have the timber to give to them if it takes some away from them and gives it to us. That's just trying to be fair about it. But we don't know what the solution would be in those cases. There might be some merit in the suggestion that if a mine is found in a public working circle and timber is required, that there should be some provision, however it is arranged, that the timber, or a quantity of timber, on that circle must be sold to that mine within reasonable limits at a reasonable price, at a competitive price. That is about the only thing that could give us any hope for protection, and I assure you that we'll undoubtedly find mines in either forest management areas or public working circles."

It should not be difficult to define by appropriate legislation the respective rights and obligations to be enjoyed by or imposed upon prospectors entering upon forest management areas or public working circles in their search for minerals nor to catalogue what is to be expected from the various users of forested land once a claim is recorded and a mine developed. All of these matters are substantially covered now by existing legislation and the terms of forest management licences and timber sales. The difficulties became immediately apparent when the mining interests request an allocation of timber from the Crown contribution thereof to forest management licences, and from public working circles.

* Transcript, p. 9411 *et seq.*

The mining industry in the past has had several sources from which it acquired timber: (*a*) On Crown-granted mining claims, (*b*) from private holdings, (*c*) from timber sales, (*d*) from contract loggers, and (*e*) from the open market.

Mr. Mitchell, in his evidence, stated that timber acquired from the surface rights appurtenant to Crown-granted mineral claims was not, generally speaking, contributing a substantial part of the daily requirements of those producing mines holding such claims and that with a few exceptions private holdings were being cut out. He further stated that companies bidding in timber sales did not find this to be a successful venture, and experience had shown that " by and large we can do better to buy from a logger or contractor rather than sending our own people out to do our logging." His conclusion was that the mining industry to-day derives the major proportion of its timber requirements from the " local open market."*

It was not made clear whether these " open market " purchases were restricted to the Coast, but from the general tenor of the evidence throughout the Inquiry I would think that his reference related solely to the purchases made by those large Coast mining companies which do not have in reserve any substantial timber holdings of their own. There is no open log market as such in the Interior.

So far as the future timber-supplies for large producing mining companies on the Coast is concerned, the answer seems to be in the open log market or by acquiring timber through the instrumentality of tied loggers in the same manner as conversion plants now obtain logs for their mills.

I am unable to recommend that the large mining companies in production on the Coast be given any prior rights of allocation of timber in public working circles. There is no distinction in principle as far as I can see in this regard between a producing mine and a sawmill. The same reasoning applies to the large companies in the Interior. It seems to me that their supply of logs must come from public working circles, in which they must compete for the available cut. I can see no other answer to their problem unless we are going to effect radical changes in our free enterprise economy.

If lumber is required for construction purposes, I presume that it is bought in the usual way from mills or retail yards.

There is, however, the plight of the small mines at the development stage both on the Coast and in the Interior. Their needs are relatively small, and I suppose in most cases their wood requirements are met by their right to the use of the timber on their mining claims for mining purposes pursuant to the provisions of the " Mineral Act."

If their claims are sparsely stocked with suitable tree species and are located in an unmanaged area of Crown forest land, there should not be any difficulty, I would think, in acquiring additional Crown timber for their mining purposes. If, however, their claims are situated in forest manage-

* Transcript, p. 9404.

ment areas, and, in 1954, 382 claims covering an area of 19,700 acres were so situated (at what stage of development, I do not know), then their problem of acquiring additional timber becomes acute, especially if the claim is located after the forest management licence has been granted. If the mining property is in existence and being developed on an area of Crown forest land prior to the award of the forest management licence over this area, suitable provisions could be written into the licence contract. When, however, the mineral deposit is discovered in an area included within a forest management licence already awarded and timber is required for developing the mine and bringing it into production, I must confess I do not know what the answer is. Mr. Mitchell was unable to suggest a solution, and it is indeed a thorny question. Perhaps the Provincial Advisory Council should consider this aspect of dual forest use.

Should such a situation arise in a public working circle, the Forest Service would be in a position to set aside or reserve a small area thereof, at an upset price, to assist in the development stages of the mining property without an adequate supply of timber for its legitimate mining purposes. The volume would be negligible in most instances. This may be considered an allocation of timber, but this would, in my opinion, be a justifiable exception and one in the public interest.

Mr. Moss, speaking on behalf of the Interior Lumber Manufacturers' Association, gave the following relevant evidence:—*

> " In connection with mining on forest lands, more specific regulations are needed to ensure that the boundaries of mining claims are properly marked for recognition by persons engaged in forestry.
>
> " We feel that the number of mining claims held on speculation is, in some cases, unnecessarily high. We suggest that studies should be made to determine if some reduction of claims taken up but not used could not be achieved. Significant numbers of claims on forest lands can cause considerable cost increases to licensees and Government by the necessity of surveys and determination of the particular rights exercised on the individual claim.
>
> " In order to stress the point made in this section, we should point out that, in claims granted prior to 1948 (after 1893?), the mining claim holds a prior right to use of the timber on the claim although the timber remains in the ownership of the Crown. We consider that this right should be cancelled, except where bona fide mining developments exist. In practice, if a lumber operator wishes to use timber on such a claim, the miner is usually loathe to waive his rights.
>
> " It has been estimated that in the area of Midway, for example, 50 million board-feet of timber are held on mining claims. Mining-claim owners have asked for financial recompense from the industry

* Transcript, p. 3395 *et seq.*

to waive their rights, and, in at least one instance, this has been paid. It appears to us that a mining-claim owner should not be able to deal in the sale of timber in this way.

" Generally speaking, the timber useful to the miner and the lumber industry are different, particularly in size. Some adequate solution should be sought for this problem."

When questioned by Mr. Locke concerning the necessity of the licensee surveying mining claims and the resultant cost thereof, Mr. Moss said such boundary surveys should be conducted by the miner at his own expense and added:—*

"A.—After all, in questions of forestry, in forest management licences, the licensee can be responsible for surveying his boundary. It seems to me the same thing should apply to the miner.

" Q.—That would solve your problem in so far as cost is concerned, at least? A.—Yes. The other thing, of course, is that you can spend considerable sums of money on such matters as cruising and so on. If you are having a continual change of claims, new claims coming up and old claims falling out, which is what is occurring, you can get a very complex picture in your forest area.

" Q.—Does it actually represent, except in some particularly small local areas, a significant problem to many of the members of your Association? A.—I would say, to my knowledge, yes. We have had reports from the Nelson area, Midway area, Okanagan. I think so, yes."

Speaking again of the situation at Midway he said:—

" Take that example there in the Midway area, which is running quite short of timber at the present time, there are 50 million feet held on mining claims, and the sawmill-owners are having to pay the mining-claim owners for that timber. There is no mining going on in many cases, no mines there."

Mr. Mitchell's evidence in this regard is as follows:—†

" Q.—We have had some evidence in the Commission to date, though not very much, about the existence of nuisance claims, in which prospectors have come along and have decided to find a mine under areas of the finest timber in the country. Having done that, they then approach the gentleman near by who might want that. Have you given any consideration as to how that problem affects the recommendations you've made here? A.—I don't see how it affects our recommendations to any extent. I know of two instances in the Vancouver Forest District, I believe they both were, where this has been done. There is a loophole available and certain people are going to take advantage of

* Transcript, p. 3484 *et seq.*
† Transcript, pp. 9409–9410.

it. But the Minister of Mines in the 'Mineral Act' is specifically empowered to take that timber away from any free miner if he considers there has been an abuse. All I can suggest in that connection is that if there is any argument that the mining industry, equally with the logging industry, would strongly support any move made by the Minister to take land away where it can be demonstrated or proven that it was acquired for purposes other than mining."

It may be said that sections 23 and 161 of the "Mineral Act" cover the complaints of Mr. Moss, but the power vested in the Minister of Mines in section 23 relates generally to a restrictive use, although it is made clear enough by subsection (2) (*b*) thereof, that "matured timber and species not ordinarily used for mining purposes *and that is not being used for mining purposes* may be disposed of under the Forest Act" (my italics). An extension of this section to include all timber on a claim that is not being used for mining purposes would effectively prevent the abuses referred to by Mr. Moss.

I have not considered the 1957 amendments to the "Mineral Act," nor what effect, if any, they might have on the use of timber on a mining claim. They were enacted after the Inquiry terminated, and were thus never before me for discussion.

One thing is clear: there is an abundance of legislative enactments covering mining generally, and the rights of prospectors specifically, already on the Statute books of this Province, including the closure section of the "Forest Act."

It is also made manifest from the evidence I have selected for insertion in this Report that a good many complaints have been recorded concerning the impact of sustained-yield forestry in the mining industry and others engaged in various enterprises on forested land areas.

Mr. Moss summarized the general trend of the evidence succinctly when he said:—*

"Q.—It is drawn to my attention that the legislation with which we have to deal is contained partly in the 'Forest Act' and in the 'Land Act,' in the 'Grazing Act,' 'Water Act,' 'Game Act,' and the 'Mines Act,' all of which Acts affect in some way forest land. Can you give us any suggestion as to what you would like to see done with the various pieces of legislation which are to be found throughout all these Acts? A.—I am not too concerned about the legislation. What I would like to see is a better knowledge in other Government departments of what is going on in the Forest Department. I think if that were created, the Acts would iron themselves out.

"Q.—I take it, then, simply that you think the left hand of the Government isn't sure what the right hand is doing? A.—That is the impression we get."

* Transcript, pp. 3481–3482.

I think the time is opportune for the Government set up an inter-departmental committee representing the different branches of the Government which exercise jurisdiction over matters relating to forestry, land, grazing, mining, petroleum and natural gas, water, and game administration to examine the various Statutes under which each functions in order to correlate by appropriate amendments such administrative activities and land uses so that a clear-cut delineation of each land-using interest can be effectuated by legislation and present or future conflicts be thus avoided or minimized.

This committee should in this endeavour seek the assistance of the Provincial Advisory Council as representing the various groups interested in the multiple-use aspects of forested lands. The Provincial Advisory Council should in a matter of this kind call upon the Northern and Southern Interior Advisory Boards for an expression of their opinions concerning matters of special significance to their members.

The opportunity for a full discussion of this kind between Government representatives and the Provincial Advisory Council should, in itself, tend to remove to a considerable degree the present apprehension that is due in some instances to misunderstanding of the present legislation. Where further clarification is deemed necessary in order to give an adequate measure of protection to each class of user, the required amendments should remove all residual doubts.

With a better understanding gained by discussion and doubts removed by legislation, mutual co-operation between the various interests involved should not be difficult of achievement.

Watershed Management

This subject was touched upon briefly in this Inquiry and did not appear to loom so large as it did in 1944–45.

There were questions raised relating to logging watershed areas near Nelson and Revelstoke, but I do not think that I can add anything useful to what I said concerning this general subject in the 1945 Report, as follows (in part):—*

> "The evidence before me leads to no other conclusion than that the removal of the up-stream forest-cover has a definite effect upon water run-off. I do not have sufficient data upon which to make any finding upon whether the removal of the forest-cover increases or decreases the annual watershed yields. I have read many scientific treatises upon the subject and the general trend of professional opinion seems to indicate, however, that mainly because of the tremendous volume of water drawn from the soil and returned to the atmosphere through transpiration, and by the interception by the trees of rain and snow, thus permitting moisture to evaporate before reaching the

* 1945 Report, p. 159 *et seq.*

ground, the existence of forest cover decreases the total watershed yield. This conclusion is, I think, acceptable in a general sense, but it seems to me that so many factors enter into the picture influencing total water yield—e.g., the slope of the watershed, topography, density of the forest and vegetation cover, soil conditions, and so on—that what might be true in localities in which studies were conducted, it does not necessarily follow that the conclusions reached therein have a universal validity. In this connection it must also be borne in mind that forested areas receive more precipitation than open country. However that may be, I am on safe ground in saying that, except in exceptional circumstances, run-off distribution is materially effected by removal of the forest-cover.

" The effect of forest-cover—trees, vegetation, and humus—is to decrease materially the rapidity with which water flows into its stream and river drainage systems, thus ensuring a continuous and even supply. The removal of the forest-cover leads to an accelerated run-off—the ' flash run-off '—with consequent soil deterioration and erosion, and, in the absence of adequate storage facilities, means a plethora of water in the streams one day followed by a scant supply thereafter until the next rain.

" Soil erosion results (*inter alia*) in the silting of reservoirs, irrigation systems, and the pollution of water used in processing plants.

" The problems of watershed protection and management are of vital interest to many groups in the interior. The Okanagan fruit and vegetable industry is dependent upon an abundant supply of water for its continued existence. The stockmen require an adequate water-supply for their grazing ranges.

" The Interior fruit and vegetable industry plays an important part in the economic welfare of this Province. Without water for its irrigation systems this industry would soon disappear.

" In addition to supplying the essential requirements of these two classes of water-users, the streams, both on the Coast and in the Interior, are the spawning-grounds for salmon and sport fish.

" The forest and water-yield are inseparably linked, thus the maintenance of the forest-cover must have as one objective the continued prosperity and perpetuation of these three manifestly important wealth-producing activities: fruit and vegetable farming, stock-raising, and salmon-fisheries.

" The maintenance of stream and river flow as a source of power producing electric energy is also a vital necessity. The management of watersheds upon which communities depend for their domestic water-supply falls within the same category.

" Each watershed presents its own peculiar and complex problems, but there are three broad principles of watershed management that

apply to them all: they must be protected from fire, they must be restored, and they must be improved.

" Restoration of a watershed is indicated when logging or fire, or both, have removed the forest-cover to an extent that floods and erosion follow. This can be accomplished by tree planting. Seeding by a suitable grass-cover may also be required.

" Watershed improvement may call for silvicultural treatment, such as thinning too dense stands, thus reducing forest water consumption by transpiration and preventing premature evaporation. In some areas which have ample water-storage facilities improvement may extend to the removal of a great part of the non-commercial cover compatible with erosion-control.

" The practical application of these fundamentals will necessitate considerable research and experimentation in order to decide, for instance, whether a particular watershed should have a greater or less density of cover.

" The methods to be adopted to ensure a continuous water-supply for any localized area must be determined by a close study of local conditions by men equipped for this work by training and experience.

" The control of logging methods and the allowable cut from watersheds must also be governed by local conditions and a careful appraisal of conflicting values.

" Where, for instance, the water yield may be collected in reservoirs and flood and erosion damage are not to be anticipated the cut may be as heavy as a sustained-yield policy would permit. If, on the other hand, regulation of stream-flow is of more importance than total water yield the cut must be light enough to maintain a fairly complete forest canopy.

" In areas where by reason of topographical or other contributory causes flood and erosion damage is a definite danger cutting should be kept at a minimum.

"All of these matters must, however, be decided according to the circumstances peculiar to the area under review."

MISCELLANEOUS SUBJECTS

There are a few remaining matters to be dealt with, and I have included them under this heading, not because of their relative lack of importance, but mainly because they did not fall conveniently within any of the other sections.

SALMON-STREAMS

In 1945 the value of the salmon-fisheries amounted to about $15,000,000 a year. In the calendar year of 1956 the marketed value of the salmon produced in this Province had increased to $45,000,000. There are about 15,000 individuals employed as fishermen or cannery employees. In addition, there are numerous other industries which, in whole or in part, are dependent upon or associated with the salmon-fisheries.

There are five species of Pacific salmon which frequent British Columbia waters and are exploited commercially. The most valuable of these is the sockeye, the runs of which frequent the larger river systems of the Province, such as the Fraser, Skeena, Nass, Nimpkish, and Somass, and the smaller rivers tributary thereto.

Two of the species—i.e., springs (tyee) and cohoe—are excellent sport fish and serve as valuable tourist attraction as well as providing sport and recreational values for our own people.

In 1945 I said:—*

> " The continuance of this industry depends upon, first—a sufficient escapement of adult salmon; second—their ability to reach the spawning-beds; third—the hatching of the spawn; fourth—an unimpeded journey down-stream of the fry to the sea.
>
> " The question of escapement is not a matter within the scope of this Inquiry, but the effect of the forest-cover upon stream-flow is germane thereto, and I have already expressed my views thereon.
>
> " That leaves for consideration the effect that logging methods have upon the up-stream travel of the adult salmon, the gravel of the spawning-beds, and the seaward journey of the young fry."

I then referred at some length to the evidence of the then Chief Supervisor of Fisheries, Major J. A. Motherwell, concerning the destruction of the salmon-spawning beds by the logging methods in use and the depositing of logging debris in salmon-streams, causing jams and consequent interference with the use of these streams by spawning salmon.

I continued:—†

> "As the Chief Supervisor stated in his evidence before me, the Federal Fisheries Regulations vest ample and complete authority in Federal officials to meet this challenge to the perpetuation of the salmon industry.

* 1945 Report, p. 169.
† 1945 Report, p. 171.

" It is my opinion, however, that the Forest Service should also take a hand in this endeavour.

" Salmon are, in one sense, just as much a forest crop as are the trees, for without the forested watersheds there would be no streams capable of supporting the spawning-beds and, in consequence, no salmon. Protection and perpetuation of the salmon run is just another forest use. The stream-flow can be preserved by an intelligent management of the watersheds. The spawning-beds and the streams, as highways from and to the sea, also need protection from that type of individual—fortunately few in number—who considers it a smart trick to haul logs down the bed of a salmon-stream, thus destroying the eggs waiting their hatching period in the gravel-beds. In my opinion the Forest Service should have power to cancel any contract or terminate any form of tenure held by any operator who, or whose employee, is found guilty of this or other practices destructive of the salmon run."

Mr. A. J. Whitmore, the present Chief Supervisor of Fisheries, Pacific Area, presented a brief to this Inquiry on behalf of the Department of Fisheries of Canada.

In this he said (in part):—*

" In our brief to the Royal Commission ten years ago the damages to the salmon-fishery as a result of the logging methods then practised were pointed out.

" It gives me great pleasure to report to this Commission that many of the logging practices which were formerly harmful to the salmon-fishery have now been almost completely eliminated. The dragging of logs down salmon-streams has become a rare occurrence, and the instances of slash and logging debris being carried into or disposed of in streams are much less frequent than previously.

" There is no doubt that the recommendations and comments contained in the 1945 Report of the previous Royal Commission contributed substantially to this improved condition. Also, following the war, reorganization of the Department of Fisheries has brought about increase and strengthening of its staff of Fishery Officers and other field personnel so that we have been and are now better able to deal with such problems at the local level, and to prevent harm from being done by co-operation with the logging operators in the field.

" Our brief to the previous Commission also pointed out the dangers inherent in removal of the forest-cover and destruction of the forest floor along streams and around lakes supporting runs of salmon. This danger was also recognized in the Report of the previous Commission, and the result has been a general improvement in this respect by the introduction of ' patch logging,' reforestation, and the general trend towards placing logging on a sustained-yield basis.

* Transcript, p. 11016 *et seq.*

" It should not be construed from the foregoing that these two main problems have been completely solved. Continued vigilance is necessary on the part of our Fishery Officers to prevent or remedy damage to spawning-streams, and continued co-operation by all logging interests is also essential to the future well-being of our fisheries. Our Department would welcome recognition in the forestry licences or permits of the fisheries needs as associated with streams and lakes in the terrain to be logged and of a responsibility of licensees to assist and co-operate in fullest possible measure for protecting and safeguarding these streams in perpetuating the salmon runs.

"Before leaving the subject of logging methods, I would like to comment on one problem which, although not new, was not discussed at the previous Royal Commission hearing. From time to time attempts have been made to introduce the practice of conveying logs to the markets by driving them down the shallower rivers. This driving is distinct from the practice of booming or floating logs in the larger, deeper rivers such as the Fraser. The latter has been found up to the present to have no adverse effects on the fishery. Log-driving on the shallower streams where salmon spawning takes place or where salmon migration is frequently heavily concentrated has been found in general to be an extreme hazard to the salmon runs. In the early days of logging on the Pacific Coast, this practice was quite prevalent, and remains of many of the old 'splash-dams' still exist in streams rendered barren of salmon. Some have been removed and programmes are under way to rehabilitate the salmon runs. The Adams River near Kamloops is an outstanding example.

"This practice of log-driving has virtually died out in the Northwest in the last few decades, but occasional attempts are made to revive it, usually without success. It is regretted that these occasional attempts can do tremendous harm to the fishery, even when they are abandoned at a later date. Gouging out of the spawning gravel-bars by logs, with resultant erosion of the channel, is one of the chief causes of concern in this respect. Another danger is the construction of the many so-called 'river improvements' necessary to keep the logs moving in an orderly progression down-stream. These can consist of splash-dams, wing-dams, fender-booms, and river diversions. All of these tend to disrupt the normal regime of the river, with the resultant disruption in the spawning of the salmon and incubation of eggs.

"Q.—What is a splash-dam? A.—It is a dam which is constructed with the principle of allowing a quick volume of water to pass through it and to flush the logs down-stream. It is a flushing process.

"Q.—It constricts the area of the water channel, does it, and increases its velocity or something of that sort– A.—Yes, increases the

velocity and also the volume of water momentarily to flush logs that have been gathered.

"Q.—It creates a surge? A.—Yes. Our Fisheries Act gives us no power to ban such an operation, we can only prevent damage to eggs and fish which has been proved by circumstantial evidence. Because direct evidence is rarely obtainable, it is necessary to depend almost completely on the co-operation of the operators in eliminating this hazard. It is our sincere hope that this co-operation will in future prove sufficient to meet the problem. If it is not, we would feel justified in recommending that all log driving be banned in salmon-spawning streams.

"In my opening remarks, I pointed out that the effects of the forest industry on the fishery have changed during the last ten years. Besides the general improvements in logging methods just discussed, other developments have introduced new effects which were not apparent ten years ago.

"The growth of integrated forest operations have brought to the fore the modern pulp-mill, running to a large extent on forest products formerly wasted in logging. These pulp-mills are large water-consumers, and in addition their waste products must be disposed of economically, usually into adjacent rivers or salt water. Both of these requirements have threatened to affect the salmon-fishery to varying degrees at all of the pulp-mills constructed in British Columbia in recent years.

"Fortunately the owners of the new mills have been most co-operative in their approach to these installations; it has been the policy of the Department to encourage this in every feasible way. Our engineers, biologists, and oceanographers have worked closely with the designers of the projects, and in all cases serious harm to the fishery has been avoided. Water intakes have been screened and storage provided in cases where pulp-mill demand would have reduced stream-flow below the requirements for spawning and migration.

"Study of the waste-disposal problems has been extensive, involving oceanographic work and construction of complicated hydraulic models. Considerable expense has been involved both to our Department and to the operators, but in all cases to date a mutually satisfactory solution has been arrived at which we believe has justified the costs involved.

"Here again, we would not wish to leave the impression that this problem has been solved for all time. The future well-being of the fishery will depend on the diligence and ingenuity of our scientists and the continued co-operation of the pulp industry.

"In the field of pollution, other phases of the forest industry have contributed problems which are not yet serious but may become so in the future. Sawdust-disposal from small sawmills requires constant checking by officers of the Department in order to prevent pollution

of salmon-streams. The co-operation of operators is nearly always easily obtained once they are acquainted with the consequences of such practices. A newer problem is the disposal of water from the hydraulic barking processes now being installed in more and more sawmills. This water contains a heavy concentration of suspended bark sediment, and if the waste water is conducted to a salmon-river, the sediment load could contribute substantially to the pollution of the stream and destruction of the fish. No serious pollution has resulted to date because some screening of the wastes is normally practised, and the remaining load is not sufficient to create a problem. However, the use of hydraulic barkers is increasing, and the co-operation of the wood-processing industry in the future will undoubtedly be necessary to prevent a serious problem from arising.

"An additional problem which is mentioned here in passing, since it has only arisen outside the boundaries of the Province, is that of damage by the use of insecticide sprays in the control of forest insects. In the Province of New Brunswick a tract of forest on the Miramichi River was sprayed with DDT for control of budworm infestation. Extensive tests were carried out simultaneously to determine the effect on young salmon. The result was that in the sprayed area virtually all the newly hatched salmon fry were killed, while the larger fish were affected to a lesser degree, the 2- and 3-year-olds being reduced by only one-third. The effects were noticeable on the fish as much as 14 miles outside the sprayed area, and dead and dying young salmon were found from two and a half to three months after the spraying took place. While this may never become a problem in British Columbia, it is a startling example of the type of new development which must be carefully analysed in the early stages in order to prevent serious damage of one resource for the benefit of another."

Mr. Whitmore's comment "that this may never become a problem in British Columbia" has unfortunately been disproven by recent events.

I have, in writing this Report, seldom ventured into occurences in 1957. All the statistical and other material before me related solely to the years prior thereto, but I think I should in this instance refer to the extensive efforts in 1957 on the part of the Federal and Provincial Governments, and the companies whose timber was affected, to save large stands of hemlock in the Nimpkish-Port Hardy area from fatal defoliation by the black-headed budworm. The attack was by aerial spraying with DDT* and covered about 158,000 acres at a cost exceeding $300,000. The timber values are estimated at somewhere in the neighborhood of $25,000,000.

I am advised by Mr. Whitmore that from test-pens, and general observation, damage to young salmon and trout in streams and lakes in the area

*Dichlorodiphonyltrichloroethane.

sprayed was extensive but not yet fully evaluated. Every effort was made by those engaged in this spraying operation to avoid actual contamination of streams and the waters of Lake Victoria near Port Hardy, but seemingly without success.

Although the area treated was relatively minor in extent when compared with the area similarly sprayed in New Brunswick, nevertheless it was a large operation for this Province and serves to point up the necessity for further research to discover a chemical spray not fatal to fish life or perhaps some other means of combating this hemlock defoliator against which the DDT spray appears at present the only quick method of eradication or control. The cyclic extermination of the budworm by parasitical agencies is a slow process, and tremendous damage can be done to a forested area before the worm population is thus reduced. In the meantime and before new discoveries result from research, the continued use of sprays destructive to fish life will, I suppose, have to be decided, when occasion arises, upon the basis of the relative and comparative values involved and the risk calculated accordingly.

The problem is a serious one in any event and calls for close co-operation between all interests affected.

Returning to Mr. Whitmore's submission to the Inquiry, it is manifest that the untoward conditions experienced ten years ago are no longer so troublesome due to the measure of co-operation that exists between the logging industry and fishery officials. It is my opinion, however, that his suggestion that a clause be inserted in forest management licences and timber-sale contracts imposing an obligation to assist and co-operate in the fullest possible measure in the protection and safeguarding salmon-streams is one that should be adopted by the Forest Service. Flagrant breaches of this obligation would then be a ground for suspending or cancelling the licence or timber sale. I said much the same thing in 1945.

The effluent from pulp-mills and the deposit of sawdust in salmon-streams are matters of importance, and I have no doubt that the pulp-mills and smaller sawmills will continue to demonstrate a co-operative attitude and seek to remedy these factors destructive to the salmon runs.

River Driving.—There appears to be a revival under way of the practice of river driving logs from Interior points to the Coast.

Mr. Whitmore's observation that "occasional attempts are made to revive it usually without success" is not altogether accurate according to the evidence before the Inquiry. It is far more extensive than he indicates.

Mr. Walter Koerner said in this context:—*

> "During the war our company tried the driving of a few logs down the Fraser Canyon from near Spuzzum, and found it feasible. Making it a successful commercial undertaking was the work of the Kester Brothers, who are engaged in river towing, and McCorkle Brothers

* Transcript, p. 12240 *et seq.*

Logging Ltd., who have acquired timber above Boston Bar. After a trial had been made in 1953, these firms began the commercial driving of logs through the Canyon in early 1954. The method used is to strap the truck-load as a bundle before it is dumped in the river. The bundles come through the Canyon without assistance and are picked up near Hope.

"Initially, the operators allowed for a loss of 5 per cent. After two years' experience they have found the losses to be negligible.

"Unlike many of our rivers, there are no shallows or flat areas where logs can be lost.

"Meanwhile other operators have taken up the system, and to our knowledge there are at least seven operating on this basis between Hope and Lytton. They also report negligible losses. Last spring logs were successfully driven from Williams Lake, and more are coming. In our opinion, areas tributary to the river up to Williams Lake, and possibly even farther, are commercially accessible to Vancouver.

"The cost of this transportation is within reason and reverses former conceptions based on a railroad-haul. It is comparable to flat-rafting logs from, say, Port Hardy, and is very much less than transportation by Davis raft or barge. The system, too, is ideally suited to the small operator, who can bring a few logs to the river and dump them without concern for expensive booming-grounds, rafting, and the like."

Mr. C. B. Dunham, of the Columbia Cellulose Company, said:—*

"Present plans envision the use of the Kitsumgallum Lake and River for transport of logs to the C.N.R. track near Terrace. The Company's main logging-road runs parallel to this river and lake for a distance of 28 miles, and successful use of this watercourse would thus do away with the long and costly truck-haul.

"During the past year the lower part of the river was improved for a distance of 9 miles, and logs were successfully driven for this distance. We are continuing to improve the watercourse in order that low-cost log movement can be attained over the entire distance for approximately 150 days a year.

"In 1951 attempts were made to drive the Skeena River from the mouth of the Kitsumgallum River to tidewater, a distance of some 50 miles. Log-driving from this point proved too hazardous, but we concluded that logs could be towed down the river.

"This past season, logs were successfully towed in small rafts from 30 miles above tidewater. Results to date indicate that with channel improvements, large-scale log movements are feasible from the Terrace area to the pulp-mill.

"The Nass River taps a major part of our licence area. The eventual use of this river for log transportation can be a vital factor in the

* Transcript, p. 13334 *et seq.*

economic development of this portion of the licence area, since wood from the central and upper portions of the Aiyansh Block must be transported for distances of from 50 to 100 miles to tidewater.

" We have examined the Nass River for towing and log-driving, and in 1955, as a part of this survey, for the first time a river tug reached Grease Harbour, some 40 miles above tidewater. These investigations indicate that the Nass is driveable from the north end of the licence area to Grease Harbour, a distance of about 75 miles, and thence towable to tidewater."

It will be remembered that Mr. Whitmore said in his submission that the Skeena and the Nass Rivers supplied in part the valuable sockeye runs.

Mr. I. C. MacQueen, of the Western Plywood (Cariboo) Limited, was of the opinion that the upper reaches of the Fraser River would have to be " improved " for log-driving. In this connection it will be recalled that Mr. Whitmore defined generally the type of improvements required and their effect on the water-flow and spawning-beds.

Mr. MacQueen said:—*

" River transport is a matter which, if logs are being driven down the river loose, the cost of that river drive is dependent upon the expenditure required to improve the river for safe delivery of those logs. The Fraser River between Soda Creek and Prince George contains numerous islands, numerous back channels and sand-bars. There are many places where river driving would require very considerable expenditure."

Mr. Samuel Heller, of the Pacific Pine Company, contended that " legislation should be enacted to safeguard rights of logging operators to the use of rivers for log-driving."†

It is apparent from these quoted excerpts from the testimony of these witnesses that the future will see an intensive use of the large rivers like the Fraser and others of less depth and volume for log-driving. This activity and the " improvements " consequent thereon in the shallower rivers and in the higher reaches of the large rivers and their tributaries might very well have a deleterious effect upon the spawning-beds and is, in consequence, a subject deserving of serious study by the logging and fishing industries before any serious damage occurs to the salmon runs. Whether legislation will be required, either Federal or Provincial, or both, is a matter for future determination after the facts are established.

EDUCATION AND PUBLIC RELATIONS

Education, in a relevant sense, is the process of instilling into the minds of children and adults a knowledgeable understanding of our forest resource, its importance to our economy and way of life, and the necessity for its management and protection for the benefit of our own and future

* Transcript, pp. 8482–8483.
† Transcript, p. 13043.

generations. Public Relations is, as I understand the term, when used in this connection, the employment of various media of expression to create in the minds of the public generally an understanding and acceptance of policies designed to keep our forest lands productive under a system of sustained-yield management.

In my Report of 1945 I said:—*

> " Our forests are of such importance to the economic life of this Province it is essential that the public generally be acquainted with their growth, uses, and perpetuation. The school children of to-day will become the future custodians of this great resource. It seems to me, therefore, that our young people should receive instruction in matters pertaining to the economic and social values thereof.
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> . . . . . .
>
> " General public instruction is also an essential requirement in order to create public opinion favourable to the practice of sustained-yield forestry involving, as it will, the expenditure of direct forest revenue upon the perpetuation of our forests to a far greater extent than at present—at least during the transition stage. The public must also learn through suitable media the imperative necessity of keeping our growing stock protected from fire."

In 1909, ante-dating my 1945 comment concerning public education in relation to fire protection and prevention by thirty-six years, the Royal Commission of that year said with a remarkable prescience:—†

> " As settlement progresses in each thickly timbered country public opinion goes through the same inevitable changes. At first forest fires are looked upon as a natural accompaniment to the routine of progress and development; indeed they may even seem desirable means of opening up new territory. Then, as the lumbering industry obtains the control of small areas of timber land, these fires appear as a vague menace to private interests; a menace, however, that arouses little anxiety since, when timber is destroyed, there is no difficulty in obtaining elsewhere in the immense unused forest the grant of fresh sources of supply. After this comes the time when men realize how limited is the amount of merchantable timber and how valuable it must soon become. The holding of timber lands becomes a profitable form of investment and in consequence most of the accessible forest passes into private control. At this stage fires cause direct injury to private interests by actual destruction of timber held; they damage a source of public revenue; and their prevalence deters investment and acts as a drag upon the rise in stumpage values. The attention they thus arouse soon causes the remarkable discovery that it is often possible to minimise the damage

* 1945 Report, pp. 156–157.

† Report of Royal Commission on Forestry, 1909, pp. 59, 62.

they can do by spending money upon fighting them. The lumbermen and Government co-operate, money is actually obtained, and the protection of the merchantable forest is begun. The final stage is reached when both Government and people realise that the protection of merchantable timber is but a part of the work that must be done; that the young growth on cut-over lands needs equal care, since upon it depends the future of the lumbering industry and much of the future commerce of the whole community; and that money and effort must be invested in the prevention of forest fires as well as in the fighting of those that have been allowed to spread."

". . . Your Commissioners wish to emphasize the necessity of educating public opinion in British Columbia in order that our forests may be the better protected from stupidity and carelessness."

In May of 1945 Dr. Orchard, as Chief Forester, established, on an organized basis, a Division of Public Relations and Education as part of the Forest Service administration with a graduate forester in charge. In a directive he stated in part:—

" There is established in the Forest Service in the Chief Forester's office a new division to be known as the ' Division of Public Relations and Education.' The duties attached to this new division, as far as present intentions will permit definition, are outlined below.

" The Division will take charge of, and the Forester in charge will be responsible for, the Forest Service library and library of photographs. The Librarian will report directly to, and be responsible to, the Forester in charge.

" The Forester in charge, and his assistants as directed, will act in the capacity of Forest Service editor. All bulletins and reports for publication and distribution will be submitted to the Forester in Public Relations and Education for editorial review. The Forester will be responsible for seeing that all such have the approval of the Chief Forester before publication is finally authorized. In the case of departmental reports and memoranda, officers of the Service are to have the benefit of this editorial service, if it is desired, but there will be no obligation to submit departmental reports to this Division for editorial review.

" The Division will be responsible for all Forest Service advertising and publicity, but it is not intended that the Service as a whole should be in any way restricted in suggesting, preparing or seeking advertising programs. Forest Protection advertising, for example, will probably in large measure originate with the Operations Division, with the new Division acting in an advisory, editorial and mechanical capacity in relieving Operations of the detail and responsibility of placement.

" Routine advertising, publicity, and public relations activities of long standing in the Service are transferred to this Division, including the calendar and the News Letter.

" Public Relations duties cover a field which it is difficult to define, but it is desired to lay down the overall guiding principle that there is no intention, and there must be no effort on the part of the Division or the Service to advertise the Forest Service as such or to seek in so many words to indicate how good we may consider the Service to be. The functions of public relations, advertising and education, rather, shall be to explain to the public generally the principles of sound forestry and the practice of forestry, the extent of our forest resources, their importance in the economic life of the Province, the extent to which they are being wisely managed and the extent to which management and protection have failed, without, in either case, taking specific credit to the Service or laying blame on the Service or other parties or agencies. They will also include explaining to the public, either in general terms, or on specific occasion and in relation to specific problems the provisions of the law and regulations, the reasons for such, the reasons for action which may have been taken, or the lack of action, endeavouring to give the public a clear understanding of current problems and how they are dealt with. An example of this type of contact will be meetings with Boards of Trade and Fish and Game Clubs that might have current misconceptions regarding decisions or actions, or failure to act in specific problems.

" Public Relations will also include publication of articles, preparation, publication and distribution of informative and educational bulletins dealing with such factors as the resources of the Province, the forest industry, forest protection, and descriptive bulletins such as that published in 1943 in relation to the Green Timbers Nursery.

" The educational functions of the Public Relations Division might better perhaps be described as a type of extension forestry. The Division should seek by bulletins, articles, speeches and work in the schools to give the public of the Province a proper appreciation of the forest resource and the science of forestry, its necessity, progress and limitations. Particularly, its functions will include the preparation of such bulletins as are outlined above, and co-operation with the Provincial Department of Education in the preparation of educational material, textbooks, and teaching aids for the schools.

" The Division will be responsible for all photographs and moving picture work of the Service, and, in co-operation with the various Divisions and Districts, for the use and distribution of pictures and moving-picture equipment."

At its inception in 1945 the Division comprised the forester in charge, one clerk who already had been performing certain of the functions of the

new organization, and a stenographer who had been serving as librarian in charge of books and photographs. In the intervening years the establishment of the Division has been increased to eleven, in the following categories: 1 forester, 1 public relations officer, 2 forest assistants, 2 clerks (library), 2 stenographers, 1 clerk (general office), 2 photographers. During that time the Division has maintained almost all of the projects that had been undertaken by various Forest Service officers previously, and has initiated a few new ones.

In the execution of its duties outlined by Dr. Orchard, this Division has been engaged in the following activities:—

(1) *School Lectures.*—The two forest assistants spend approximately nine months in each year visiting schools throughout the Province (public elementary and high, private and separate) delivering lectures on forest conservation, supplemented by suitable motion pictures. This is a co-operative effort with the British Columbia Branch of the Canadian Forestry Association, which also places lecturers in the field. Between lecturer visits, interest is maintained by a series of leaflets entitled " Conservation Topics."

(2) *Press Advertising.*—This project placed display advertisements primarily advocating care with fire in all daily and weekly papers throughout the Province and in several trade publications and similar periodicals. It was discontinued in 1954.

(3) *Radio Advertising.*—In 1949 the Forest Service initiated a paid broadcast programme over all radio stations in the Province, concentrating largely on fire-prevention messages and hazard warnings in the months of June to September. This project has continued to date. Previous to 1949 a considerable amount of time had been donated by some radio stations as a public service, in some cases using scripts prepared by the Division.

(4) *Signs and Posters.*—The Division has assumed responsibility for the production of a diversity of signs and posters, as noted below:—

(*a*) Highway (roadway) protection signs.

(*b*) Highway (Scotchlite roadside) protection signs.

(*c*) Ranger station, assistant ranger station. Lookout, and other directional and identification signs.

(*d*) Cardboard protection and information posters for display in stores, post offices, and other locations.

(5) *Miscellaneous Educational Items.*—This is a group which includes such material as fire-warning decals for cars, blotters, stuffers for photographers' orders, and a calendar which is printed and distributed each year. The calendar has been a

regular feature of Forest Service educational material for over twenty-five years. Other items, produced at intervals during the last three decades, include rulers for school-children, pocket whetstones, and folders depicting composition of the Union Jack.

(6) *Photographs and Motion Pictures.*—The photographic unit of the Division is responsible for the taking of special photographs as required by other divisions of the Forest Service, particularly Research, Protection, Engineering, and reforestation. It processes, as and when required, photographs taken by other officers of the Forest Service. Prints of the size and type required are produced in the Division Laboratory for the press, the general public (e.g. writers, advertising agencies, other forestry organizations), other divisions of the Forest Service, and other Government departments. It counsels in the selection and purchase of photographic equipment for use of other divisions. The unit produces suitable motion pictures for the education—cum—entertainment of the general public, students, and such like. A fairly extensive library of motion-picture titles was in existence when the Division was established in 1945. Since that time the number of titles has been somewhat increased and the audience attending increased manyfold through the acquisition of multiple prints of most of the titles, the printing and distribution of an attractive and informative catalogue, and the acquisition of staff to look after repair and circulation of films. In addition to loaning films to interested individuals or organizations, personnel of the Division frequently project for service clubs, Scout and Guide groups, and other meetings.

(7) *Publications.*—A variety of publications ranging from technical reports on research studies to popular leaflets and childrens' stories have been produced.

Mr. Eric Druce is the forester in charge and has been since 1945. He is a man of long experience. After serving nineteen years with the Federal Forest Service at Ottawa, he was engaged by the Canadian Pulp and Paper Association and was in its employment for three years. He has been over ten years with the British Columbia Forest Service, and during all that time has been engaged in educational and public relations work. The information I have recorded concerning this Division has been drawn from his submission to the Inquiry.

Mr. Druce in his presentation said:—*

"A greater endeavour should be made to anticipate public interest in changes in policy, new methods and new practices. It is a safe

* Exhibit 31.

assumption that most changes will meet with hesitancy and criticism and it is probable that difficulties can be avoided by clear explanations of impending changes before they are implemented. Where changes are legislative and, therefore, cannot be publicized before they become operative, opportunity should be given to the Division to prepare explanatory material to be released coincident with the introduction of the legislation.

" It is difficult to maintain satisfactory public relations, and properly disseminate information, particularly on matters of only regional or local interest, from a single central office in Victoria. Consideration should be given to placement of qualified personnel at the five district offices. Currently, the Public Relations and Education Division is the only one, of those divisions of the Forest Service whose function is to meet with and render service to the public, lacking representation on district office staffs. While it is true that this responsibility is usually assigned to some member of the district staff, that individual always has other duties for which he is more specifically trained and which have higher priority not only in his designated duties but also in his personal interest. In essence, district administration and procedure are still in the same state as Victoria head office was in ten years ago—much excellent work is being accomplished but efforts lack continuity and many opportunities for profitable public contact and education are lost because the responsible officer is preoccupied with other duties and fails to recognize an opportunity due to lack of specific training and experience.

" Consideration should be given to a gradual increase in the funds available for public relations work to a point commensurate with the importance of the forest resource to the economy of the Province. The value of forest production in British Columbia now exceeds half a billion dollars annually. It is submitted that the sum of $52,000 allotted to the Public Relations and Education Division this year—representing one-one hundredth of 1 per cent of the resource it is required to publicize to the people—is disproportionate.

" In addition to a steady extension in the forms of public education being utilized, there are new avenues that cannot be explored with limited funds and the present small staff. Television is a case in point. A slow but steady increase in funds is advocated to enable suitable staff to be acquired or trained. Any immediate, sizeable increase in funds might not be efficiently expended."

Mr. Druce is repeating what so many witnesses have brought to my attention concerning other branches of the Service. He, sharing a common experience, has not sufficient funds to discharge properly the obligations of his office.

The following compilation shows the moneys allotted, since the fiscal year 1943–44 to public relations (publicity) on forestry for disbursement by the British Columbia Forest Service.

TABLE 163

AMOUNTS ALLOTED BY BRITISH COLUMBIA GOVERNMENT FOR PUBLIC RELATIONS (PUBLICITY) ON FORESTRY BY FISCAL YEARS[1]

Fiscal Year	Amount Allotted	Fiscal Year	Amount Allotted
1943–44	$8,325	1950–51	$55,950
1944–45	10,075	1951–52	63,950
1945–46	10,025	1952–53	91,250
1946–47	14,425	1953–54	57,550
1947–48	18,675	1954–55	57,400
1948–49	26,950	1955–56	52,200
1949–50	46,450	1956–57	52,200

[1] These amounts do not include salaries amounting presently to about $35,000 a year but show expenditures for advertising, radio, motion-picture production and distribution, printing bulletins, signs, and such like items.

The decrease in moneys allotted from $91,000 in 1952–53 to $52,000 in the year 1956–57, a drop of about 40 per cent, is to be noted.

Mr. Druce was questioned on this reduction as follows:—*

"Q.—What was the reason for that reduction? Didn't you ask for the money or did you ask for it and not get it? A.—It wasn't a question of asking for it and not getting it, sir. We were told that expenditures must be reduced in the forthcoming year and we prepared a budget on that basis.

"Q.—Do you think that is adequate for your needs? A.—No, sir, I don't.

"Q.—Was the $91,000 about adequate? A.—It was coming fairly close. You will notice that there was a gradual increase there during a number of years from 1946 onward. That more or less kept pace with the development of projects and the acquisition of competent staff to expend the moneys. I would have liked to have seen that trend continue for a few more years to a point where I thought we might cover the work adequately.

"Q.—In your view, you should have a budget probably twice what you have now, is that it? A.—I would like to see it go even a little higher than that, for a figure $125,000 to $150,000 a year, which I think we could spend efficiently and satisfactorily. That would have the further feature that in the course of my brief I have suggested some expansion of staff and that would also increase the salary item.

"Q.—That $125,000 to $150,000 doesn't include your salary account? A.—That does not include the salaries, no. Salaries might go up, reasonably $50,000 or $60,000, as against the $35,000 figure

* Transcript, pp. 609–610.

I gave you, making an over-all figure in the vicinity of $200,000 to $225,000 for this type of work.

"Q.—The total you have now being about $85,000 to $90,000? A.—That is right, sir."

It is my opinion that the allotment to this Division should be increased to at least $100,000 a year exclusive of salaries. It became quite apparent during the Inquiry that a considerable misunderstanding exists concerning Forest Service policies and administrative functions, not only in the minds of the general public, but many witnesses engaged in the Industry in one way or another displayed a similar lack of knowledge leading to quite unwarranted assumptions. The suggestion of Mr. Druce that his Division have direct representation in the district offices seems to me a sound one and would lead to a closer liaison between the district officials and the public than presently exists, especially in the Interior.

I have already dealt with the need for attracting young men to the profession of forestry. Extensive public education in this field is a vital necessity for future forest management, and it seems to me the primary schools are a good place in which to lay the foundations of a future Forest Service.

The Forest Service functioning through this Division is doing an excellent job with the money and staff available. More of both are needed. In addition, Industry must do its share. In this regard I have already mentioned the very creditable achievements of the Canadian Forestry Association.

The commendable efforts of the Canadian Pulp and Paper Association (Western Division) in this field should also be recorded. Mr. M. J. Foley, President of the Powell River Company, in his capacity as Chairman of this Association, gave the following details of its programme:—*

"Commencing in 1947 the Pulp and Paper Industry of British Columbia has carried out a continuous plan of public education. The main objective of the plan is to inform the public of the value of British Columbia's forest resources and the economic importance of the Pulp and Paper Industry.

"It is a very diversified operation, comprising as it does several individual projects. It reaches and informs British Columbia citizens in all age-groups, children and adults alike.

"It is a positive attempt to make manifest the opinion expressed by the Commissioner in his 1945 Report of the Forest Resources of British Columbia. . . ."

Mr. Foley then quoted the comments from my Report previously mentioned concerning the necessity for public education, and continued:—

"It will be apparent that the objective presents an unusually difficult task, in that all sections of our people must be reached. Further,

* Transcript, p. 9444 *et seq.*

it must be a continuing operation and sufficiently diversified to inform and hold the interest of an equally diversified public audience.

" To this end, the Pulp and Paper Industry directs eleven different education projects. These are as follows:—

"(1) *Seedling-tree Presentations.*—Seedling trees and presentation certificates are presented to children in their first year at school. Over the past eight years, the Pulp and Paper Industry has distributed more than 50,000 seedling trees to small children. Personal ownership engenders a continuing interest in the growing gift tree. It impresses them with the importance of trees to British Columbia. This project is carried out in co-operation with the Department of Lands and Forests and Department of Education.

"(2) *Annual Essay Contests.*—These are zoned for the participation of all British Columbia schools. The project encourages students to inform themselves correctly of the British Columbia Pulp and Paper Industry and the proper management of the forest resources. Over 5,000 high-school students enter this contest every year.

"(3) *Booklets for School Libraries.*—A number of general industry books have been distributed to all school libraries for study and reference purposes. Booklets on new subjects are produced and distributed as required.

"(4) *Paper-making Kits.*—One paper-making kit has been placed in every junior and senior high school in British Columbia under the supervision of the principal or science teacher. With these kits, students can make paper in the classrooms. Prepared lectures with filmstrips on good forestry practices by Industry are supplementary aids to all kits.

"(5) *Models of Forest and Integrated Mills.*—These models for classroom lectures demonstrate the integration of a pulp-mill with lumber, plywood, and hardboard mills. They are complete with forest areas in various stages of growth and reforestation, demonstrating management for perpetual yield. Three of these models have been placed in British Columbia schools. A prepared lecture is provided for use with the models, which are used extensively throughout the Lower Mainland and Vancouver Island. One of these was recently withdrawn for public exhibition purposes.

"(6) *Dioramas (Three-dimensional).*—These are in colour and dramatize the important manufacturing processes in the Pulp and Paper Industry. Several sets of three dioramas to serve as one unit have been prepared for distribution by the Division of Visual Education of the Department of Education; more

are in preparation. They are used for classroom lectures in all grades.

"(7) *The Queen Elizabeth Arboretum.*—This is a cultural community project originated and promoted by the Pulp and Paper Industry in co-operation with the Board of Park Commissioners, Vancouver. Now recognized as one of Vancouver's outstanding beauty spots, it is in its fifth year of development. Considered to be one of Canada's most unusual Industry projects, the Arboretum will become a valuable source of information for research, horticulture, and university groups.

"(8) *Scholarships for Child Artists.*—For the first time, during the summer of 1954 one $250 and thirty-two smaller scholarships were provided to encourage children's art classes in the Vancouver area, conducted by The Federation of Canadian Artists in the Pulp and Paper Industry's community project, the Queen Elizabeth Arboretum. The finished work, which was very creditable, was exhibited in the Vancouver Art Gallery. This project will continue each year.

"(9) *Series of U.B.C. Lectures.*—These are given each fall and winter session by nine Industry executives. The lectures deal with the economics, manufacturing processes, and forestry practices of the Pulp and Paper Industry.

"(10) *Annual Fellowships, Scholarships, Bursaries, and Loans to Graduates of the University of British Columbia.*—Companies comprising the Pulp and Paper Industry in British Columbia annually provide $18,300 in scholarships and bursaries for several faculties at the University of British Columbia.

"(11) *General Distribution of Industry Information.*—Factual and statistical information concerning the Pulp and Paper Industry is regularly distributed to publishers, high-school principals, M.P.s, M.L.A.s, radio stations, news editors, columnists, editorial writers, business editors, banks, libraries, and so on.

" Results to date have amply justified this multiple effort, upon which the Industry spends thousands of dollars annually."

During the last decade there has been a growing awareness and a keener appreciation in the public mind of the dependence of our economy on the perpetuation, management, and utilization of our forest resource, but, as Mr. M. J. Foley said, " it (public education) must be a continuing operation " and, I might add, an expanding one.

Much has been accomplished in this field by the Forest Service, the University of British Columbia, the Canadian Forestry Association, and industrial organizations such as that represented by Mr. Foley, but the task can never be regarded as completed.

Education must keep in step with the growing population and the developing techniques of forest management and expanding wood uses.

A growing population means a greater number of people, both young and adult, to whom those engaged in these fields of public instruction should reach and teach. It is also reflected in the greater number of people travelling our highways and venturing into forested areas for recreational purposes of various kinds. This increasing influx of people into the woods during the fire season creates a hazard measurable in terms directly proportionate to the extent they have been made aware of and educated in the basic principles of fire prevention.

I fully concur in the necessity as expressed by the 1909 Royal Commission of "educating public opinion in British Columbia in order that our forests may be the better protected from stupidity and carelessness." There is a far greater necessity for such protection to-day than there was in 1909, forty-eight years ago.

MUNICIPAL FORESTS

In the 1945 Report* I said in this connection:—

"Areas of reverted land situated in or near settled communities could be managed on a sustained-yield basis as public working-circles by municipal authorities, subject to regulations designed to prevent improvident future management and transactions in relation thereto. These community forests, apart from the timber production therefrom, have proven to be of considerable value in the United States as a means of acquainting the public with the benefits to be secured from the practice of sustained-yield forestry, the necessity for fire-protection, and related subjects."

Professor Seheult's opinion is as follows:—†

"Q.—Would you care to give your own personal opinion as to the influence of a municipal licence? A.—Yes, I think it is an excellent idea.

"Q.—You think it would tend to stabilize industry within that municipality? A.—Yes. I don't envisage that as a very large area, for the local needs of that community, and not for, say, an exporting industry or anything of that kind. Local, yes. I think the legislation in Ontario and Quebec does favour that sort of thing.

"Q.—As a forester you think it would have merit? A.—Yes."

In this Province to date only one municipality—that of The Corporation of the District of Mission—has applied for a forest management licence. It has been awarded subject to the approval of working plans, and details of the licence applied for are set out in Table 18.

* 1945 Report, p. 147.
† Transcript, p. 7055.

This concept is one which should find a wider acceptance, and as a guide and encouragement to other municipalities owning forested land areas, and with unalienated Crown timber contiguous thereto, I think it desirable to set out in some detail the background of the application of the Mission District Municipality for a management licence.

In the brief submitted by this Municipality and in the evidence relating thereto, the following comments are made:—*

"The idea of a forest-management plan in Mission Municipality was developed through the interest of local residents in a constructive and long-range plan for the forest land in the Municipality. Initial planning started ten years ago with discussions between the Reeve and Council, the local Ranger of the B.C. Forest Service, and interested business-men and industrial executives.

"Within Mission Municipality there were two classifications of public land, both of which had an appreciable quantity of standing timber. The two classifications were Crown-grant land reverted to the Municipality through non-payment of taxes and Crown land administered by the Government of the Province of British Columbia. The plan for the Mission Municipal Forest has been to incorporate both these areas into a public forest managed by the Municipal Council.

"The area controlled by the Municipality is commonly referred to as 'tax sale' land. In 1945 there were approximately 3,000 acres of 'tax sale' land within Mission Municipality. This land, most of which is forest land, is controlled by the Municipal Council and can be treated as the Council may deem advisable, within the limitations of the 'Municipal Act.'

"The area of Crown land in Mission Municipality comprises approximately 17,500 acres. A large part of this is forest land, with some areas of mature timber. As it is Provincial land, it is administered by the B.C. Forest Service. In the past, timber sales were made on this area within the Municipality by the B.C. Forest Service. The logging-trucks which logged the area used municipal roads; the Municipality was responsible for the conduct of the logging operators. But the Municipality derived no direct revenue from the sale of the standing timber, and they were not able to place any form of tax on the value of the timber, although it was a valuable asset within the boundaries of the Municipality.

"Q.—Does it appear that the area applied for lies completely within the boundaries of the Municipality? A.—Originally we applied for an area extending beyond the municipal boundaries, but, as subsequently related in this brief, the present legislation enables us to have a management licence plan within our municipal boundary only. We will make a subsequent recommendation in this brief, to the effect that

* Transcript, p. 10655 *et seq.*

municipalities who have a management licence should be allowed to proceed beyond the boundary of their municipality, when it is a topographical unit.

" Initial proposals were made to the Provincial Government by the Municipality in 1946, to the effect that the Provincial Government should turn the Crown lands within the Municipality over to the Municipality as either a Crown-grant ownership or as a long-term lease. These proposals were not considered favourably by the Provincial Government; but in the course of discussions between the Government and the Municipal Council and local men, it became evident that the Provincial Government was interested in enabling the Municipal Council to establish a forest programme for its ' tax sale ' lands. Through constructive planning of the Department of Municipal Affairs and the Municipal Council, an amendment to the ' Municipal Act ' passed in 1948 (section 60) made provision that ' the Council of any municipality may by by-law set aside as a forest reserve any lands owned by the municipality that in the opinion of the Council are suitable for reforestation purposes.' It was further provided that by-laws passed pursuant to this section shall receive assent of the electors; it made provision for additions to or deletions from the forest reserve; it set up the manner of disposal of cutting rights of timber, with the Council enabled to ' enter into a contract with any person for the cutting and removal of timber,' with proper forest planning for a cutting programme, and it enabled Council to ' employ forestry engineers or foresters.'

" To establish a municipal forest reserve, in 1948 the Municipal Council had Mr. E. T. Calvert, retired Forest Ranger, make a study of all ' tax sale ' lands, with an inventory of all forest resources. The areas were studied block by block, and all forest land was defined.

" The Mission Municipal Forest Reserve was then constituted under section 60 of the ' Municipal Act.' It was presented as a by-law as required, and established with the assent of the electors. The original total in 1948 was 2,660 acres.

" Subsequent development of this initial forest plan showed that there could be some improvement in the manner in which the forest reserve was administered. Through the prosperous years of 1949 to 1951 there was a continual demand for forest products from the forest reserve. The Municipal Council had the opportunity of a substantial financial gain from the sale of standing timber, and timber sales satisfied the local demand for cutting rights. An allowable annual cut had been calculated, but due to the pressure of circumstances and the lack of authority behind the Council to restrict the cut, there was an ever-present tendency to overcut.

" Fortunately, before this tendency could develop into serious depletion, it became apparent to the Council and members of the Industry that a more constructive forest plan would have to be developed. It was also apparent that any such plan must remove the possibility of present or succeeding Councils sanctioning more than the allowable annual cut, whether from failure to withstand pressure from short-sighted logging interests or from inability to combat the appeal of increased stumpage revenue.

" Further studies indicated that an arrangement with the Provincial Government by which both municipal and Provincial forest land could be jointly administered, would not only remove the possibility of Councils permitting overcutting, but would enlarge the unit sufficiently that it could be economically planned and developed. It was suggested that Mission Municipality should apply to the Provincial Government for a forest management licence on the Crown lands within and adjacent to the Municipality, with Mission's own forest reserve lands forming an integral part of the proposed management licence. In this way, since the Forest Service, as a contractual ' partner,' would have to approve all proposed cutting plans, Council would be free to plan a constructive forestry policy and administer it efficiently.

" There are now provisions in the ' Municipal Act ' and the ' Forest Act ' which allow a municipality to enter into a forest management licence agreement with the Provincial Government. This development has been achieved through discussions initiated by Mission Municipality with members of the Forest Service, the Chief Forester, and Cabinet Ministers who were concerned with the project. It has been gratifying to the Mission Municipal Council and to the planners associated with the proposal that the idea has been received with enthusiasm and interest.

" One important point to be decided was the equity of the Provincial Government in the Crown timber to be cut in the proposed management plan. It is important to note that this municipal forest plan, applied for as a management licence under section 33 of the ' Forest Act,' is different from all other management licences proposed to date in that the licensee of the area, the Municipality, plans to contract all cutting rights on the area to independent operators. All contracts are to be awarded on a tender basis, with no restrictions as to eligibility of contractors other than their ability to fulfil the contract requirements. The Municipality does not propose to undertake logging work or any industrial utilization programme at any time.

" Q.—Do you propose to conduct an auction such as the Forest Service conducts? A.—No, sir, it's a tender.

" Q.—It's a tender? A.—Yes.

" Q.—You were placing no restrictions, I take it, on whether a man has a sawmill or utilization plant at all; he proposes to contract only to log and you're not interested in what he does with the logs thereafter? A.—I wouldn't put it quite that way, sir, no. I think that interests like that would possibly show up in the man's tender, and the Council are hoping so. The Council would not like, I am sure, to be in a position where they had to give a tender to an outside operator who had no apparent interests in the community to the detriment of somebody who is utilizing the logs in the community as well. But they felt that it would be, on the other hand, unwise to place that as a necessary requisite of placing a tender.

" Q.—I take it then you are not necessarily going to accept the highest bid? A.—Not necessarily, no.

" Q.—And other things being equal, or reasonably equal, if I can reduce it to that, you're hoping that the bidders will come from Mission and are going to use the material in Mission, and you'd sooner see that occur rather than, as you say, some outsider with no plant in Mission get the contract. A.—That appears to be the intention of the Council, yes, sir.

" On the matter of the equity of the Provincial Government in the Crown timber, the Municipality suggested in a brief (October 28th, 1953) to the Honourable R. E. Sommers, then Minister of Lands and Forests, that: ' On lands held in the name of the Crown in this proposed forest reserve, full royalty would be paid to the B.C. Forest Service. The Municipality would receive the revenue of stumpage, which it would use for forest administration, management and supervision work, for forest improvement programmes, and for road construction and maintenance.' The Government was favourable to our request, and in 1954 details were worked out by the Department of Municipal Affairs and the Department of Lands and Forests.

" In that same year (1954) section 60 of the ' Municipal Act ' was amended by adding the following as subsection (8):—

> " ' (8) The Council of any municipality which has established a forest reserve pursuant to the provisions of this section may by by-law enter into an agreement described as a forest management licence with the Minister of Lands and Forests pursuant to the provisions of the " Forest Act ": Provided that such an agreement shall not extend to any lands outside the boundaries of the municipality.'

" The ' Forest Act ' was also amended by adding the following to subsection (20) of section 33 as clause (*f*):—

"'(*f*) The provisions of clauses (*a*), (*b*), and (*c*) shall not apply to a forest management licence of which a municipality is the licensee, but there shall be due and payable to the Crown on all timber cut on Crown lands in the area covered by such a management licence, royalty as provided by this Act.'

"These two amendments made it possible for a municipality to enter into a management licence agreement with the Provincial Government.

"Q.—Your arrangement with the Provincial Government is simply this, that the growth stumpage would be paid to you and out of that you would pay to the Crown the royalty reserved, and the difference would be what would accrue to the Municipality for the expenses of operating and provide for your hoped-for profit? A.—Yes.

"The Municipal Council then directed Mr. A. C. Buckland, forester, to proceed with the preliminary application. This was favourably received by the Minister of Lands and Forests; advertising was completed, as stated previously, with no public criticisms; and the Municipality was directed by the Minister to prepare working plans. These were submitted July 2nd, 1955, have been approved, and are now waiting to be embodied in a formal management licence contract.

"The municipal forest plan developed by Mission Municipality is termed a 'management licence' as it comes under the provisions of section 33 of the 'Forest Act.' Actually it is a public plan, with the Municipality acting as agent for the senior Provincial Government. It would be more correctly named if it were called a 'municipal public working circle.' The Municipality is not interested in conducting for itself either a logging, a milling, or any other subsidiary industry. It is planning the forest-management area as an administrator only. The Municipal Council knows that it is to the advantage of the local community to have the local forest area planned with a programme of intensive forest management on a permanent basis. This plan is drawn up as part of the duty of the Municipal Council to serve the public which elected the Council to office.

"All logging contracts in the management area will be advertised and sold by public tender. The timber sales made will be similar to the sales made by the B.C. Forest Service on a public working circle, with a modification in that all municipal sales proposed will be small in size and for a short term. Small sales made for short terms will give the Municipality more direct control of logging, and will encourage the participation of local men in the forest plan.

"It is anticipated there will be a profit to the Municipality from the sale of cutting rights. Out of the stumpage revenue collected by the Municipality will have to be paid the royalty to the Provincial Government and the costs of forest protection. In addition, cost of field

studies, supervision, and administration must be borne by the municipality, as well as all road-maintenance costs attributable to forest management and development. There is no precedent for a plan of this nature, and it is not possible to predict what proportion the direct costs will bear to the revenue. However, it is assumed with confidence that a satisfactory margin of profit will accrue to the Municipality. The disposal of this profit will be the decision of the Municipal Council. Sound forest practice would be to ' plough back ' into the forest land the profit earned by the forest, in anticipation of future improved yields from the area. This is particularly important during the initial years of this forest plan as there is a great deal of improvement work to be done to obtain a properly planned and thrifty growing forest. There are old roads to be opened up and some new ' protection ' roads to be built, densely stocked immature timber stands which require a ' cleaning out,' some areas require reforestation, and special areas are to be improved for recreational use by the general public.

" The Reeve and Council of the Municipality have stated that they are definitely in favour of a constructive long-range forest-improvement plan, with all revenue earned by the forest to be spent on improvement work. With proper planning this ' improvement work ' will benefit the Municipality each year. It is proposed to plan the work to relieve seasonal unemployment problems which recur in the Municipality. For instance, local men who may be unemployed in the winter season could be used to make a ' cleaning out ' in the dense immature stands, or to remove some undesirable hardwood species from the forest. This example of improvement work refers to costly thinnings only. Wherever a thinning can be done that will yield a working profit to an operator, a tender will be called and the specified material sold on a contract cutting agreement.

" Ultimately, when the forest is improved and properly managed, there will be a surplus revenue greater than the requirements of the forest administration and improvement costs. Then it will be a decision of the Council as to whether the surplus is spent on alternative projects such as improvement on public roads, development of additional recreational facilities, or added to the general revenues of the Municipality. It is the thought of the intelligent forest-minded men of the community that for at least twenty-five years all money earned from the forest should be spent on forest-improvement work.

" The Mission Municipal Forest Plan is a practical programme from which the community will derive an increasing measure of industrial stability, and it will develop a forest area which the public will use and enjoy. The plan will also serve as an educational example of proper forest practice. Most of the area is accessible and easily reached by the people of the Lower Fraser Valley communities and

Greater Vancouver. A small area of the forest is planned for the Mission School Forest, to be developed for youth education.

" This is part of the educational programme of the Province of British Columbia. The Mission School Board now has approval for a high-school course which will study forest planned programmes. It is presently in operation at Mission, and the actual course was sponsored originally by the Canadian Forestry Association then developed locally. I believe the Canadian Forestry Association wished to introduce this throughout British Columbia. We have arrived at a stage where this area has been set out on our maps as a ' school study ' area, to be used for the field studies of boys who take this course which is now in operation at the Mission High School.

" The plans for reforestation, silvicultural practices, improvements, and protection have been discussed with the B.C. Forest Service, and drawn up in conformity with their requests.

" The adequate protection of this forest area is a very important matter. With present plans, the Municipality will be responsible for fighting all fires within the management licence area, to the extent of the contractors and their employees actively engaged in the forest area at the time of the fire. This is an onerous requirement, but is applied by the B.C. Forest Service to all forest management licensees.

" It is anticipated, because of the special nature of this management licence, with the tremendous public recreational and education use that will occur, that special plans must be arranged to produce an efficient and practical plan for fire suppression. The Municipality, by accepting a share of the forest crop, assumes a portion of the responsibility for protecting it. For efficient protection, however, all fire-suppression work should remain, as at present, under the direction of the B.C. Forest Service.

" With present legislation, a municipal management licence is possible only for those municipalities that have forest land within the municipal boundaries. To obtain a forest management licence, the Municipality must first establish a municipal forest reserve under section 60 of the ' Municipal Act.' Then it may proceed with an application for a forest management licence under section 33 of the ' Forest Act.'

" The provisions of the ' Municipal Act ' state specifically the agreement between the municipality and the Minister of Lands and Forests for a forest management licence shall not extend to any lands outside the boundaries of the municipality.

" In our brief of October, 1953, presented to the Minister of Lands and Forests, was the statement:—

" ' For efficient administration and a practical forest unit, we submit that the boundaries of this forest should be drawn along topographical lines and not along the arbitrary township divisions which comprise the District of Mission.'

" This request was overridden in the 1954 amendments which allowed the forest management licence plan to proceed, but limited it to within the municipal boundaries.

" We submit at this time, as a recommendation placed before this Royal Commission, that a municipal forest management licence should not be confined arbitrarily to within the boundaries of a municipality, but should be planned with the principal purpose of efficient administration of a practical forest unit, following natural boundaries and not arbitrary municipal boundaries. This would produce a management licence with some portions outside the boundaries of the municipality, but forming a topographical unit for efficient administrative purposes. These additional lands incorporated in a forest-management plan should be confined to Crown lands in unorganized territory, in order to avoid any conflict with adjacent municipalities.

" Our suggestion is in keeping with the basic principle that forest plans should, as far as possible, include all lands that are located within specific watersheds or drainage-basins.

" We submit with this brief two additional recommendations. These suggestions have no direct bearing on the Mission Forest Plan; they deal with problems which arise when other areas in British Columbia are considered.

" Our suggestions are:—

" (1) When a municipality has no forest land within its boundaries, but there exists Crown land near by, the municipality should be allowed to enter into a forest management licence agreement on an administrative unit of the Crown forest land. This would produce a forest plan with the advantage of local control, operating under the supervision of the B.C. Forest Service to produce a detailed and intensive forest plan.

" (2) For watersheds and other areas of Crown timber which are reserved in some form and locally controlled, we suggest that the management licence plan of Mission Municipality could serve as a pattern for planning. The local Board or local Council would draw up and supervise the management plan; they would be responsible to the B.C. Forest Service, and this would ensure proper forest practice. This suggestion is made on the assumption that watersheds should be ' multiple use ' areas; that is, they should be used to produce a planned

forest crop as well as serving as a watershed. The use of the productive forest lands in watershed areas to yield a planned forest crop is, we understand, an accepted and good practice.*

"A locally administered management licence such as the Mission Municipal Forest Plan is a logical and efficient method of administering a forest plan on reserved areas of Crown land."

It is most gratifying to learn of the manner in which the various departnts of Government have co-operated with the officials of the Municiity in this joint endeavour to create a municipality-managed forest in Mission area.

The Reeve, Mr. W. Matheson, his officials, and Mr. A. C. Buckland, forester in charge of this operation, and their predecessors are to be ngratulated on their efforts in this behalf and for the knowledgeable anner in which they have proceeded to bring this plan to fruition.

There are several features of their presentation that remain to be condered. It seems to me that the limitation in the "Municipal Act" proiding that a municipal forest management licence "shall not extend to ny lands outside the boundaries of the municipality" may be unduly estrictive in those instances when the topographical boundaries considered roper to delineate a management area fall partly within and partly without the municipal boundaries. The answer seems to be the extension of he boundaries of the municipality to encompass the entire area of the management licence. Alternatively, an amendment to the "Municipal Act" to the effect that the boundaries of a municipality shall be deemed to extend to and include the licensed area *for the purposes of the licence* might be a more appropriate and less complicated solution to be applied generally. This suggestion is, of course, based on the assumption that the *ad hoc* extension of boundaries relates solely to contiguous unalienated Crown lands.

The suggestion by the municipal officials that a planned municipal forest "would be more correctly named if it were called a 'municipal public working circle'" meets with my approval. The whole set-up, while having some of the attributes of a forest management licence, is more closely allied to a Crown-managed public working circle.

Mr. James Muir, representing the views of four sawmills operating in the Mission area, supports this view. He said in this connection:—†

"Some of us were the original campaigners in securing the cooperation of the Forestry Department through the local Board of Trade

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* *See* previous section for my comments on watershed administration.

† Transcript, p. 13822.

and Municipal Council in the establishment of a municipal forest for Mission Municipality.

" There has been uniform satisfaction amongst local sawmill operators at the progress made between Mission Municipality and the Forest Department in the establishment of a municipal forest reserve, but we feel it should not be classified as operating under a management licence. We recommend that it should be known as a ' municipal working circle,' because in effect it will be conducted along the same lines as a public working circle, and, therefore, ' municipal working circle ' more accurately classifies the situation."

I had occasion in an earlier part of this Report to comment upon the use of the phrase " public working circles " and suggested that the name of these managed areas be changed to " sustained-yield units." In consequence, it is my opinion that municipally managed forests organized on similar lines to that at Mission be generally known as " municipal sustained-yield units " and specifically distinguished by the name of the municipality. For example, the one at Mission would be known, in brief, as the " Mission Municipal Sustained-yield Unit," a more accurate description than is implied by the present nomenclature, even if a trifle cumbersome.

FARM WOOD-LOTS

In the southern pine and other regions of the United States and in Eastern Canada, pulp-mills derive a good part of their wood requirements from small farm wood-lots. In anticipation of a similar market developing in British Columbia, the " Forest Act " was amended in 1948 to provide for the issuance of farm wood-lot licences. The anticipated demand has developed to some degree and will undoubtedly increase. For instance, Mr. R. J. Filberg, speaking on behalf of the Elk Falls Company, operating a pulp and paper mill at Duncan Bay on Vancouver Island, said in this connection:—*

"Another source of wood-supply for the Duncan Bay mill, which is of growing local economic importance, is the logs and wood purchased from farmers and small-land owners in the vicinity of Campbell River. Increasing numbers of people are adding to their incomes by taking advantage of the facilities at Duncan Bay for disposal of small amounts of wood."

Once the market incentive is recognized, the principal aims of the farm wood-lot licence legislation may be stated as fourfold:—

(1) The farmer is encouraged to place his marginal land and adjacent Crown forest land under sustained-yield forest management.

(2) Employment is provided on the farm during the winter season, and extra revenue received through the sale of forest products.

* Transcript, p. 9755.

(3) Wood products are provided for the farmer's own use at nominal cost.

(4) Farm settlement is encouraged.

The legislation under which the licences are issued contains provisions ıich in effect create tiny forest-management areas.

The Canadian Institute of Forestry endorses the principle of this type tenure but adds "the legislation governing the issuance of such licences considered to be too complicated and restrictive for efficient administra-n."*

Dr. Orchard, when asked to comment upon this criticism, said:—†

"I don't find it very complicated. We tried to make it very simple and workable, and I think we well succeeded. Evidently some of the foresters don't think so. If they would propose a better draft, perhaps we could change it."

In view of this divergence of opinion, I think I should at this point ;produce the enabling section of the Act. It reads as follows:—

"19. (1) In the case of a bona-fide farmer in the Province who is not possessed of any forest land, or whose forest land is not capable of producing ten thousand cubic feet of wood per year, the Minister, subject to the further provisions of this section, may reserve for the sole use of the farmer an area of forest land not to exceed six hundred and forty acres, or an area of productive capacity of not more than ten thousand cubic feet of wood per year, or an area sufficient to bring the combined capacities of the farmer's privately owned land and the proposed additions to ten thousand cubic feet per year, whichever is the lesser acreage, for use as a farm wood-lot, and may issue a licence to the farmer to manage and use the said wood-lot.

"(2) Where an applicant farmer is possessed of privately owned forest lands, no farm wood-lot licence shall be issued unless the privately owned lands are combined with the Crown lands and the whole managed to produce an annual or periodic harvest in accordance with the terms of this section and of the licence.

"(3) A farm wood-lot shall be appurtenant to the farm property in respect of which the wood-lot is reserved. It shall not be sold, transferred, assigned, or otherwise disposed of by the licensee, and in the event of the sale or other disposal of the farm the appurtenant farm wood-lot shall revert unconditionally to the Crown, but in the case of such sale or other disposal the Minister may reallot the same wood-lot to the new farm-owner.

"(4) It shall be a condition of every farm wood-lot licence that:—

"(*a*) The lands shall be kept stocked with forest-growth of saleable commercial species:

* Transcript, p. 11372.
† Transcript, p. 15636.

"(*b*) The lands shall be managed by the licensee for the perpetual yield of an annual or periodic harvest of wood:

"(*c*) The estimated yield shall be harvested annually or periodically.

"(5) No wood-lot licence shall be issued until a management plan has been prepared for the area and approved by the Chief Forester. The management plan may be prepared either by the applicant, by his agent, or by the Forest Service without cost to the applicant. The management plan will be revised from time to time in accordance with the terms of the licence.

"(6) At the time a licence is issued, the licensee shall deposit with the Minister the sum of fifty dollars, and shall add to this deposit such sum per unit of materials removed from the licence as is specified in the licence document, but the total sum of such deposits shall not at any time exceed two hundred and fifty dollars. Deposits under this subsection shall be for the purpose of ensuring compliance on the part of the licensee with the provisions of this Act, the regulations, the licence, and the management and working plan, and may be used for such purposes as this Act, the regulations, or the licence provides.

"(7) In respect of Crown lands in a farm wood-lot, no ground-rental, forest-protection tax, or other annual dues, fees, or taxes shall be payable, but the licensee shall pay stumpage, inclusive of royalty, in such sum per unit of wood products removed, destroyed, or wasted as is appraised and assessed by the Forest Service.

"(8) The holder of a farm wood-lot licence shall not be eligible to compete for, to buy from the Crown, or to enter into any contract with the Crown for the use of other Crown timber unless the approved annual or periodic capacity of his farm wood-lot is being harvested and used to the satisfaction of the Chief Forester."

The Forest Service in 1953 issued a booklet of some fifteen pages entitled "An Explanation of that Section of the Forest Act dealing with Farm Wood-lot Licences."*

The effect of section 19, subsections (1) and (2), are explained in the booklet as follows:—

"The 'Forest Act' provides that any bona-fide farmer who is the owner of a farm may apply for a licence to manage a parcel of Crown forest-land, if any such is available, whether or not he already owns forest-land. Providing a farmer does not have forest-land capable of producing 10,000 cubic feet of wood per year he may apply for a licence to manage a parcel of Crown forest-land large enough to bring the total growing capacity, including what his own land will produce, up to 10,000 cubic feet per year. If he has no forest-land on his farm, the farmer can apply for a licence to manage an area of Crown forest-

* Exhibit 36 (64).

land that will produce not more than 10,000 cubic feet per year of wood products.

"In the coastal areas an acre of forest-land of average productivity will have an average annual growth (increment) of 100 cubic feet or approximately one cord.

"Therefore, the maximum acreage a farmer can manage under a wood-lot licence on the Coast is roughly 10,000 divided by 100, or 100 acres. In the Interior of the Province, where the average annual growth per acre is approximately 40 cubic feet or two-fifths of a cord, the maximum acreage will approximate 10,000 divided by 40, or 250. The allowable maximum will depend on how much above or below average the actual growth is computed to be. From this example it can be seen that a farmer who already owns forest-land of average productivity to the extent of 100 acres on the Coast or 250 acres in the Interior would not be considered eligible for a wood-lot licence. In any event the area must not exceed 640 acres.

"Another limiting factor in farm wood-lot licence applications is the possible lack of suitable Crown land within working distance of the farm. Although there is no maximum laid down for the distance between the farm and its wood-lot, it should be such that the wood-lot can be economically maintained in conjunction with the farm."

The booklet continues:—

"The three basic conditions to be met by the farmer who acquires a wood-lot licence are as follows:—

"(1) *The land shall be kept stocked with forest-growth of saleable commercial species.*—If any portion of the area is logged or burned, so that there is no satisfactory stand remaining for a further harvest, it will be the responsibility of the farmer to see that it becomes productive within a reasonable period of time. As a wood-lot operation will be managed so that no large areas will be cut over at any one time, there is a good chance that cut-over areas will re-seed naturally with suitable forest-growth within 3 to 5 years. If such is not the case the Forest Service will supply the necessary seedlings with which to replant the area. If, at the time the farmer acquires the licence, there are areas which are not supporting suitable growth it may be necessary to plant them.

"(2) *The land shall be managed by the licensee for the perpetual yield of an annual or periodic harvest of wood.*—The primary purpose of the farm wood-lot licence is to ensure that the farm will have a perpetual supply of wood products. To achieve this objective it is important that the cut for a stated period does not exceed the growth for that period. In other words, if a wood-lot is capable of growing new wood to the extent of 30 cords in one year, the allowable cut per year for that particular area shall not exceed 30 cords. On such a small area

as a wood-lot, however, it will not always be possible to remove an amount of forest products annually exactly equivalent to the annual growth, because trees must reach a certain stage of development before they become merchantable. A wood-lot consisting of a single stand 30 years of age may have an annual growth of one cord per acre but yet have no immediate volumes suitable for harvesting. This is one of the factors taken into consideration when a wood-lot application is being appraised. There must be some volumes available for cutting at the time the licence is issued.

"The ideal situation would be to have a forest made up of a number of equal areas, each bearing trees in a 20-year age-class, ranging all the way from trees 1–20 years old up to maturity of 100 years or more. During the first 20 years the oldest age-class would supply the annual or periodic cuts for that period; during the next 20 years the next oldest age-group would supply the allowable cut while the area first harvested was being restocked with new growth, and so on through each age-group. Uniformity such as this seldom exists in the forest. The next best approach is to balance the current merchantable volumes against the immature growing stock. Different forest conditions will call for different treatment. The following two examples will show how harvesting must be adjusted to satisfy forest composition.

"(3) *The established yield shall be harvested annually or periodically.*—It is permissible and often preferable to allow the growth to accumulate over a short period of years in preference to harvesting the allowable cut each year. It is usually more difficult and less profitable to dispose of forest products in small quantities, such as a cord at a time. Buyers are not interested in such transactions because they are uneconomical. For this reason it may prove that, except when forest products are being cut to satisfy farm requirements, the harvesting can best be carried out at intervals of from two to five years.

The management plan is explained:—

"Before a wood-lot licence can be granted a management plan for the forest area concerned must be prepared either by the farmer, his agent, or the Forest Service. The preparation of a management plan suitable for the relatively small area covered by a wood-lot licence need not be elaborate but calls for some knowledge of forestry. To a farmer who is accustomed to growing crops the reasoning behind such a plan will appear to be largely a matter of common sense. Current inventory, including data on merchantable volumes and immature stands, determination of allowable cut, recommended logging practice, and suggested treatment of forest stands for maximum yield are all included in this report.

"The management plan is what the words imply, a plan of management and, when applied to a forest area, the plan is prepared with the

object of developing maximum growth of marketable timber per acre, and so planning the harvest of this timber as to give a continuous supply of forest products. The amount of the supply will depend on the following factors: average annual growth (increment) per acre, present merchantable volume, the distribution of age of the immature stands, and the economic situation at the time of harvesting. To allow for major changes in utilization practice, adjustments of allowable cut because of poor distribution of age classes, and improved growth estimates, such a plan should be revised at the end of each five- to ten-year period. The revision is not intended to change the basic plan of management but only to make minor adjustments considered beneficial to the operation of the licence.

"In the event that the Forest Service is requested to prepare the management plan it is expected that the farmer will aid in collecting the necessary field information. When he accompanies the Forest Service representative he will be able to supply valuable information and, at the same time, gain first-hand knowledge of some of the factors contributing to the successful or unsuccessful management of forest-land.

nventory follows:—

"As in any business, it is important to know the amount and condition of stock on hand. When dealing with forest-land we wish to know what merchantable volumes are present and the general condition of the forest growth or cover.

"*Current Merchantable Volume.*—First the amount of saleable or merchantable volume must be known. This volume will be made up of mature timber and immature trees which are adaptable to specific uses such as poles, piling, car stakes, ties, pit props, and so on. Mature timber may occur in solid blocks or as scattered seed trees which have been left standing following early logging, burning, or both, and now stand as veterans in young stands which they have helped to establish by the dissemination of their seed. Windfallen trees which have retained their soundness, as is the case with Western red cedar and, to a lesser extent, Douglas fir, may also provide merchantable volumes. Each stand containing merchantable volume should be evaluated according to its suitability for specific uses.

"*Immature Growing Stock.*—In addition to having a knowledge of the merchantable timber present in a forest area, it is important to have a description of the immature stands by age-groups, since the distribution of these age-groups by area will largely determine the allowable harvest for any particular period once the mature trees have been removed.

"For convenience, age-groups of 20 years are satisfactory and may be listed as follows: 1–20, 21–40, 41–60, and on up to the rotation

age. An area on which the stand was estimated to be 15 years old would be listed in the 1–20-year age-group and so on.

"*Areas Unsuitable for Forest Growth.*—In preparing the inventory it is important to determine areas considered unsuitable for forest growth such as swamp, rock, and water; also areas which are considered suitable but are not satisfactorily stocked with trees of commercial value. From the information supplied by the forest inventory the plan of action can be developed."

Then the determination of the allowable cut:—

"In estimating the allowable cut for an area it is necessary for the forester to know the available markets for different classes of material on that area because current merchantable volumes are based on the amount of wood which can be harvested at a profit. The farmer can render valuable assistance in this phase of the management plan by supplying any information he may have of outlets for wood products in his region.

"As previously mentioned, the annual harvest from a particular area should not exceed the estimated annual growth on that area. To calculate the growth on an area a forester refers to tables which have been prepared to supply this information. These tables are based on actual measurement of trees on permanent experimental plots. From those measurements, usually taken at five-year intervals, the actual growth of new wood during that period for a specific area can be determined.

"The estimated annual growth for an area will be the maximum, average, annual cut allowable on that area within the period covered by the management plan. The proportion of this estimate which can be harvested without over-cutting the merchantable volume on hand will be the actual allowable cut. Whoever prepares the management plan will assess each wood-lot area on its own merits. The important point to be remembered is that the harvest for a definite period should never exceed the growth for that period on a given area."

The booklet then proceeds to deal with silvicultural treatment of young stands by thinning, logging methods, and so on.

Mr. Hughes, of the Working Plans Division, said in his presentation:—*

"Section 19, subsection (5), of the Act states that 'the management (working) plan may be prepared either by the applicant, by his agent, or by the Forest Service without cost to the applicant.' In practice the responsibility for the preparation of the working plan has so far rested with the Forest Service for the following reasons:

"(*a*) The farmer does not have sufficient knowledge of forestry principles to prepare such a plan.

* Exhibit 36, pp. 19–20.

"(*b*) The cost of employing an agent, such as a consulting forester, to prepare the plan would be exorbitant when compared to the revenue obtainable from the maximum allowable cut from a wood-lot licence, which is 10,000 cubic feet per annum. It is considered to be a public service and it is felt that the time we spend on these wood-lot working plans can be justified in the light of the experience we gain, the fact that this experience can be applied to working plans for the larger public working circles, and, probably more important, the public education in rational forest management that will result from large numbers of small 'owners' managing their own forest lands on a sustained-yield basis."

While I agree with Dr. Orchard that section 19 of the Act is simple ɔugh to understand, it is also very clear to me that any ordinary farmer, less made of sterner stuff than I am, would, when confronted with the mplex details of management outlined in the explanatory booklet from ıich I have quoted in part, consider that the effort to put 100 acres on e Coast or 250 acres in the Interior in a wood-lot licence to produce),000 board-feet per year was not worth the trouble. It seems to me the orest Service is using an elephant gun to shoot a mosquito. Surely the ervice can devise a more simple and less complicated system of wood-lot ıanagement than presently exists.

In spite of the complexities, which I suppose must be more apparent han real, a number of licences have been issued to December, 1956. They ıppear below by districts.

TABLE 164

FARM WOOD-LOT LICENCES AWARDED

Forest Districts	Number of Licences	Productive Area (Acres)		Total	Allowable Annual Cut (Cu. Ft.)
		Private	Crown		
Vancouver	12	360	1,170	1,530	59,000
Kamloops	12	737	2,577	3,314	71,500
Nelson	6	603	1,014	1,617	27,300
Prince George	6	242	1,364	1,606	48,700
Prince Rupert	1	110	143	253	10,000
Totals	37	2,052	6,268	8,320	216,500

It will be seen from these figures that the average annual cut per licence works out at about 5,800 cubic feet or approximately 29,000 board-feet.

In addition to licences granted there were, as of December 31st, 1956, an additional twenty-nine applications in various stages of processing.

PARKS ADMINISTRATION

During the Inquiry a considerable body of evidence was adduced concerning the administration of the various parks in the Province by the Forest Service, and much interesting and informative material was placed before me by Mr. E. G. Oldham, forester in charge of the Parks and Recreation Division.

In this instance I feel justified in referring to a 1957 Act of the Legislature—the "Department of Recreation and Conservation Act"—which removed the management and administration of Provincial parks from the Department of Lands and Forests and vested these functions in this new Department of the Government.

My Commission relates to the administrative activities of the Forest Service, and while an historical review of our parks—their creation and administration—might prove of interest, any consequential recommendations I might feel necessary to make could possibly be construed by the Minister of Recreation and Conservation as an unwarranted interference with the functions of his Department.

In the result I feel impelled to construe the 1957 Act as operating to remove from my consideration the subject of parks administration.

I have consulted the Honourable the Attorney-General concerning this matter, and he concurs with the opinion I have expressed.

E. & N. BELT

The finest stand of mature timber remaining in this Province—predominantly fir—lies within the E. & N. Belt on Vancouver Island. Some areas in the western regions of the Belt run as high as 150,000 feet board-measure to the acre, mostly "peeler" fir. Other areas of considerable extent carry 10,000 to 12,000 feet board-measure to the acre, and, generally speaking, the stands are even aged due to holocaustic fires which swept the Island centuries ago. There remains yet unalienated in the Belt approximately 400,000 acres of timber land. If we assume that these forested areas are supporting an average of 30,000 feet board-measure per acre, as estimated by Mr. H. S. Irwin,* the total timber volumes remaining in E. & N. Railway ownership amount to somewhere in the vicinity of 12 billion feet board-measure.†

The timber on the land sold by the Esquimalt and Nanaimo Railway Company during 1956 was assessed on the average at $5.67 per thousand board-feet (Table 119). This assessment is calculated at 60 per cent of value, so that we may assume stumpage values average about $9 per thousand board-feet on 12 billion feet. On a very rough calculation we thus arrive at a figure of about $108,000,000 as the value of the remaining unalienated timber land in the E. & N. Belt.

* Transcript, p. 16489.

† The Forest Service estimate is much greater, and actual volumes would have to be ascertained. *See* Annual Report of Forest Service, 1952, at p. 16.

As I pointed out when considering timber sales generally, the policy ıe Esquimalt and Nanaimo Railway Company is to sell this forested and the timber thereon on a lump-sum basis, most of it to adjoining ·ators, at appraised and non-competitive prices. As Mr. H. S. Irwin :—*

"Primarily the owner of that timber is in the transportation business and all other things being equal, accessibility and so forth, I would say that the freight revenue that could be expected from that particular area has a bearing on the sales."

continued:—

"Of course, the majority of the timber that's left with the E. & N. now is pretty well adjoining holdings that were taken up a great many years ago, and there's really no access unless you want to fight it out over a right-of-way, there's no access in many instances to the adjoining owner. That, I think, is a reasonable attitude to take, that the adjoining owner who already has his own property developed should quite likely expect to get timber that's alongside his own boundary, and that is, I think, roughly the way we work it.

"Q.—Generally speaking, who are your purchasers? A.—Oh, I suppose we might have fifty of them on the books, some small, some large. There are small isolated patches here and there that go to small loggers. The main body, as I say, is well back in the heart of the Island, and it's pretty well shut away from access by any small operator because they don't own anything near by. They have no roads in that neighbourhood. But we do a lot of business with the small loggers. Odds and ends that were left behind years ago by the big operators.

"Q.—Under the contracts that you enter into with the purchaser, do you require them to log in any particular way, or do you require them to leave seed sources, or can they just log as they see fit? A.—It's like most merchandising, I imagine. When the person has paid for a piece of goods, it's his. And we protect ourselves as much as possible by insisting on the purchase of an area which will not leave anything that will endanger adjoining timber that we still own. That's about as far as we go. We insist that certain areas be taken in, and that's your baby then. You look after it from a fire-protection point of view, and in doing that you're looking after E. & N. timber adjoining it, but, as far as possible, we lay out an area to provide for reasonable protection for adjoining timber which we still own."

The vast timber resource in the E. & N. Belt is not under any form of forest management by the Railway Company nor does the Company feel it can impose conditions in its sale contracts of forest lands compelling the purchaser to conduct his logging operations in a manner to ensure future

* Transcript, p. 16512 *et seq.*

regeneration or to practise any aspects of forest management. " It considers that after the land is sold its future use and treatment is the responsibility of the purchasers and the Government."*

The Government has no control over the land until and unless it reverts to the Crown for non-payment of taxes, so it follows that unless the purchaser wishes to add any new forest land acquired by him from the E. & N. to his own holdings already managed on a sustained-yield basis, the cut from alienated E. & N. forest land is free from any control or management by the Forest Service.

In extension of Mr. Irwin's quoted comment that " there are small patches here and there that go to the small loggers," Mr. McBain's statement of Company policy states:—*

> " The Company sells timber acreage to small operators where suitable and accessible areas are available. Sales are made to existing large industries on Vancouver Island because of the volumes required for these industries, because of their already owning bodies of timber adjoining the E. & N. timber in the drainages, and because most of the Company's remaining timber is now remote and requires development beyond the financial reach of small operators. The Company makes sales to small operators who are established and operating where there is remaining timber suitable for their use.
>
> " Reasons for occasional refusal to sell are fire risk, probably damage to second growth, regardless of ownership, or interference with the management and logging plans of adjacent owners."

It seems to me that if the remaining area of forested land in the E. & N. Belt, excluding the mineral rights, could be acquired by the Government and managed as a public working circle by the Forest Service with a sufficient number of small sales designed for independent loggers supplying the open log market, the present difficulties confronting the smaller sawmills on the Coast, and the larger ones without sufficient timber reserves of their own, would be largely, if not wholly, eliminated.

A number of bigger sales could also be arranged to protect the interests of the presently established larger operators now looking to the E. & N. for their future supplies.

My suggestion is that the Government endeavour to negotiate the purchase of these timber lands at a just appraised price in order to bring this tremendous forest resource under sustained-yield management. The public interest would be greatly benefited if such an arrangement could be effectuated.

Financing the large sum involved, totalling somewhere in the neighbourhood of $108,000,000, would be relatively simple if the Esquimalt and Nanaimo Railway Company would agree to accept in payment Gov-

* Memorandum for Mr. C. W. McBain, E. & N. Vice-President and Land Agent, dated May 9th, 1957.

rnment bonds, the capital sum of which could be payable over a period ıot exceeding fifty years, with interest on the capital outstanding calculated .t 3 per cent per annum. Stumpage values received by the Crown should ıe an ample source of the moneys required for financing this arrangement.

The Government would assume the risk of loss from fire and other ıgencies now borne by the Railway Company, and the Company, should t agree to some such proposal as I have touched upon, would not be leprived of the value of its land grant, but, on the contrary, would benefit ıot only by the capital value secured, with interest thereon, but to a degree ıy the increased freight revenues that should accrue from a programme of ong-range forest management and the consequent opening-up of presently :emote areas by main access roads constructed by the Forest Service.

This suggestion may possibly be regarded with some disfavour by those arge operators now entrenched in areas adjoining the E. & N. Belt and who exercise, in their respective spheres of influence, a considerable mea- ;ure of control over the timber-sale policy of the Railway Company, but it is my belief nevertheless that serious consideration should be given to this proposal by the Government and the Esquimalt and Nanaimo Railway Company in order that these magnificent stands of timber in the E. & N. Belt be brought under a system of sustained-yield management for the benefit of the people of this Province, providing, of course, the Railway Company be adequately compensated for its present equity therein.

In essence, so far as the Railway Company is concerned, my suggestions amount to no more than a proposal that the Company sell its forested lands en bloc at a fair price to the Government instead of continuing to sell these lands piecemeal to a few individual purchasers on a liquidation basis.

At the present time the Government has either acquired through tax reversions or purchase from private owners approximately 170,000 acres of logged-off timber lands in the E. & N. Belt,* but these holdings are widely scattered, and unless they could be "blocked up" by some form of exchange agreements with the holders of similar lands in the Belt, a management plan therefor is most difficult, if not impossible, to effectuate.

* *See* Report of Forest Service, 1953, at p. 35.

CONCLUSION

In the writing of this Report I have had occasion to record criticisms of the Forest Service administration, but it must also be recorded and emphasized that there was an unanimity of opinion—with which I concur—that the officials of the Service are sincere and dedicated men of sterling honesty diligently performing their responsible and arduous duties. Criticisms relating to administration in most part, if not wholly, result from lack of trained personnel in the Service.

It is to be expected in a subject so vast and complex in its various ramifications as that under review in this Inquiry that opinions of Industry relating to matters of principle differ sometimes violently with those held by the Forest Service and, indeed, as I have illustrated, between various segments of the Industry itself, but this divergence of views cannot be considered as casting any reflection on the sincerity of purpose of those who are in opposite camps. I have endeavoured, as best I can, to deal at some length with those problems relating both to basic fundamental policies and the administration thereof by the Forest Service both in fairness to those who advocated and opposed the present policy of sustained-yield forest management. It was, I thought, necessary for me to enter into a far more detailed examination of the issues involved in this Inquiry than I did in 1945, not only in an attempt to elucidate for the public benefit the many vexing problems that have arisen over the last decade, but also to furnish the next Royal Commission with a full factual background of our present policies, the manner in which they have evolved, and the reasoning behind the recommendations I have suggested for Governmental consideration.

In this endeavour I have had the fullest measure of co-operation from the officials of the Forest Service. They presented meticulously prepared and detailed submissions for my consideration. Industrial groups, both large and small, and many individual witnesses spared no expense or trouble in preparing and submitting to the Inquiry the great volume of material in the record. Rather than attempt to paraphrase in summary the evidence of many key witnesses, I have reproduced their own phraseology, which accounts, in part, for the prolixity of this Report.

The carefully prepared synopsis of this evidence by Mr. Locke, Commission Counsel, furnished me, and made available to others interested prior to the final summations, and the sedulous, conscientious, and fair manner in which he discharged his duties throughout were of great value to me and to those who appeared before me. The late F. D. Mulholland, consultant forester attached to the Commission, assumed that function at a considerable financial sacrifice to himself and rendered both to Mr. Locke and myself a most commendable service. His untimely death was a great loss to me, both as a friend and as a trusted and experienced adviser. It is only fair to his memory to state that many of the recommendations con-

ained in this Report do not necessarily reflect his own personal views as ι forester.

Captain Hart, as secretary to the Commission, was indefatigable in the :xecution of his exacting duties, and his compilation of a compendious ndex of the evidence, in addition to his many other tasks so ably per-ormed, is deserving of high commendation.

To counsel who so assiduously represented their clients' interests and o the representatives of Industry and to the Forest Service generally, express my grateful appreciation for their very helpful assistance to me. Messrs. Howard and Eckardt deserve special mention for the able manner n which they focused attention upon the problems of their clients during heir constant attendance throughout the long months of the Inquiry.

Dr. Orchard merits special reference in these closing remarks. He may ɔe truly regarded as the chief architect of our present policy of sustained-yield forest management. It was his insistence that such a policy be inaugurated that led to the creation of the 1944–45 Commission, and it was largely upon his shoulders that the onerous responsibility rested of translating the broad outlines of my 1945 recommendations into detailed legislation acceptable to the Government. Since the forest-management policy was written into the "Forest Act" he has been, as Chief Forester, charged with its administration. While it is true that the machinery he has created in such a relatively short time is rough-cast in spots and not free from defects—as he himself has freely admitted—nevertheless it meets the pragmatic test: it works. Stream-lining will come later from knowledge gained by experience. In the meantime the foundations have been well laid, and Dr. Orchard's influential part therein has deservedly earned for him a special place in the historical development of our forest resource.

Much, of course, remains to be accomplished, and during the preparation of this Report I have sought to maintain, as best I can, a global and long-term perspective in relation to those matters wherein the extension of our planning into the future will be probably of greater economic importance over the years than are the many problems calling for solution in the immediate present.

The extent to which I may have succeeded in forecasting future developments will be for the next Royal Commission to determine, ten years hence, in 1966. I say 1966 advisedly because, although this Report will not be published until 1957, it is founded almost wholly upon conditions existing in and prior to 1956. For that reason my final suggestion is that this Report be read and considered as if completed in that year and not the year of its publication.

APPENDICES

APPENDIX A

FOREST MANAGEMENT LICENCE

THIS INDENTURE made in duplicate this _____ day of _____, ıe year of our Lord one thousand nine hundred and fifty-five.

BETWEEN:

THE MINISTER OF LANDS AND FORESTS of the Province of British Columbia, who, with his successors in office, is hereinafter called " the Licensor," of the one part,

AND

_____, a Corporation duly incorporated under the laws of the Province of British Columbia, and having its registered office in the City of _____ in the said Province, hereinafter called " the Licensee," of the other part.

WHEREAS by Subsection (2) of Section 33 of the " Forest Act," being Chapter 128 of the vised Statutes of British Columbia, 1948, it is provided that the Licensor may enter into an agree- ıt to be described as a forest management licence with any person for the management of Crown ıds specified in the agreement and reserved to the sole use of the Licensee for the purpose of growing ntinuously and perpetually successive crops of forest products to be harvested in approximately ual annual or periodic cuts adjusted to the sustained-yield capacity of the lands in the area covered the licence, or may enter into an agreement to be known as a forest management licence with the ner of other tenures to combine such other tenures and Crown forest lands into a single unit served by mutual consent and contract to the sole use of the Licensee for the like purpose:

AND WHEREAS the conditions precedent to the issuance of this licence, as set forth in said ection 33, have been complied with to the satisfaction of the Licensor:

NOW THIS INDENTURE WITNESSETH THAT pursuant to Section 33 of the " Forest Act " ınd in consideration of the payments, agreements and stipulations to be made and observed by and ɔn the part of the Licensee as hereinafter mentioned, the Licensor doth hereby grant unto the Licensee ;he management of the Crown lands specified in Schedule " B " to this agreement, which lands are reserved to the sole use of the Licensee for the purpose of growing continuously and perpetually successive crops of forest products to be harvested in approximately equal annual or periodic cuts adjusted to the sustained-yield capacity of the said lands:

And in consideration of the premises, IT IS HEREBY AGREED AS FOLLOWS:

1. This forest management licence may be referred to as the " _____ Forest Management Licence " and is numbered _____ (____) on the Forest Service register of forest management licences and on the official atlas maps of the Department of Lands and Forests.

2. The Licensee shall manage the licence area in accordance with the provisions of the said Section 33 of the " Forest Act " and of regulations under the said Act for the regulation of forest management licences, and in accordance with the management working plan applicable thereto, for the purpose of growing continuously and perpetually successive crops of forest products to be harvested in approximately equal annual or periodic cuts adjusted to the sustained-yield capacity of the licence area.

3. Subject to compliance on the part of the Licensee with the provisions of the " Forest Act " and the regulations made thereunder, and the terms and conditions of this licence and the management working plan, the licence is perpetual. This agreement in all respects shall be subject to the " Forest Act."

4. The licence area includes all Crown lands not otherwise alienated at this date, as set forth in Schedule " B " hereto, together with all the lands owned or controlled by the Licensee, as set forth in Schedule "A" hereto, both of which are shown outlined in bold black line on the plan attached hereto, subject, however, to any increase, decrease, re-allocation or exchange of lands as provided by this agreement; and in addition it includes any and all lands that may be subsequently acquired by the Licensee and incorporated into said Schedule "A" pursuant to Clause 6 hereof, provided also that any lands included in Schedule "A," the title or interest to which reverts to the Crown, or which the Licensee elects to revert to the Crown, shall be considered as being included in Schedule " B " from the time of such reversion.

APPENDIX A.—FOREST MANAGEMENT LICENCE—*Continued*

5. The Licensee hereby declares that it owns or controls the cutting rights on each parcel of the lands listed and described in Schedule "A" hereto, and that each parcel contains the estimate of merchantable timber set opposite each parcel in the said Schedule "A" at the time this agreement is entered into.

6. The acquisition by the Licensee of forest lands, excepting only cutting rights offered by the Forest Service for competitive sale, subsequent to the issuance of this licence shall, pursuant to Subsection (9) of said Section 33, be reported to the Licensor, and such forest lands shall be included forthwith in the licence area and be incorporated in Schedule "A" hereof to the extent required by said Subsection (9). Acquisition, as used herein, shall be deemed to include other tenures as defined hereinafter.

7. For the purposes of Subsection (8) of Section 33 of the "Forest Act," the watershed and drainage basins relating to this licence are defined as .....

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8. The Licensor may from time to time withdraw from the Crown lands included in the licence area such lands as are required for forest experimental purposes, parks, or for æsthetic purposes; but the lands so withdrawn shall not exceed one per cent of the total area of lands in the licence area without the consent of the Licensee, and no land shall be withdrawn from areas being developed under the current cutting plan without the consent of the Licensee. Any such withdrawals shall be deducted from Schedule "B."

9. If at any time, or from time to time, part of the Crown lands within the management licence area is found to be required for a higher economic use than raising forest crops, or for any use deemed to be essential to the public interest, said lands may be withdrawn from the licence area by the Licensor, provided that if by such withdrawal the productive capacity of the licence area is diminished by more than one-half of one per cent of its total productive capacity, other lands, if available, will be added to the licence area in substitution therefor. Any such withdrawals shall be deducted from Schedule "B," and any such additions shall be added to Schedule "B." For the purposes of this section, the development of mines and mineral prospects may be deemed to be essential to the public interest.

10. It is expressly understood that the Licensor may at his discretion and at any time, either permanently or for a specified time, withdraw from this licence and from the licence area any Crown lands needed for rights-of-way under Part VI of the "Forest Act," or for railway, highway, power transmission, or other right-of-way purposes, and such lands will be deducted from Schedule "B."

11. In the event of the withdrawal of any lands from the licence area pursuant to Clauses 8, 9, 10, and 13 hereof, the Licensor may require the Licensee to remove from such lands within one hundred and twenty days thereafter all timber then cut thereon and all buildings, machinery, equipment, and other property placed by it thereon and which is capable of removal. Compensation shall be paid to the Licensee in respect of improvements capable of removal from the lands so withdrawn to the extent only of the cost of removal and damage incidental thereto; and compensation shall be paid to the Licensee in respect of improvements not capable of removal on the basis of cost less depreciation.

Without limiting the generality of the foregoing, the term "improvements" means all buildings, structures, fixtures, and things erected upon or affixed to such lands and shall include machinery, boilers, tanks, pipes, dams, flumes, roads, railways, transmission lines, and other works used in connection with the business of the Licensee. Improvements shall also mean areas artificially reforested by planting or seeding, compensation for which shall be the cost incurred in the act of reforesting.

If the amount of compensation payable to the Licensee is not agreed upon, then such amount shall be appraised and awarded by a single arbitrator in case the Licensor and Licensee agree upon one; otherwise by three arbitrators, one to be appointed by the Licensor, one to be appointed by the Licensee, and the third to be appointed by writing under the hands of the two appointed, such arbitration to be in accordance with the provisions of the "Arbitration Act" of the Province of British Columbia.

12. If at any time, or from time to time, part of the lands included in Schedule "A" is found to be required for a higher economic use than raising forest crops, said lands may be withdrawn from the licence area on the consent of the Licensor and at the request of the Licensee, and after such withdrawal such lands will be deducted from Schedule "A" and may be disposed of by the Licensee for the purpose for which they were withdrawn.

13. Where the licence includes within the described boundaries a belt or area of non-productive land surrounding or adjacent to the productive forest land of the licence, any or all of such non-productive land may be withdrawn from the licence at the pleasure of the Minister.

APPENDIX A.—FOREST MANAGEMENT LICENCE—*Continued*

5. The Licensee hereby declares that it owns or controls the cutting rights on each parcel of the lands listed and described in Schedule "A" hereto, and that each parcel contains the estimate of merchantable timber set opposite each parcel in the said Schedule "A" at the time this agreement is entered into.

6. The acquisition by the Licensee of forest lands, excepting only cutting rights offered by the Forest Service for competitive sale, subsequent to the issuance of this licence shall, pursuant to Subsection (9) of said Section 33, be reported to the Licensor, and such forest lands shall be included forthwith in the licence area and be incorporated in Schedule "A" hereof to the extent required by said Subsection (9). Acquisition, as used herein, shall be deemed to include other tenures as defined hereinafter.

7. For the purposes of Subsection (8) of Section 33 of the "Forest Act," the watershed and drainage basins relating to this licence are defined as .....

.....

.....

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8. The Licensor may from time to time withdraw from the Crown lands included in the licence area such lands as are required for forest experimental purposes, parks, or for æsthetic purposes; but the lands so withdrawn shall not exceed one per cent of the total area of lands in the licence area without the consent of the Licensee, and no land shall be withdrawn from areas being developed under the current cutting plan without the consent of the Licensee. Any such withdrawals shall be deducted from Schedule "B."

9. If at any time, or from time to time, part of the Crown lands within the management licence area is found to be required for a higher economic use than raising forest crops, or for any use deemed to be essential to the public interest, said lands may be withdrawn from the licence area by the Licensor, provided that if by such withdrawal the productive capacity of the licence area is diminished by more than one-half of one per cent of its total productive capacity, other lands, if available, will be added to the licence area in substitution therefor. Any such withdrawals shall be deducted from Schedule "B," and any such additions shall be added to Schedule "B." For the purposes of this section, the development of mines and mineral prospects may be deemed to be essential to the public interest.

10. It is expressly understood that the Licensor may at his discretion and at any time, either permanently or for a specified time, withdraw from this licence and from the licence area any Crown lands needed for rights-of-way under Part VI of the "Forest Act," or for railway, highway, power transmission, or other right-of-way purposes, and such lands will be deducted from Schedule "B."

11. In the event of the withdrawal of any lands from the licence area pursuant to Clauses 8, 9, 10, and 13 hereof, the Licensor may require the Licensee to remove from such lands within one hundred and twenty days thereafter all timber then cut thereon and all buildings, machinery, equipment, and other property placed by it thereon and which is capable of removal. Compensation shall be paid to the Licensee in respect of improvements capable of removal from the lands so withdrawn to the extent only of the cost of removal and damage incidental thereto; and compensation shall be paid to the Licensee in respect of improvements not capable of removal on the basis of cost less depreciation.

Without limiting the generality of the foregoing, the term "improvements" means all buildings, structures, fixtures, and things erected upon or affixed to such lands and shall include machinery, boilers, tanks, pipes, dams, flumes, roads, railways, transmission lines, and other works used in connection with the business of the Licensee. Improvements shall also mean areas artificially reforested by planting or seeding, compensation for which shall be the cost incurred in the act of reforesting.

If the amount of compensation payable to the Licensee is not agreed upon, then such amount shall be appraised and awarded by a single arbitrator in case the Licensor and Licensee agree upon one; otherwise by three arbitrators, one to be appointed by the Licensor, one to be appointed by the Licensee, and the third to be appointed by writing under the hands of the two appointed, such arbitration to be in accordance with the provisions of the "Arbitration Act" of the Province of British Columbia.

12. If at any time, or from time to time, part of the lands included in Schedule "A" is found to be required for a higher economic use than raising forest crops, said lands may be withdrawn from the licence area on the consent of the Licensor and at the request of the Licensee, and after such withdrawal such lands will be deducted from Schedule "A" and may be disposed of by the Licensee for the purpose for which they were withdrawn.

13. Where the licence includes within the described boundaries a belt or area of non-productive land surrounding or adjacent to the productive forest land of the licence, any or all of such non-productive land may be withdrawn from the licence at the pleasure of the Minister.

APPENDIX A.—FOREST MANAGEMENT LICENCE—*Continued*

14. Other tenures included in this management licence shall not be sold, transferred, or other- disposed of except as hereinbefore provided or except as provided in Section 33 of the "Forest ."

15. This licence, insofar as Crown lands in Schedule "B" are concerned, shall not be considered imit the use of the lands at the discretion of the Minister for other purposes such as mining, trap- g, hunting, fishing, hydro-electric development, or any use that does not materially prejudice the its granted to the Licensee to employ the use of the lands for the growing and harvesting of forest ducts under the terms of this licence.

16. It is understood and agreed between the parties hereto that any rights under this agreement respect of Crown lands do not include any riparian or foreshore rights, and all such riparian and eshore rights vested in the Crown in respect of the said Crown lands mentioned in this agreement ill remain in the same status as if this agreement had not been entered into, and the Licensee shall ve no rights or claims whatsoever in respect thereto by virtue of this agreement.

17. The Licensor may direct the Licensee to have surveyed and defined on the ground, and at the censee's expense, any or all the boundaries of the licence area which he may deem necessary to have surveyed and defined. In the event of failure of the Licensee to complete any such survey within ne limits set by the Licensor, the Licensor may cause the survey to be made and the costs shall be iarged to and be payable forthwith by the Licensee.

18. As a first essential to the primary object of sustained-yield management of this licence, it is greed that all potentially productive forest land within the licence area shall be kept by the Licensee i growing stock as provided in Clause 19 hereof, and adequately stocked in accordance with standards o be defined from time to time by the Forest Service for comparable lands in British Columbia.

19. Any lands in the licence area denuded before the date of this licence which are found to be tocked below the minimum standards defined by the Forest Service as provided in Clause 18, above, shall be classified as to site quality and those determined by the Forest Service to be of a site quality index equal to or better than 80, unless in the opinion of the Licensor they are occupied by an advanced growth of brush, or otherwise in such condition as to make planting operations economically impractical, shall be reforested by the Licensee by artificial means with a merchantable species suitable to the locality at a rate per year of not less than one thousand acres, or ten per cent of the total acreage of such lands, whichever is the lesser, all to the satisfaction of the Licensor.

The Licensee further agrees that lands of site quality index better than 110 denuded after the date of this licence, and not found to be restocked satisfactorily five years after logging, will be artificially regenerated by the Licensee before the end of the seventh year after logging; and that lands of site quality index between 80 and 110 not found to be restocked satisfactorily eight years after logging, will be artificially regenerated by the Licensee before the end of the tenth year after logging, all to the satisfaction of the Licensor.

20. On failure of the Licensee to comply with the provisions of Clause 19, the Licensor, his servants or agents, may enter on the lands in respect of which the Licensee is in default, and restock them, and the cost thereof shall be recoverable by the Crown from the Licensee and may be taken in whole or in part from the deposit referred to in Clause 35 hereof.

21. The operations covered by the licence shall be managed in accordance with the currently approved management working plan, each of which in turn as approved for each successive period is hereby incorporated into and made a part of this licence.

22. Management working plans will be approved for such period as the Minister may decide, and will be subject to revision as set forth in the said plans.

23. Revised management working plans shall be submitted for the approval of the Minister not later than three months prior to the expiry of currently approved plans.

24. The object of each succeeding plan shall be to implement the primary object of the licence; i.e., sustained yield in equal annual or periodic cuts, and may embody any method of attaining that objective that over a reasonable period of years is likely to prove economically feasible, that is approved by the Minister, and that is not inconsistent with the spirit and intent of the Act and regulations. In preparing the management working plan, advantage shall be taken of all available data and experience.

25. Should it appear at any time to either party hereto necessary or expedient in case of emergency to increase or decrease the rate of cutting contemplated by the cutting budget then in effect, or to alter the cutting plan then being observed, then, subject to the approval of the Minister, emergency revision of the management working plan will be undertaken upon the request of either the Licensee or the Minister.

Without limiting the generalities of the preceding paragraph, cause for revision on account of emergency conditions will cover such things as fire damage of major proportions, serious windthrow,

APPENDIX A.—FOREST MANAGEMENT LICENCE—*Continued*

insect or disease attacks, serious damage to the Licensee's manufacturing plant, or other catastrophe of great moment, or should there occur a national emergency brought about by war or a severe economic depression.

26. In the process of harvesting the crop from the licence area, the Licensee shall provide the opportunity for contractors other than the Licensee's own employees or shareholders who own more than one per cent interest to harvest a minimum of thirty per cent of the allowable cut on Crown lands not held under other tenure as set forth in each succeeding management working plan, but where the Minister is satisfied that such contract operation is not feasible, either by reason of lack of operators or for other good and sufficient reason, the Minister may relieve the Licensee in whole or in part from this responsibility.

27. In the event of the development on the licence area of injurious insects in numbers which in the opinion of the Minister will seriously reduce the current or future allowable annual harvest of wood, and which in the opinion of the Minister can be controlled, then the Licensee and Licensor shall take such control measures as may be mutually agreed upon, or the Licensee at his own expense shall take such control measures as the Minister shall direct, provided that the cost of such control measures to the Licensee at his own expense in any one calendar year shall not exceed one-half the cost of such control measures incurred during that calendar year, or the total stumpage value of that year's cut, whichever may prove to be the lesser. For the purposes of this clause, the stumpage value shall be the value appraised by the Forest Service.

28. In the event that mutual agreement cannot be reached between the parties hereto as to the sustained-yield cutting capacity or as to the sequence or methods of cutting to be employed at the time emergency, or any other revision of the cutting plan or cutting budget is undertaken, the Licensor shall determine the permissible cut and the plan and methods of cutting.

29. The Licensee, in his logging operations on the licence area, shall at all times maintain at least as high a standard of utilization as, in the Licensor's reasonable opinion, is being maintained by well-conducted logging operations in the _____ Forest District.

30. Cutting on the licence area shall be done only in accordance with the management working plan, and only after notice of intent has been given to the Minister and a cutting permit has been issued. Such cutting permit shall be issued by the Minister if the proposed cutting is in keeping with the provisions of this licence and the management working plan. If the proposed cutting is to be on other tenures, the cutting permit will constitute the Licensor's concurrence that the cutting is according to plan and specify such other details as he may deem necessary, such details, however, always to be in keeping with the provisions of the management working plan and this licence. If cutting is on Crown lands not held under other tenures, the cutting permit will, in addition, fix the stumpage in accordance with Subsection (20), Clauses (*a*) and (*b*) or (*c*) of Section 33 of the "Forest Act." Any cutting not covered by a cutting permit will be deemed to be in trespass and the Licensee may be assessed a sum by the Licensor in respect thereof in an amount not in excess of the value of the logs or other product so cut or wasted or destroyed.

31. For the purpose of Subsection (20), Clause (*a*) of Section 33 of the "Forest Act," merchantable timber means all even-aged stands in which the average age of the dominant trees at the date of this licence is more than one half the length of the rotation as defined in the management working plan; and all timber cut during the first half of the initial rotation in uneven-aged stands managed under a selection system. The age of trees and stands for the purpose of this paragraph shall be determined by the Minister.

32. Timber marks shall be secured by the Licensee and marking carried out as required by Part IX of the "Forest Act."

33. All timber cut on the licence area shall be scaled in cubic feet and in accordance with the provisions of Part VIII of the "Forest Act."

34. Timber and wood cut from lands included in this licence, regardless of the tenure of the lands, shall be subject in all respects to the provisions of Part X of the "Forest Act" insofar as they relate to lands granted after the 12th day of March, 1906.

35. The Licensee herewith deposits, pursuant to Subsection (6) of Section 33 of the "Forest Act," the sum of _____ Dollars ($_____), receipt of which is acknowledged and will supplement this deposit by the payment of ten cents on each one hundred cubic feet of wood harvested, but the sum total of deposits held at any one time by the Licensor under this clause shall not exceed _____ Dollars ($_____). In the event that the amount of the deposit becomes less than _____ Dollars ($_____), the Licensee will forthwith deposit sufficient money with the Licensor to bring the total amount up to _____ Dollars ($_____), and thereafter will supplement the deposit by the payment of ten cents on each one hundred cubic feet of wood harvested to bring the total amount up to _____ Dollars ($_____). The said deposits shall be

APPENDIX A.—FOREST MANAGEMENT LICENCE—*Continued*

ıld for the purpose of ensuring compliance on the part of the Licensee with the terms of the "Forest ct," the regulations made thereunder, this licence, the management working plan, and any permit sued pursuant to this agreement.

36. The Licensee agrees to pay stumpage on all merchantable wood cut, wasted, or removed by ıe Licensee or his agents on or from that part of the licence area described in Schedule "B" hereto, ; provided in this licence, the "Forest Act" and the cutting permit.

37. Starting on the first day of January next following the date of this licence, the wood harvested ·om the licence area in any one year shall not be less than fifty per cent and not more than one undred and fifty per cent of the approved annual cut, and shall not vary more than ten per cent from ıe total approved cut over a period of five years.

38. Damages, recoverable in full or in part from the deposit made by the Licensee under Clause 5 hereof, may be assessed by the Licensor for failure to observe the provisions of Clause 37 of this .icence, as follows:

(*a*) The full stumpage value as appraised by the Forest Service on the quantity of timber by which the year's cut falls below fifty per cent of the approved annual cut.

(*b*) Double the stumpage value as appraised by the Forest Service on the quantity of timber by which the year's cut is in excess of one hundred and fifty per cent of the approved annual cut, whether cut from Crown lands or from other tenures.

(*c*) Should the total cut over five consecutive years vary more than ten per cent over or under the total of the five years' approved cut, a sum per one hundred cubic feet will be assessed by the Minister on the amount cut over or under the ten per cent allowance, whether cut from Crown land or from other tenures.

(*d*) Should the total cut over ten consecutive years, including the five-year period referred to in (*c*) above, vary less than ten per cent from the total of the ten-year cutting budget as approved in the working plan, the damage assessed in paragraph (*c*) above, if any, will be refunded.

(*e*) For the purposes of this paragraph, stumpage shall be appraised on the same basis and in the same manner as provided in Clause 30 hereof.

(*f*) Any damages provided for in any cutting permit mentioned in Clause 30 may be deducted from the deposit mentioned in Clause 35, and thereupon the Licensee shall forthwith deposit with the Licensor sufficient moneys to make the said deposit equal to the amount of deposit thus required.

(*g*) In the event that the licence is cancelled by reason of any default or breach of the licence by the Licensee, then all moneys on deposit with the Licensor under the terms of this contract shall be payable to the Crown for damages.

39. For the purpose of carrying out the provisions of Clause 38 hereof, the Licensee may elect to start a new five-year period from any year in which the periodic cut for the preceding five-year period is within ten per cent of the accumulated approved annual cuts.

40. The aggregate acreage of the Crown lands in the licence area for the purposes of this rental under Subsection (19) of Section 33 of the "Forest Act," as of this date, shall be ..... acres.

41. For the purposes of Section 124, Subsection (1) of the "Forest Act" as amended by Chapter 24 of the Statutes of British Columbia for 1949, the approved annual productive capacity of the licence shall be such as may be determined in the current approved working plan, and forest protection tax shall be payable as provided by the said Section 124.

42. All camps or other living quarters established incident to the management of the licence area shall be of a standard at least as high as those that, in the Licensor's reasonable opinion, are being maintained by comparable well conducted forest operations in the ..... Forest District.

42A. All roads, on lands within the boundaries of this licence, including the lands listed in Schedule "A," shall be held available for public use in accordance with the terms of the "Forest Act" relating thereto.

43. The Licensee shall provide, to the satisfaction of the Licensor, reasonable office and living accommodation for a reasonable Forest Service inspection staff on the licence area or at any headquarters, plant, or operation maintained by the Licensee, if instructed by the Licensor in writing so to do.

44. The Licensee shall employ one Forester, registered under the terms of Chapter 127, R.S.B.C. 1948, and amendments thereto, and as many additional Registered Foresters as may be deemed necessary. The working plan and all revisions and amendments thereto shall be signed and sealed by the Registered Forester.

45. In the event of the bankruptcy or insolvency of the Licensee, the Licensor may cancel the licence and any or all moneys on deposit may be declared by the Licensor to be payable to the Crown for damages.

APPENDIX A.—FOREST MANAGEMENT LICENCE—*Continued*

46. This agreement may be amended by the parties hereto by a memorandum in writing signed by the parties hereto.

47. This management licence shall not be sold or transferred by the Licensee within ten years immediately subsequent to the issuance of this licence.

48. Any notice required to be given to the Licensee by the Licensor under this licence may be given by written notice sent by registered mail or delivered to the registered office of the Licensee in British Columbia, and shall be deemed to be so given on the day it would be received by the Licensee in the ordinary course of post, or on the day it was so delivered.

49. (*a*) This licence may be terminated at any time by mutual consent of the parties hereto.

(*b*) The Licensee may terminate this licence on two years' notice in writing given to the Licensor subject as hereinafter provided.

(*c*) In the event that the Licensee serves notice of termination of this licence as provided in the next preceding clause such termination shall be subject to the following conditions:

(i) All moneys held as security deposit of whatsoever nature or kind or any part thereof may be declared by the Licensor payable to the Crown for damages or otherwise and the Licensor shall not be obliged to account in respect thereof.

(ii) All tenures which have reverted to the Crown pursuant to this contract shall not revest in the Licensee.

(iii) All improvements made on Crown lands shall become and be the property of the Crown and the Licensee shall have no claim or in any way be entitled to compensation therefor: Provided the Licensee may remove his own fixtures in such a manner as not to damage other improvements; provided also such removal shall not in any way affect the lien of the Crown on such fixtures as provided in the "Forest Act."

(iv) All cutting permits issued pursuant to the licence shall terminate on the termination of the licence.

(v) Where cutting and removal of timber is being carried out subject to the provision of Subsection (21) of Section 33 of the "Forest Act" and such cutting and removal has not been completed or is otherwise insufficient to extinguish the tenures involved then the provisions of Subsection (22) of the said Section 33 shall apply thereto as if the contract had been cancelled as mentioned in the said Subsection (22).

(vi) The Licensee shall forthwith pay all moneys owing on outstanding accounts for stumpage, royalty, taxes, and annual rental.

(vii) All rights granted pursuant to any statute or regulations or under this licence as ancillary to the licence and all appurtenances shall be and are herewith cancelled effective on the termination of this licence.

50. In the event that this licence is cancelled or terminated, existing other tenures owned or controlled by the Licensee included within the licence area shall in no way be encumbered by any commitments, agreements, understanding or in any other manner arising out of the execution of this licence, except as provided for in Subsection (22) of Section 33 of the "Forest Act."

51. In this licence:

"Act" means the "Forest Act," R.S.B.C. 1948, Chapter 128, and amendments thereto in force from time to time during the currency of this licence.

"Approved," if not otherwise defined in the context, means approved by the Licensor.

"Denuded" or "denuded lands" means any forest lands in the licence area from or on which substantially all mature timber has been cut, logged, or destroyed, and on which trees of young growth in sufficient numbers to produce a valuable crop according to the standards of the Forest Service have not yet been established.

"Forest Service" means the Forest Service of the Department of Lands and Forests of British Columbia.

"Higher economic use" means that use which in the opinion of the Licensor will contribute most to the good and welfare of the Province, including non-monetary uses.

"Minister" means the Minister of Lands and Forests and his successors in office.

"Other tenure" means any title, licence, lease, or berth whereby the Licensee has the right to cut timber on land included in Schedule "A" hereto, or on land that subsequently may be acquired by the Licensee pursuant to Clause 6 hereof.

"Management working plan" means the management and working plan submitted by the Licensee with the application for this forest management licence and approved prior to the execution of these presents and subsequent revised management working plans to be submitted by the applicant in accordance with the terms of this licence as herein appearing.

APPENDIX A.—FOREST MANAGEMENT LICENCE—*Continued*

This Agreement shall enure to the benefit of and shall be binding upon, not only the parties ereto, but also the successors in office of the Licensor and the successors and assigns of the Licensee, spectively.

This Licence and Agreement is issued subject to the provisions of the above-mentioned "Forest ct" and regulations made thereunder.

IN WITNESS WHEREOF the Licensor has executed these presents and the Licensee has hereunto fixed its corporate seal by the hands of its proper officers in that behalf.

IGNED, SEALED, AND DELIVERED
in the presence of:

Witness.

Minister of Lands and Forests.

HE COMMON SEAL OF THE LICENSEE
was hereunto affixed in the presence of:

SCHEDULE "A"

_____ FOREST MANAGEMENT LICENCE

FOREST MANAGEMENT LICENCE NO. _____

Forest lands and merchantable timber in other tenures owned or controlled by the Licensee.
(Description of lands.)

SCHEDULE "B"

DESCRIPTION OF CROWN LANDS

APPENDIX B

FOREST SERVICE INSTRUCTIONS FOR PREPARING WORKING PLAN

Adjustments to the preliminary boundaries of the proposed Management Licence will be required in many instances, and opportunity will be given to the applicant to consider such amendments as are deemed necessary by the Minister. Subject to agreement with respect to any adjustments found necessary in the boundaries of the area applied for, advertising, and approval by the Minister (see page 2), it will then be in order for the applicant to have his forester prepare a working plan for the unit. This is the detailed management and working plan on which the licence will be issued.

A good working plan takes some time to prepare. To obtain reasonably complete information on the growing stock may take from two to five years, but in the meantime it is desirable to get the licence area under management as soon as possible and a preliminary plan should be submitted without delay. This initial plan will be for three years to enable the resident forester to gather data from which a revised and more complete plan of management can be prepared and submitted for approval.

On pages 15 to 19 of this bulletin is presented an outline of the items that should be covered in a management working plan. The preliminary effort may omit all or part of Sections V, VIII, and XI with the aim of collecting the necessary data to complete these during the initial three-year period. It is better to have a blank section and an open mind than to put in unreliable data which may lead to false conclusions. For example, in Section V yield studies are needed on which to base sound calculations, but in the meantime the allowable cut can be estimated on the basis of the best information available. The standard Forest Service yield tables will be of assistance and copies may be had on application to the Chief Forester.

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OUTLINE OF WORKING PLAN AND ACCOMPANYING DATA

I. OWNERSHIP KEY MAP { Applicant's holdings; Crown land; Other private holdings; Other public holdings } Scale 4 miles=1" (minimum).

II. DETAILED MAPS of individual areas on scale of 20 chains=1 inch or 40 chains=1 inch, whichever is best suited to the situation.

The aim will be to make up forest cover maps to show the following types:

A. *Productive Forest Land:*

Mature coniferous—show species composition and volume per acre.

Immature coniferous—show species and date of establishment.

Deciduous.

Not satisfactorily restocking—show history and dates.

Non-commercial cover:

(*a*) Coniferous.

(*b*) Deciduous.

B. *Non-productive Forest Area:*

1. Barren.
2. Scrub.
3. Swamp.
4. Water.

C. *Not Suited for Forests:*

1. Agricultural.
2. Grazing.
3. Industrial areas and forest villages.

III. TABULAR SUMMARIES OF AREAS (in acres) HELD BY: { Applicant.; Crown.; Other private agencies.; Other public agencies.

APPENDIX B.—FOREST SERVICE INSTRUCTIONS FOR PREPARING WORKING PLAN—*Continued*

[*Page 16.*]

A. *Productive Forest Land:*
Mature coniferous.
Immature coniferous by age classes:
1– 5 years.
6– 10 years.
11– 20 years.
21– 40 years.
41– 60 years.
61– 80 years.
81–100 years.
100+.
Deciduous (by age classes as above).
Not satisfactorily restocking:
(*a*) Logged.
(*b*) Burned.
(*c*) Logged and burned.
Non-commercial cover:
(*a*) Coniferous.
(*b*) Deciduous.
Total Productive Forest Land.

B. *Non-productive Forest Area:*
1. Barren.
2. Scrub.
3. Swamp.
4. Water.
Total Non-productive Forest Area.

C. *Not Suited for Forests:*
1. Agricultural.
2. Grazing.
3. Industrial areas and forest villages.

D. *Totals by Ownership Classes:*

E. *Grand Totals for Working Circle:*

IV. TABULAR SUMMARIES OF TIMBER VOLUMES IN M B.M. OR CUBIC FEET (11" D.B.H. and over) (diameter limit may be lower in special cases).
Segregated by species and surveyed lots, and other subdivisions.

A. *Owned or Controlled by Applicant:*
1. Under timber licence, lease, or timber sale.
2. Under other tenure.

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B. *Owned or Controlled by the Crown (Province):*

C. *Owned or Controlled by Other Private Agencies:*

D. *Owned or Controlled by Other Public Agencies:*

V. DATA INCIDENTAL TO YIELD CALCULATIONS.

A. *Site Index Map to Cover Working Circle:*

B. *Rotation Proposed:*

C. *Methods of Yield Computation:*

D. *Cutting Budget:*
1. Current allowable cut and equalization period—show calculations.
2. Periodic allowable cut.
3. Ultimate yield capacity—show calculations.

E. *Yield Capacity in Second and Subsequent Rotations:*
Show calculations.

VI. ANNUAL PLANT CAPACITY.

A. *Present Facilities:*

B. *Proposed Development:*

APPENDIX B.—FOREST SERVICE INSTRUCTIONS FOR PREPARING WORKING PLAN—*Continued*

VII. CUTTING PLAN—INITIAL PERIOD.
- A. *Cutting Budget for Initial Three-year Period, as in V, D:*
- B. *Schedule of Cutting by Lots or Blocks:*
- C. *Map Showing Cutting Areas Scheduled:*
- D. *Methods of Cutting to Be Employed:*
  1. Clear cutting—show provision for seed source.
  2. Selective cutting:
     (*a*) Justification.
     (*b*) Intensity.
  3. Thinning or partial cuttings.

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- E. *Proportion of Annual Cut to Be Processed in Licensee's Plant:* (Not less than 80 per cent.)

VIII. MANAGEMENT PLANS—SUBSEQUENT TO INITIAL PERIOD.
- A. *Complete Plan of Management for First Ten Years:*
- B. *General Plan of Management for First Rotation:*

IX. PROVISIONS FOR ADJUSTMENTS OF WORKING PLAN.
- A. *Provision for Intensive Survey and Revision of Plan:* E.g., following pathological survey.
- B. *Adjustment of Cutting Budget:* (50 per cent–150 per cent) Minimum and maximum variations within five-year period.
- C. *Provisions for Salvage Due to Losses from Fire, Insects, or Other Catastrophe:*
- D. *Revision of Plan after Salvage under (C):*
- E. *Provision for Yield Studies or Other Research:*

X. REFORESTATION PLAN.
- A. *Standard of Stocking and Methods of Survey Adopted:* Forest Service standard.
- B. *Plan for Reforestation of Present Unsatisfactorily Restocked Areas:*
  1. Area.
  2. Plan of survey.
  3. Rate of reforestation—1,000 acres or 10 per cent, as approved.
  4. Schedule of planting:
     (*a*) Map showing areas.
     (*b*) Sequence of planting.
     (*c*) Species.
- C. *Provision for Planting of Future Logged or Burned Areas where Natural Reforestation Fails:*—Forest Service time limits.

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  1. Period to elapse before survey to determine necessity of planting—where seed source is available.
  2. Period within which planting to be completed:
     (*a*) Where seed source available.
     (*b*) Where no seed source available.
- D. *Provision for Survival Studies:*

XI. CULTURAL PRACTICES.
- A. *In Immature Stands:*
  1. Release cuttings.
  2. Thinnings.
  3. Pruning.
- B. *Non-commercial Cover:* Provisions for establishment of a commercial crop.

XII. IMPROVEMENT PLAN.
- A. *Map:*
- B. *New Construction:*
  1. Roads—location, character, grades.
  2. Other.

APPENDIX B.—FOREST SERVICE INSTRUCTIONS FOR PREPARING WORKING PLAN—*Continued*

C. *Maintenance:*

D. *Co-operative Use:*

E. *Public Use:*

Where provided in contract.

. PROTECTION PLAN.

. DESCRIPTION OF LIMITS OF UTILIZATION IN EXTRACTION OPERATIONS.

APPENDIX C

LIST OF WITNESSES

Witness	Representing	Heard at—
Allen, Dr. G. S.	Faculty of Forestry, U.B.C. (Dean)	Victoria, B.C.
Allison, D. G.	Allison Logging Co. Limited	Victoria, B.C.
Anderson, E. A.	Elton Logging Company Limited	Vancouver, B.C.
Andrews, L. R.	B.C. Lumber Manufacturers' Association	Vancouver, B.C.
Anton, N.	Anton Pole and Lumber Company	Victoria, B.C.
Backs, P. L.	Willa Lumber Company Limited	Kamloops, B.C.
Banford, R.	Federated Co-operative Limited	Kamloops, B.C.
Bell, F.	Greenwood Board of Trade	Kamloops, B.C.
Beltz, J. E.	B.C. Mountaineering Club	Vancouver, B.C.
Bendickson, A. B.	Bendickson Logging Co. (1939) Ltd.	Victoria, B.C.
Bentley, A. W.	Personal	Vancouver, B.C.
Bentley, L. L. G.	Canadian Forest Products Limited	Vancouver, B.C.
Bentley, L. L. G.	B.C. Lumber Manufacturers' Association	Vancouver, B.C.
Bestwick, L.	Coal Creek Logging Company Limited	Vancouver, B.C.
Bonner, G. E.	Vancouver Island Rate Payers' Association	Victoria, B.C.
Bowie, A.	Prince George Board of Trade	Prince George, B.C.
Bowman, O.	Orion Bowman & Sons Limited	Victoria, B.C.
Boyd, R. S.	Independent Loggers' Association	Vancouver, B.C.
Breitenbach, W. E.	Alaska Pine and Cellulose Co. Ltd.	Vancouver, B.C.
Brink, V. C.	Vancouver Natural History Society	Victoria, B.C.
Brown, W.	Columbia Cellulose Company Limited	Vancouver, B.C.
Brown, W.	Celgar Development Company Limited	Vancouver, B.C.
Buckland, A. C.	District of Mission	Victoria, B.C.
Burchett, E. P.	Timberland Development Company Ltd.	Victoria, B.C.
Burgess, T. E.	B.C. Forest Products Limited	Vancouver, B.C.
Burns, G. K.	Passmore Lumber Company Limited	Nelson, B.C.
Butler, E. J.	Personal	Victoria, B.C.
Butler, F. G.	Horsefly Committee, Williams Lake and District Board of Trade	Williams Lake, B.C.
Cattermole, R. J.	Personal	Victoria, B.C.
Chase, E. E.	District of Mission	Victoria, B.C.
Chestnut, R. H.	Personal	Vancouver, B.C.
Christie, Mrs. E. G.	Vancouver Island Rate Payers' Association	Victoria, B.C.
Church, P. S.	Church Sawmills Limited	Prince George, B.C.
Clark, F. H.	Workmen's Compensation Board	Vancouver, B.C.
Clay, C. H.	Department of Fisheries	Victoria, B.C.
Cooke, E.	Cooke Lumber Company Limited	Kamloops, B.C.
Corbett, I. F.	Personal	Vancouver, B.C.
Corlett, W. D.	Mill Bay Logging Company Limited	Victoria, B.C.
Cox, M. R.	Greenwood logger	Kamloops, B.C.
Craig, S.	Connection, J. G. Gibson evidence	Victoria, B.C.
Craig, S.	C. & B. Logging Company	Victoria, B.C.
Dahlgren, L. O.	Fraser Lake and District Board of Trade	Burns Lake, B.C.
Darnall, R. B.	Canadian Institute of Forestry (Cariboo)	Prince George, B.C.
Davis, D.	Grouse Mountain Resorts Ltd., etc.	Victoria, B.C.
DeGrace, L. A.	Willow River Association	Prince George, B.C.
DeGrace, L. A.	Ahbau Forest Association	Prince George, B.C.
DeGrace, L. A.	Stuart Lake Forest Association	Prince George, B.C.
Dent, G. R.	Squamish Towing & Contracting Co. Ltd.	Victoria, B.C.
Doren, G.	The Pas Lumber Company Limited	Victoria, B.C.
Douglas, R. R.	Alaska Pine and Cellulose Co. Ltd.	Vancouver, B.C.
Draeseke, G. L.	Alaska Pine and Cellulose Co. Ltd.	Vancouver, B.C.
Druce, E.	Public Relations Division, Forest Service	Victoria, B.C.
Duffy, P. J. B.	Mount Seymour Park Committee	Vancouver, B.C.
Dumont, M.	Subpœnaed at request of C. S. Brazier	Vancouver, B.C.

APPENDIX C.—LIST OF WITNESSES—*Continued*

Witness	Representing	Heard at—
Dunaway, J. H.	Cariboo Cattlemen's Association	Williams Lake, B.C.
Dunham, C. D.	Columbia Cellulose Company Limited	Vancouver, B.C.
Dunham, C. D.	Celgar Development Company Limited	Vancouver, B.C.
Ellingson, E.	Ernel Logging Limited	Vancouver, B.C.
Elliot, T.	B.C. and Yukon Chamber of Mines	Victoria, B.C.
Ellis, H. P.	Pacific Pine Company Limited	Vancouver, B.C.
Emery, C.A.	Victoria Sno-Birds Ski Club	Victoria, B.C.
Engler, J.	Lumby Board of Trade (rancher and sawmill-owner)	Kamloops, B.C.
Fensom, K. G.	Forest Products Laboratories	Victoria, B.C.
Filberg, R. J.	Crown Zellerbach Canada Limited	Vancouver, B.C.
Flavelle, A.	Personal	Vancouver, B.C.
Fleming, D. R.	Lakes District Sawmill Association	Burns Lake, B.C.
Flesher, E. H.	F & R Logging Company Limited	Vancouver, B.C.
Fletcher, J. E.	Truck Loggers' Association	Vancouver, B.C.
Foley, H. S.	Powell River Company Limited	Victoria, B.C.
Foley, M. J.	Canadian Pulp and Paper Association	Victoria, B.C.
Forse, H. B.	District Ranger, Nelson District, Forest Service	Nelson, B.C.
Foster, Dr. R. E.	Forest Pathology Division, Department of Agriculture, Canada	Victoria, B.C.
Frederiksen, H. F.	Tahsis Company Limited	Victoria, B.C.
Frolek, J.	J. Frolek, Drew Bros. & Sons, and Long & Son Lumber Co.	Williams Lake, B.C.
Fry, J. E.	B.C. Beef Cattle Growers' Association	Kamloops, B.C.
Gardner, H.	H. J. Gardner & Sons Limited	Quesnel, B.C.
Gibson, J. Gordon	Personal	Victoria, B.C.
Gibson, Dr. J. Miles	Personal	Vancouver, B.C.
Gilgan, W. W.	Omineca Lumbermen's Association	Burns Lake, B.C.
Gillespie, J. R.	Gillespie & DeLure Logging Co. Ltd.	Victoria, B.C.
Gilmour, J. D.	Crooked River Forest Association	Prince George, B.C.
Giroday, L.	Giroday Sawmills Limited	Victoria, B.C.
Gordon, M. J.	Kootenay Columbia Timber Council	Nelson, B.C.
Gormely, M. W.	Canadian Institute of Forestry (Vancouver Section)	Vancouver, B.C.
Gormely, M. W.	Evans Products Company Limited	Vancouver, B.C.
Gregg, E. E.	Western Plywood Limited	Quesnel, B.C.
Greggor, R. D.	Engineering Services Division, Forest Service	Victoria, B.C.
Grewall, N. S.	Mission Forest Products Limited	Victoria, B.C.
Griffith, W. L.	Quesnel and District Board of Trade	Quesnel, B.C.
Grove-White, C. D.	Canadian Institute of Forestry (Okanagan Section)	Kamloops, B.C.
Haddleton, W. D.	B.C. Interior Fish, Game, and Forest Protection Association	Penticton, B.C.
Hagenstein, W. D.	Industrial Forestry Association, Portland, Ore.	Victoria, B.C.
Hallin, O. D.	Crown Zellerbach Canada Limited	Vancouver, B.C.
Hanbury, W.	Pondosa Pine Lumber Company	Victoria, B.C.
Hatter, Dr. J.	B.C. Game Commission	Victoria, B.C.
Hayward, J. L.	B.C. Trade Union Congress	Victoria, B.C.
Heller, S.	Pacific Pine Company Limited	Vancouver, B.C.
Heron, J. P.	H.K. Lumber Company Limited	Kamloops, B.C.
Hicks, W. V. P.	Accounts Division, Forest Service	Victoria, B.C.
Hilliard, G. G. A.	Boundary Sawmills Limited	Penticton, B.C.
Hodgins, H. J.	Crown Zellerbach Canada Limited	Victoria, B.C.
Hodgins, H. J.	Personal	Victoria, B.C.
Hole, J. H.	Personal	Victoria, B.C.
Holst, J.	International Woodworkers of America	Prince George, B.C.
Hughes, W. G.	Working Plans Division, Forest Service	Victoria, B.C.
Irwin, H. S.	C.P.R. Company (Land Department)	Vancouver, B.C.
Jacobsen, J. F.	Association of B.C. Foresters	Vancouver, B.C.
Johnson, F. J. G.	Princeton Trail Sawmills Limited	Victoria, B.C.

APPENDIX C.—LIST OF WITNESSES—*Continued*

Witness	Representing	Heard at—
Johnson, F. J. G.	Cariboo Lumbermen's Association	Quesnel, B.C.
Johnson, F. J. G.	Personal	Victoria, B.C.
Keeley, B. J.	Forest Policy Development Association	Victoria, B.C.
Kerr, L. J.	Lignum Limited	Victoria, B.C.
Kilde, T.	Western Plywood (Cariboo) Limited	Quesnel, B.C.
Kindree, L. C.	Squamish and Howe Sound Board of Trade	Victoria, B.C.
Kingston, J. T. B.	Bureau of Economics and Statistics	Victoria, B.C.
Knight, E.	Assistant Forester, Prince Rupert, Forest Service	Burns Lake, B.C.
Koerner, W. C.	Alaska Pine and Cellulose Co. Ltd.	Vancouver, B.C.
Koster, J.	B.C. Cattle Company Limited	Kamloops, B.C.
Lamb, A. D.	Sechelt Area Loggers' Association	Vancouver, B.C.
Lamb, A. D.	Sechelt Forest Loggers' Association	Victoria, B.C.
Lamb, T. A.	Lamb Lumber Company Limited	Vancouver, B.C.
Leboe, W. J.	Personal	Prince George, B.C.
Liersch, J. E.	Powell River Company Limited	Victoria, B.C.
Litke, H.	Personal	Prince George, B.C.
Lloyd, A. P.	Federated Co-operative Limited	Kamloops, B.C.
Lundy, C.	Smith-Neilson Lumber and Timber Co.	Kamloops, B.C.
Malpass, W. R.	Continental Lumber Company Limited	Victoria, B.C.
Manning, S. A.	City of Revelstoke	Kamloops, B.C.
Marks, N. H.	B. & M. Logging Limited	Vancouver, B.C.
Mason, N. V.	Forest Service	Prince George, B.C.
Matheson, W.	District of Mission	Victoria, B.C.
Mattras, C. J. T.	Omineca Lumbermen's Association	Burns Lake, B.C.
Mayson, H. G.	Forest Service	Kamloops, B.C.
Melan, L. G.	Melan Logging Company Limited	Victoria, B.C.
Minns, G. W.	Boundary Sawmills Limited and Oliver Sawmills Limited	Penticton, B.C.
Mitchell, C. H.	Mining Association of B.C.	Victoria, B.C.
Moore, A. M.	Canada Tax Foundation	Vancouver, B.C.
Moore, W. S.	Moore-Whittington Lumber Co. Ltd.	Victoria, B.C.
Morgan, N.	Labor-Progressive Party	Vancouver, B.C.
Morris, J.	I.W.A. Council No. 1	Victoria, B.C.
Moscrop, H. J.	Pacific Pine Company Limited	Vancouver, B.C.
Moss, A.	Interior Lumber Manufacturers' Association	Vancouver, B.C.
Moss, A.	S. M. Simpson Limited	Penticton, B.C.
Mowat, S. A.	S. A. Mowat Limited	Vancouver, B.C.
Muir, J.	Fraser Valley Lumber Service	Victoria, B.C.
Munro, J. F.	Assistant Forester, Protection, Forest Service Prince Rupert	Burns Lake, B.C.
Munro, H. G.	B.C. Forest Products Limited	Vancouver, B.C.
Murton, H.	Murton Cedar Farms	Nelson, B.C.
Myring, W. F.	Canadian Forestry Association	Victoria, B.C.
McArthur, W. E.	City of Greenwood	Kamloops, B.C.
MacBean, A. P.	MacMillan & Bloedel Limited	Vancouver, B.C.
McColl, D.	Tahsis Company Limited	Victoria, B.C.
McColl, D. J.	Northern Spruce Company Limited	Prince George, B.C.
McKay, L. L.	McKay & McCallum Limited	Vancouver, B.C.
McKee, R. G.	Protection Division, Forest Service	Victoria, B.C.
McLean, A.	Experimental Station, Forest Service, Kamloops	Kamloops, B.C.
MacMillan, H. R.	MacMillan & Bloedel Limited	Victoria, B.C.
McMynn, C. G.	Boundary Sawmills Limited	Penticton, B.C.
MacQueen, I. C.	Western Plywood (Cariboo) Limited	Quesnel, B.C.
McRae, N. A.	Forest Service	Vancouver, B.C.
McWilliams, H. G.	Reforestation Division, Forest Service	Victoria, B.C.
Nichols, W. K.	Canada Creosoting Company Limited and Timber Preservers	Victoria, B.C.

APPENDIX C.—LIST OF WITNESSES—*Continued*

Witness	Representing	Heard at—
Nicholson, A. S.	Nicola Valley Sawmills	Victoria, B.C.
Oldham, E. G.	Parks and Recreation Division, Forest Service	Victoria, B.C.
Orchard, Dr. C. D.	Forest Service	Victoria, B.C.
Ordway, Mrs. D. H.	Personal	Victoria, B.C.
Parkes, F. H. H.	Alpine Club of Canada	Vancouver, B.C.
Pendray, W. C.	Grazing Division, Forest Service	Victoria, B.C.
Perry, C. A.	Income Tax Department (Federal)	Vancouver, B.C.
Perry, J. H.	Canada Tax Foundation	Vancouver, B.C.
Phillips, W. C.	Forest Service	*Prince George, B.C.*
Pogue, H. M.	Survey and Inventory Division, Forest Service	Victoria, B.C.
Prebble, Dr. M. L.	Forest Biology Division, Department of Agriculture, Canada	Victoria, B.C.
Pretty, C. N.	Pretty's Timber Company Limited	Victoria, B.C.
Recknagel, A. B.	*Northern Interior Lumbermen's Association*	*Prince George, B.C.*
Reid, C.	Personal	Vancouver, B.C.
Reid, J. A. K.	Management Division (Stumpage Appraisals), Forest Service	Victoria, B.C.
Richmond, H. A.	Forest Biology Division, Department of Agriculture, Canada	Victoria, B.C.
Roine, H.	Westlake Forest Association	Prince George, B.C.
Rustad, M. E.	Personal	Prince George, B.C.
Sawchuk, Mrs. C. D.	Sunrise Logging Company	Vancouver, B.C.
Scott, W.	Prince George Planing Mills	Prince George, B.C.
Seheult, L. R.	Personal (J. Miles Gibson)	Vancouver, B.C.
Sewell, E. H. L.	Personal	Vancouver, B.C.
Shaede, E. R.	E. R. Shaede Sawmills Limited	Kamloops, B.C.
Shaw, J. S.	Superior Shingles Limited	Vancouver, B.C.
Shelford, C. M.	Personal	Burns Lake, B.C.
Shepherd, A. J.	Shepherd Logging, Sooke	Victoria, B.C.
Short, C. J.	Evans Products Limited	Vancouver, B.C.
Simpson, S. M.	S. M. Simpson Limited	Penticton, B.C.
Smedley, E. C.	*Vanderhoof Lumbermen's Association*	*Burns Lake, B.C.*
Smith, H. R.	Personal	Nelson, B.C.
Sonner, E.	Bay Lumber Company	Victoria, B.C.
Spilsbury, R. H.	Research Division, Forest Service	Victoria, B.C.
Stevens, A. W.	Personal	Prince George, B.C.
Stevens, W. W.	*Listed firms in Kamloops Forest District*	Kamloops, B.C.
Stokes, J. S.	Management Division, Forest Service	Victoria, B.C.
Strimbold, E. G.	Strimbold Sawmill and Planing Company	Burns Lake, B.C.
Sturdy, D. A.	Sommers-Sturdy petition	Vancouver, B.C.
Swannell, L. F.	Forest Service, Kamloops District	Penticton, B.C.
Swanson, C.	*Western Forest Management Association*	Victoria, B.C.
Taylor, D. B.	Forest Service, District Forester, Vancouver	Vancouver, B.C.
Taylor, J. J.	Princeton Area Forest Industries Group (Taylor Lumber Company Limited)	Penticton, B.C.
Thompson, E. A.	Canada Creosoting Company Limited and Timber Preservers	Victoria, B.C.
Titus, R. T.	Western Forest Industries, Portland, Ore.	Victoria, B.C.
Veitch, W. F.	Taxation Department, B.C. Provincial Government	Victoria, B.C.
Walker, C. W.	Forest Policy Development Association	Victoria, B.C.
Walker, C. W.	C. D. Shultz & Company	Victoria, B.C.
Walkley, R. B.	Kootenay Forest Products Limited	Nelson, B.C.
Watkins, W. F.	Watkins Sawmills Limited	Victoria, B.C.
Welte, Miss M. E.	Consolidated Red Cedar Shingles Association of B.C.	Victoria, B.C.
Whitmore, A. J.	Department of Fisheries	Victoria, B.C.
Whittall, H. V.	Consolidated Red Cedar Shingles Association of B.C.	Victoria, B.C.

APPENDIX C.—LIST OF WITNESSES—*Continued*

Witness	Representing	Heard at—
Wilfert, F. W.	Newcastle Lumber Company	Victoria, B.C.
Williams, W. J.	Personnel Division, Forest Service	Victoria, B.C.
Willis, T. G.	Forest Service, Kamloops District	Kamloops, B.C.
Wright, C. A.	Cardinal Lumber Company Limited	Kamloops, B.C.
Wright, T. G.	Canadian Forest Products Limited	Vancouver, B.C.
Young, P.	Forest Service, Prince Rupert	Burns Lake, B.C.

Total, 219.

APPENDIX D

LIST OF COUNSEL AND THOSE REPRESENTED BY THEM

Barclay, Ian: Columbia Cellulose Company Limited.
Bowering, H. R.: Hon. R. E. Sommers.
Burns, A.: S. Craig.
Brazier, C. W.: Interior Lumber Manufacturers' Association and Members of Association.
Bowen-Colthurst, T. G.: E. R. Shaede Sawmills Ltd.
Cooper, C.: Forest Service.
Draeseke, G. L.: Alaska Pine and Cellulose Co. Ltd.
Eckardt, L. S.: Truck Loggers' Association.
Farris, Senator J. W. de B. (Q.C.): Crown Zellerbach Canada Limited.
Farris, J. (Q.C.): Columbia Cellulose Company Limited and Celgar Development Company Limited.
Fulton, E. D. (M.P.): B.C. Beef Cattle Growers' Association.
Grossman, E. D.: Lignum Limited.
Hogg, G. P.: Attorney-General, B.C. Government, on motion *re* Empire Mills.
Hossie, D. N. (Q.C.): MacMillan & Bloedel Limited.
Howard, R. M.: Western Forest Management Association.
King, H. B.: Northern Interior Lumbermen's Association.
Locke, C. C.: Commission Counsel.
Maclean, H. A. (Q.C.): Attorney-General, B.C. Government.
MacDonald, A. B.: International Woodworkers of America, Council No. 1.
MacKenzie, R. H.: City of Revelstoke.
Mathews, H. L.: J. R. Gillespie.
Merritt, C. C. (V.C.): Empire Mills.
Munro, Craig: B.C. Forest Products Limited.
Norris, T. G. (Q.C.): Cooke Lumber Company.
Owen, W. S. (Q.C.): B.C. Loggers' Association, B.C. Lumber Manufacturers' Association, and Canadian Pulp and Paper Association.
Owen, D.: B.C. Loggers' Association and B.C. Lumber Manufacturers' Association (assisting W. S. Owen, Q.C.).
Whiteside, A. M. (Q.C.): B.C. and Yukon Chamber of Mines.
Wismer, Gordon S. (Q.C.): Forest Policy Development Association.
Wismer, R. W.: Forest Policy Development Association (assisting Gordon S. Wismer, Q.C.).
Woods, Mervin: Federated Co-operative Limited.

APPENDIX E

"FOREST ACT"

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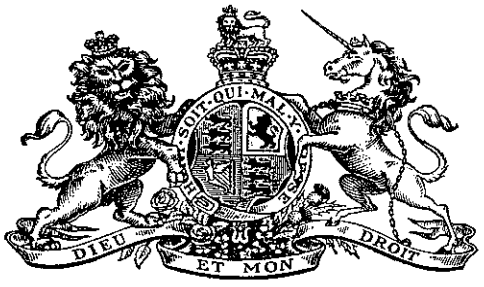
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CHAPTER 128.

R.S.B.C. 1948, c. 128; 1949, c. 24; 1950, c. 22; 1951, c. 29; 1953 (2nd Sess.), c. 9; 1954, c. 11; 1955, c. 27; 1956, c. 20; 1957, c. 23.

An Act respecting Crown Timber and the Conservation and Preservation of Forests.

[*Consolidated for convenience only, April 25th, 1957.*]

HER MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows:—

Preliminary.

Short title.

1. This Act may be cited as the "Forest Act." R.S. 1948, c. 128, s. 1.

Interpretation.

2. In this Act, unless the context otherwise requires:—

"Crown lands" means such ungranted Crown or public lands or Crown domain as are within and belong to Her Majesty in right of the Province, and whether or not any waters flow over or cover the same, and lands forfeited to and vested in the Crown under the provisions of the "Taxation Act," and lands given or devised to the Crown by any person, and lands purchased or acquired by the Crown:

"Crown timber" includes any trees, timber, and products of the forest in respect whereof Her Majesty in right of the Province is entitled to demand and receive any royalty or revenue or money whatsoever:

"Deputy Minister" means the Deputy Minister of Forests:

"Forest land" means land that in the opinion of the Minister will find its best economic use under forest crop:

"Minister" means the Minister of Lands and Forests:

"Sawlogs" includes all logs of pine, fir, cedar, spruce, or other timber of whatever length, whether round or flatted:

"Saw-timber" includes all timber cut on any area held under a pulp licence that is used or disposed of for purposes other than

manufacture into wood-pulp or paper in a pulp or paper mill situate within the Province of British Columbia, and all timber cut on any area held under a wood-pulp lease that is used or disposed of for purposes other than manufacture into wood-pulp or paper in the pulp or paper mill of the said lessee to which the wood-pulp lease is appurtenant or in the manufacture of lumber or wood cores for use in the shipment of the aforesaid products:

"Stumpage" includes every sum reserved or made payable to the Crown in right of the Province, whether by Statute or by contract, in respect of any timber, and in addition to rentals and royalties and taxes:

"Timber" includes sawlogs, spars, piles, poles, railway-ties, shingle-bolts, pulp-wood, and other cut timber:

"Timber lease" means any lease for the cutting and removal of Crown timber for any purpose, granted under this or any former Act of the Legislature:

"Timber leasehold" means the lands specified and comprised in any timber lease:

"Timber licence" means any special timber licence, pulp licence, hand-logger's licence, or other licence for the cutting and removal of Crown timber for any purpose, granted under this or any former Act of the Legislature:

"Timber limit" means the lands specified and comprised in any timber licence. R.S. 1948, c. 128, s. 2.

Division of Act into parts.

3. This Act is divided into thirteen parts, relating to the following subjects:—

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II.—Prevention of Trespass upon Crown Timber Lands	10–15
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R.S. 1948, c. 128, s. 3.

PART I.

FOREST SERVICE OF DEPARTMENT OF LANDS AND FORESTS.

"Forest Service."

4. For the purpose of administering and carrying out the provisions of this Act, there shall be in the Department of Lands and Forests a service to be known as the "Forest Service." R.S. 1948, c. 128, s. 4.

Jurisdiction of Forest Service.

5. The Forest Service shall have jurisdiction over and shall control and administer all matters relating to or in anywise connected with forestry, and particularly, and without restricting the generality of the foregoing provision, shall have jurisdiction over and shall, subject to and in compliance with the provisions of the Statutes of the Province for the time being in force, control and regulate, receive and administer, or invoke and enforce, as the case may be:—

(*a*) All the rights, properties, interests, claims, and demands of the Crown in right of the Province in Crown timber:

(*b*) All revenues and moneys of the Crown in right of the Province arising from forestry, Crown timber, and grazing:

(*c*) Conservation of forests:

(*d*) Reforestation:

(*e*) Prevention of forest fires:

(*f*) Sales and dispositions of Crown timber:

(*g*) Cutting, classifying, measuring, manufacturing, branding, and exporting of trees, timber, and products of the forest:

(*h*) Statutes, rules, and regulations relating to the regulation of forestry, the protection of forests, and the grazing of Crown lands. R.S. 1948, c. 128, s. 5; 1957, c. 23, s. 2.

Appointment of staff.

6. A Chief Forester, a Supervisor of Scalers, and such District Foresters and other officers, clerks, and servants as are required for the proper conduct of the Forest Service may be appointed pursuant to the provisions of the "Civil Service Act," all of whom shall hold office during pleasure. R.S. 1948, c. 128, s. 6.

Members of staff prohibited from dealing in Crown timber.

7. No officer, clerk, or servant of the Forest Service shall have, acquire, or hold, directly or indirectly, any property or interest in any park or in any timber lease or timber licence, or hold any licence or authority from the Crown in right of the Province to utilize or deal with any timber or product of the forest, or engage or have any interest in any business carried on in the Province having as its object the utilization or dealing in any timber or product of the forest or in the development of any park. R.S. 1948, c. 128, s. 7.

Annual report of Minister.

8. It shall be the duty of the Minister to make a report to the Lieutenant-Governor of the conduct of the Forest Service up to the

thirty-first day of December in each year, which report shall be laid before the Legislative Assembly. R.S. 1948, c. 128, s. 8.

Forest districts.

9. The Lieutenant-Governor in Council may constitute any portion of the Province a forest district, and declare by what local name it shall be known, and may from time to time extend, reduce, subdivide, or annul any existing forest district or merge it in whole or in part in the consolidation of two or more forest districts. R.S. 1948, c. 128, s. 9.

PART II.

PREVENTION OF TRESPASS UPON CROWN TIMBER LANDS.

Cutting of timber without licence prohibited.

10. (1) It shall be unlawful for any person, without a timber lease or a timber licence in that behalf, to cut or remove any trees, timber, or products of the forest upon or from any Crown lands.

Penalty.

(2) Every person who violates the provisions of subsection (1) shall be liable, on summary conviction, to a penalty of not less than twenty-five dollars and not more than five hundred dollars. R.S. 1948, c. 128, s. 10.

Exception in favour of travellers and explorers.

11. This Act shall not be construed to inflict penalties upon travellers or upon persons engaged in scientific pursuits or exploration in respect of cutting timber for actual bona-fide needs. R.S. 1948, c. 128, s. 11.

No rights acquired by person who unlawfully cuts timber.

12. (1) If any person, unlawfully or otherwise than is permitted by this Act, cuts, or employs or induces any other person to cut or assist in cutting, any trees or timber on any Crown lands, or removes any trees or timber so cut, or any products of the forest from any Crown lands, he shall not acquire any right to such trees, timber, or products of the forest or any claim to any remuneration for cutting, preparing the same for market, or conveying the same to or towards market, nor shall any lien be acquired on such trees, timber, or products of the forest, any other Statute notwithstanding.

Seizure of timber unlawfully cut.

(2) Any such trees, timber, or products of the forest may be seized by the Minister or by any officer of the Forest Service, or by any person acting under the authority or by direction of either of them, and may be sold for the benefit of the Crown, and if cut on or removed from any timber leasehold, wood-pulp lease, or timber licence may be sold for the benefit of the Crown, subject to the lawful claims of the lessee or licensee. R.S. 1948, c. 128, s. 12.

Forfeiture where timber unlawfully cut is mixed with other timber.

13. Where timber has been cut unlawfully or otherwise than is permitted by this Act on Crown lands, and has been made up with other timber into a crib or raft, or in any manner has been so mixed up as to render it impossible or difficult to distinguish the timber so cut from other timber with which it is mixed up, the whole of the timber so mixed up shall be held to have been cut unlawfully, and shall be liable to seizure and forfeiture unless the timber so cut is separated by the holder satisfactorily to the officer making the seizure. R.S. 1948, c. 128, s. 13.

Payment of stumpage where timber unlawfully cut is removed beyond reach of Crown.

14. (1) Where any trees or timber or products of the forest, cut or removed as mentioned in section 12, have been removed or dealt with in such a manner that, in the opinion of any officer of the Forest Service, a seizure of the same under the provisions of this Part is impossible, inconvenient, or inadvisable, the person who cut or removed the same, or caused the same to be cut or removed, shall pay to the Crown such sum in lieu of stumpage and royalty on the same as the Minister may determine. The certificate of the Minister stating the amount so determined shall be conclusive evidence of the sum payable.

Recovery by action.

(2) The sum so payable may be recovered with costs by action as for a debt due to the Crown in any Court of competent jurisdiction.

Lien.

(3) The Crown shall also have a lien for the sum so payable, and for all expenses of seizure, detention, or sale incurred in enforcing the lien, upon all sawmills and other factories and lands appurtenant thereto; and upon all steamships, railway and stationary engines, smelters, concentrators, furnaces, and machinery in or for which any trees, timber, or products of the forest cut or removed as mentioned in section 12 have been or are being manufactured, used, or consumed, or that belong to the person by whom the trees, timber, or products of the forest were cut or removed, and upon all cut timber and wood and lumber and other manufactured wood products belonging to that person; and also upon all steamships, tow-boats, scows, vessels, engines, logging plant and material, railway-lines, teams, wagons, and motor-vehicles in any way engaged or that have been engaged in taking out or in transporting such trees, timber, or products, or that belong to the person by whom the trees, timber, or products of the forest were cut or removed. Such lien shall constitute a first charge in priority to all other liens and to all encumbrances or charges created by any contract or arising under any Statute or otherwise howsoever, and shall confer the same rights and be enforceable in the same manner as the lien and rights of recovery of royalty conferred by the provisions of this Act in that behalf, including an absolute unconditional power to sell. R.S. 1948, c. 128, s. 14.

Burden of proof.

15. In all cases arising under this Part it shall be incumbent upon the defendant to prove his authority to cut or remove, and the averment only of the person seizing or prosecuting that he is employed or acting under the authority of this Act shall be sufficient proof thereof, unless the defendant proves the contrary. R.S. 1948, c. 128, s. 15.

PART III.

DISPOSITION OF TIMBER BY THE CROWN.

Disposition by Minister.

16. Crown timber which is subject to disposition by the Crown shall be disposed of only by the Minister pursuant to the provisions of this Act and the regulations. R.S. 1948, c. 128, s. 16.

Sale of timber licence by public competition.

17. (1) The Minister or any officer of the Forest Service authorized so to do by the Minister may from time to time, at the instance of any applicant, or otherwise, advertise for sale and sell by public competition in the manner prescribed in the regulations a licence to cut and remove any Crown timber which is subject to disposition by the Crown.

Offers to purchase licence.

(2) Every offer to purchase a licence under this section shall include an offer on behalf of the person making the same to pay to the Crown, in addition to taxes imposed by Statute:—

(*a*) The cost incurred by the Forest Service in cruising, surveying, and advertising the proposed timber limit:

(*b*) An annual rental based on the acreage contained in the lands covered by the licence and bearing the same ratio to the area of those lands as the fee for renewal of special timber licences in that part of the Province bears to six hundred and forty acres, subject to reduction each year in the computation of the rental by eliminating from the acreage each area of not less than six hundred and forty acres actually logged off to the satisfaction of the Minister during the preceding year:

(*c*) Such stumpage inclusive of royalty or additional sum, being not less than the upset price fixed by the Minister as the person making the offer is willing to pay for the privileges of the licence.

Expenses of preliminary cruising.

(3) The cost of cruising payable under subsection (2) may be fixed by the Minister, in his discretion, to include a reasonable sum to cover the actual and necessary expenses incurred by the original applicant for the licence in the preliminary cruising of the timber, such sum not to exceed the cost of cruising ordinarily incurred by the Forest Service under similar circumstances, which sum shall be paid over to the original applicant in the event of his making a bona-fide offer to purchase the licence and failing to obtain the same by reason of the acceptance of another offer therefor, or, in the event of the acceptance of the offer of the original applicant, shall be allowed to him as a deduction from the purchase-moneys payable by him.

Sales where stumpage value less than $2,000.

(4) Where the stumpage value to the Crown of the timber comprised in the licence proposed to be sold is less than two thousand dollars, the Minister may remit all or any part of the charges specified in clauses (*a*) and (*b*) of subsection (2), and the annual tax specified

in subsection (1) of section 124, and may make the sale without advertisement and in such manner as he may prescribe.

(4*a*) Where an application for a management licence has been made, and the lands applied for have been placed under reserve as provided in clause (*b*) of subsection (4) of section 33, the Minister may at his discretion, before the issuance of the management licence or the expiry of the term of the reserve, sell to the applicant sufficient timber for his current requirements without advertising and in such manner as the Minister prescribes.

Power to reject offers.

(5) The Minister may, in his discretion, reject any or all offers made for the purchase of the licence.

Contract of purchase.

(6) Upon the acceptance of an offer for the purchase of the licence, a contract, in writing, which shall constitute the licence, shall be entered into in a form approved by the Minister.

Consolidated Revenue to cover estimated expenditure.

(7) In the case of Crown timber, other than on management licences, situated east of the Cascade Mountains and sold under the provisions of this Part, there shall be made available from the Consolidated Revenue Fund for expenditure a sum estimated to be necessary to pay the cost of taking measures to reduce the hazard created by the removal of the timber, or to ensure or to promote the growth of a second crop, or of silvicultural treatment incident to removing the existing stand, and the sum made available in any fiscal year shall not be less than an amount that is computed at the rate of seventy-five cents per hundred cubic feet of the average annual cut of such timber for the preceding five calendar years for which information is available. R.S. 1948, c. 128, s. 17; 1950, c. 22, s. 2; 1956, c. 20, s. 2.

Subsequent sale without further advertisement.

18. Where a licence has been advertised for sale by the Minister and no offer to purchase is received, or no sale is made, the Minister may at any time, without further advertisement, sell the licence upon the terms and conditions previously advertised and applying to the licence, except that the amount payable by the purchaser shall not include any sum in respect of expenses incurred by the original applicant for the licence in the preliminary cruising of the timber. R.S. 1948, c. 128, s. 18.

Licence of farm wood-lot for bona-fide farmer.

19. (1) In the case of a bona-fide farmer in the Province who is not possessed of any forest land, or whose forest land is not capable of producing ten thousand cubic feet of wood per year, the Minister, subject to the further provisions of this section, may reserve for the sole use of the farmer an area of forest land not to exceed six hundred and forty acres, or an area of productive capacity of not more than ten thousand cubic feet of wood per year, or an area sufficient to bring the combined capacities of the farmer's privately owned land and the proposed additions to ten thousand cubic feet per year, whichever is the lesser acreage, for use as a farm wood-lot, and may issue a licence to the farmer to manage and use the said wood-lot.

Where farmer is possessed of privately owned forest lands.

(2) Where an applicant farmer is possessed of privately owned forest lands, no farm wood-lot licence shall be issued unless the privately owned lands are combined with the Crown lands and the whole managed to produce an annual or periodic harvest in accordance with the terms of this section and of the licence.

Farm wood-lot to be appurtenant to farm property.

(3) A farm wood-lot shall be appurtenant to the farm property in respect of which the wood-lot is reserved. It shall not be sold, transferred, assigned, or otherwise disposed of by the licensee, and in the event of the sale or other disposal of the farm the appurtenant farm wood-lot shall revert unconditionally to the Crown, but in the case of such sale or other disposal the Minister may reallot the same wood-lot to the new farm-owner.

Conditions attached to farm wood-lots.

(4) It shall be a condition of every farm wood-lot licence that:—

(*a*) The lands shall be kept stocked with forest-growth of saleable commercial species:

(*b*) The lands shall be managed by the licensee for the perpetual yield of an annual or periodic harvest of wood:

(*c*) The estimated yield shall be harvested annually or periodically.

Management plan in respect of each farm wood-lot.

(5) No wood-lot licence shall be issued until a management plan has been prepared for the area and approved by the Chief Forester. The management plan may be prepared either by the applicant, by his agent, or by the Forest Service without cost to the applicant. The management plan will be revised from time to time in accordance with the terms of the licence.

Deposit in respect of each farm wood-lot.

(6) At the time a licence is issued, the licensee shall deposit with the Minister the sum of fifty dollars, and shall add to this deposit such sum per unit of materials removed from the licence as is specified in the licence document, but the total sum of such deposits shall not at any time exceed two hundred and fifty dollars. Deposits under this subsection shall be for the purpose of ensuring compliance on the part of the licensee with the provisions of this Act, the regulations, the licence, and the management and working-plan, and may be used for such purposes as this Act, the regulations, or the licence provides.

Stumpage inclusive of royalty but no other dues payable.

(7) In respect of Crown lands in a farm wood-lot, no ground-rental, forest-protection tax, or other annual dues, fees or taxes shall be payable, but the licensee shall pay stumpage, inclusive of royalty, in such sum per unit of wood products removed, destroyed, or wasted as is appraised and assessed by the Forest Service.

Holder of lot ineligible for other Crown timber if not utilizing farm wood-lot.

(8) The holder of a farm wood-lot licence shall not be eligible to compete for, to buy from the Crown, or to enter into any contract with the Crown for the use of other Crown timber unless the approved annual or periodic capacity of his farm wood-lot is being harvested and used to the satisfaction of the Chief Forester. R.S. 1948, c. 128, s. 19; 1950, c. 22, s. 3.

Reduced rental in certain cases.

20. Where the Crown timber, the licence to cut and remove which is proposed to be sold, consists only of dead timber, stump-wood, or wood suitable for the manufacture of turpentine and other distillates, the Minister may permit the annual rental payable under subsection (2) of section 17 to be varied so that reduced rental, to be in no case less than half the amount otherwise payable, may be payable in respect of the licence. R.S. 1948, c. 128, s. 20.

Half-rental where lands are not timber lands.

21. Where the lands comprised in any licence sold under the provisions of this Part are not timber lands as defined in section 45 of the "Land Act," the rental payable in respect of the licence shall be one-half of the rental otherwise payable. R.S. 1948, c. 128, s. 21; 1950, c. 22, s. 4.

Hand-loggers' licences.

22. (1) The Minister may from time to time grant hand-loggers' licences to cut Crown timber which is subject to disposition by the Crown upon the following conditions:—

(*a*) A hand-logger's licence shall be personal and shall only grant authority to the person named therein (who must either be the holder of a registered timber-mark or have made application for a timber-mark as provided under Part IX) to cut timber as a hand-logger, and the licence shall be in force for one year from the date thereof and no longer:

(*b*) No licence under this section shall be granted to any person whose name is not on the Provincial voters list, unless the person is an Indian as defined in section 2 of the "Provincial Elections Act":

(*c*) The area to be specified or designated in each licence granted under this section shall, before the granting of the licence, be inspected and approved by an officer of the Forest Service:

(*d*) The holder of a licence granted under this section shall not use machinery propelled or operated otherwise than by muscular power in carrying on lumbering operations under the licence:

(*e*) The holder of a licence granted under this section shall be subject to the regulations governing the disposal of debris and the prevention of fire:

(*f*) The fee in respect of each licence shall be twenty-five dollars.

Penalty for violation of conditions of licence.

(2) Every person being the holder of a licence granted under this section who violates any condition upon which the licence is granted shall be liable to have his licence cancelled by the Minister, in his discretion, and shall in addition be liable, on summary conviction, to a penalty of not less than twenty-five dollars and not more than one hundred dollars. R.S. 1948, c. 128, s. 22.

Permit to cut timber on lands pre-empted or purchased.

23. Where any pre-emptor or any purchaser of Crown land is desirous of cutting and removing or disposing of the timber standing on the land in a manner or to an extent which, except for this section, he is not entitled by law, the Minister may, subject to the payment of the timber royalty reserved, grant to the pre-emptor or purchaser a permit to cut and remove or dispose of the timber standing on the land, on such terms and conditions as the Minister may prescribe; and the pre-emptor or purchaser may thereupon cut and remove or dispose of the timber in accordance with the provisions of the permit. R.S. 1948, c. 128, s. 23.

Free-use permits to cut timber.

24. (1) Notwithstanding anything contained in this Act, the Minister may from time to time grant a free-use permit which will entitle the holder to cut timber free of stumpage or royalty on the following conditions:—

(*a*) A free-use permit shall be personal and shall grant authority to the person named therein and his servants to cut timber for the purposes specified in the permit only:

(*b*) A free-use permit shall be limited to an area not to exceed one hundred and sixty acres in extent and shall be for a term not exceeding one year:

(*c*) The holder of a free-use permit shall be subject to all the regulations issued from time to time governing the disposal of debris and the prevention of fire pursuant to Parts XI and XIII:

(*d*) A free-use permit for cutting timber from vacant Crown lands shall be issued only when the person applying for it has not sufficient timber on land owned or occupied by him for the purposes specified in the permit.

Persons entitled to free-use permits.

(2) The following persons only may be permitted to obtain a free-use permit under this section, and for the following purposes respectively:—

(*a*) Free miners within the meaning of the term "free miner" as defined in the "Mineral Act," for the purpose of cutting timber for actual bona-fide needs while engaged in prospecting or preliminary development-work on any mineral or placer claim, if the free miner gives satisfactory proof to the Forest Service that the mineral or placer claim is not being operated so that any income or profit is derived therefrom:

(*b*) Actual settlers who are occupiers of agricultural lands, for use in the development for agricultural purposes of lands occupied by them:

(*c*) Persons cutting cordwood for personal use for fuel for domestic purposes and not for sale:

(*d*) Boards of School Trustees cutting cordwood for school purposes:

(*e*) Actual settlers who for a period of six months have made bona-fide use of lands for which payments to the Crown have

been completed, and pre-emptors who are complying with the provisions of the " Land Act " under which their records were issued, cutting cordwood, pulp-wood, as defined by or under section 57, or fence-posts upon the said lands for sale:

(*f*) Persons cutting trees or other forest-growth for purposes of scientific investigation.

Cancellation.

(3) Every holder of a free-use permit granted under this section who violates any of the conditions on which the permit is granted shall be guilty of an offence against the provisions of this Act, and in addition to all other penalties to which he may be liable shall be liable to the cancellation of his permit by the Minister. R.S. 1948, c. 128, s. 24; 1950, c. 22, s. 5.

Free-use permit to cut cordwood for unemployment relief.

25. Notwithstanding anything contained in this Act, the Minister may from time to time grant a free-use permit to any municipality or organization charged with the care of unemployed and needy persons which will entitle the holder to cut timber free of stumpage or royalty for the purpose of sale as cordwood, on the conditions that only those persons who are otherwise unemployed and in need of relief shall be employed in the cutting thereof, and that the proceeds from the sale thereof shall be used only for the purposes of unemployment relief. R.S. 1948, c. 128, s. 25.

Salvage-sale areas.

25A. (1) Where it becomes necessary to remove Crown timber to permit the expeditious use of Crown lands on which the timber is situate or in order to prevent the timber from being lost or destroyed, the Lieutenant-Governor in Council may, by Order, establish such area of Crown land as a salvage-sale area.

(2) Where an area has been established as a salvage-sale area under subsection (1), the Minister may forthwith proceed to sell the timber thereon, subject to such advertising and on such terms and conditions as the Minister deems advisable. 1954, c. 11, s. 2.

Sale of licence to tap trees for resin on Crown lands.

26. (1) In the case of any Crown lands which are not comprised in any application to purchase, or in any timber lease or timber licence, the Minister may from time to time offer for sale and sell by public competition a licence to tap the trees standing on those lands for the purpose of obtaining resin, on terms and conditions prescribed by this section and by the regulations, which licence shall be known as a " resin licence."

Annual rental.

(2) The annual rental in respect of every resin licence shall be not less than two cents per acre.

Disposition of lands comprised in resin licence.

(3) No resin licence shall in any way limit or affect the disposition of any lands comprised in the resin licence by pre-emption, sale, lease, or other alienation by the Crown under any Act of the Legislature, nor in any way limit or affect the disposition of any timber on the lands comprised in the resin licence by sale, licence, or otherwise under this

Act; except that during the term of the resin licence, and until a Crown grant is issued of the lands in respect of which any such alienation or disposition is made, the holder of the resin licence may continue to obtain resin under the licence from the trees on these lands so long as any trees are left standing thereon. R.S. 1948, c. 128, s. 26.

Permit to holder of timber lease or timber licence to tap trees for resin.

27. Subject to the payment of royalty at the rate provided in section 60, the Minister may grant to the holder of any timber lease or timber licence a permit to tap the trees standing on the lands covered by or included in the lease or licence for the purpose of obtaining resin therefrom, on such terms and conditions as the Minister may prescribe; and the holder may thereupon obtain and dispose of the resin in accordance with the provisions of the permit. R.S. 1948, c. 128, s. 27.

Permit to pre-emptors to tap trees for resin.

28. Where any pre-emptor is desirous of obtaining or disposing of resin from the trees standing on his pre-emption in a manner or to an extent which, except for this section, he is not entitled by law, the Minister may, subject to the payment of royalty at the rate provided in section 60, grant to the pre-emptor a permit to tap the trees standing on his pre-emption for the purpose of obtaining resin therefrom, on such terms and conditions as the Minister may prescribe; and the pre-emptor may thereupon obtain and dispose of the resin in accordance with the provisions of the permit. R.S. 1948, c. 128, s. 28.

Permit to tap trees for resin on lands held under purchase application.

29. Where the applicant under any application for purchase of lands pursuant to any Act relating to Crown lands is desirous of obtaining or disposing of resin from the trees standing on the lands in a manner or to an extent which, except for this section, he is not entitled by law, the Minister may, subject to the payment of royalty at the rate provided in section 60, grant to the applicant a permit to tap the trees standing on the lands for the purpose of obtaining resin therefrom, on such terms and conditions as the Minister may prescribe; and the applicant may thereupon obtain and dispose of the resin in accordance with the provisions of the permit. R.S. 1948, c. 128, s. 29.

Power to delimitate areas for forest reserves.

30. (1) The Minister shall cause an examination of Crown lands to be made by the Forest Service for the purpose of delimitating the area of such lands that it is desirable to reserve for the perpetual growing of timber, and as a result of the examination the Lieutenant-Governor in Council may, by Proclamation, constitute any such area a permanent forest reserve; and upon such Proclamation all Crown land included within the boundaries of the area, including land that becomes Crown land subsequent to the date of the Proclamation, shall be withdrawn from sale, settlement, and occupancy under the provisions of the " Land Act " or " Taxation Act," and in respect of the " Mineral Act," " Placer-mining Act," " Coal Act," and " Petroleum and Natural Gas Act " shall be subject to such conditions as the Lieutenant-Governor in Council

imposes. After such Proclamation no Crown land within the boundaries of the forest reserve shall be sold, leased, or otherwise disposed of, or be located or settled upon, and no person shall use or occupy any part of the land except under the provisions of this Act or of the regulations.

Management of reserves.

(2) Forest reserves except lands included in a forest management licence shall be under the control and management of the Minister for the maintenance of the timber growing thereon, for the protection of the water-supply, and for the prevention of trespass thereon.

Cancellation of reserves.

(3) Any forest reserve may from time to time be cancelled in whole or in part by Order in Council. R.S. 1948, c. 128, s. 30.

Exchange of Crown lands for alienated lands within reserve.

31. The Lieutenant-Governor in Council may, with the consent of the owner of the land, exchange for any land enclosed in whole or in part by the boundaries of any forest reserve, the title to which is not vested in the Crown in right of the Province, available Crown lands situate without the reserve, other than timber lands; and may, with the consent of the holder of the timber leasehold or timber limit, exchange for any timber leasehold or timber limit enclosed in whole or in part by the boundaries of any forest reserve available Crown timber on corresponding areas of Crown lands situate without the reserve, and when necessary may make compensation upon the exchange; and a copy of every Order in Council authorizing such an exchange shall be laid before the Legislature during the first fifteen days of the next ensuing session thereof. R.S. 1948, c. 128, s. 31.

Funds to cover afforestation.

32. For the purpose of meeting the cost of the examination of Crown lands required under section 30 and the cost of the development and protection of forest reserves, and the planting of denuded areas and maintaining the growth of continuous crops of timber in forest reserves, there shall be made available for expenditure a sum which, inclusive of any appropriation of the Legislature, will be not less than three per centum of the gross receipts from timber royalty or tax and stumpage in the last preceding year, and in the absence of any appropriation of the Legislature there shall be made available for the purpose an amount equal to three per centum of the gross receipts from timber royalty or tax and stumpage in the last preceding year. R.S. 1948, c. 128, s. 32; 1950, c. 22, s. 6; 1953 (2nd Sess.), c. 9, s. 2; 1954, c. 11, s. 3.

Interpretation.

33. (1) In this section, unless the context otherwise requires:—

"Management licence" means a forest management licence given pursuant to the provisions of this section:

"Licence area" means the area of land in respect of which a management licence is given:

"Licensee" means a person to whom a management licence has been given:

"Other tenure" means any title, licence, lease, or berth whereby a person has the right to cut timber, but does not include a management licence.

Power to give a forest management licence.

(2) The Minister may enter into an agreement, to be described as a forest management licence, with any person for the management of Crown lands specified in the agreement and reserved to the sole use of the licensee for the purpose of growing continuously and perpetually successive crops of forest products to be harvested in approximately equal annual or periodic cuts adjusted to the sustained-yield capacity of the lands in the area covered by the licence, or may enter into an agreement, to be known as a forest management licence, with the owner of other tenures to combine such other tenures and Crown forest lands into a single unit reserved by mutual consent and contract to the sole use of the licensee for the like purpose.

Application for management licence.

(3) An application for a management licence shall be in writing, signed by the applicant, in a form prescribed by the Minister, and shall contain a description of the lands desired, together with such other details as the Minister may require.

Publication of application.

(4) (*a*) If the lands applied for appear to be available for management licence purposes, the Minister shall instruct the applicant to publish in one issue of the Gazette, and in specified newspapers, in a form to be approved by the Minister, a notice of the application, with a description of the area applied for.

Placing of lands under reserve.

(*b*) Not less than sixty days after publication of notice of application, the Minister may place the lands applied for under reserve to enable preparation by the applicant of a management and working plan, and direct the applicant to prepare and submit a management and working plan for the proposed licence area designed to maintain perpetual yield and operation.

Approval of plan required.

(5) The management and working plan prepared under the provisions of subsection (4) shall be submitted for the approval of the Chief Forester, and no management licence shall be issued until the management and working plan has been approved.

Applicant to offer to make certain payments.

(6) Every application for a management licence under this section shall include an offer on behalf of the applicant to pay to the Crown:—

(*a*) The cost incurred by the Forest Service in cruising, surveying, and investigating the lands applied for, and their productive capacity and the management and working plan:

(*b*) A cash deposit or security approved by the Minister in such sum as the Minister shall determine, to be held by the Forest Service for such time and under such conditions as the Minister may determine:

(*c*) A deposit in such sum per unit of wood harvested from the management licence lands to such total sum, and to be held for such time and under such conditions as the Minister may determine:

(*d*) A cash deposit or security approved by the Minister in such sum as the Minister requires, but not to exceed five hundred dollars per million feet, board measure, of the estimated annual-yield capacity of the proposed licence area, which deposit shall be repayable to the applicant when, in the opinion of the Minister, the working-plan is being implemented and an appurtenant manufacturing plant is in operation.

Deposits under this subsection shall be for the purpose of ensuring compliance on the part of the licensee with the terms of this Act, the regulations, the licence, and the management and working plan, and shall be subject to such payments to the Crown as this Act, the regulations, or the licence provides.

Applicant to furnish statement of other tenures.

(7) An application for a management licence under this section shall be accompanied by a statement of other tenures owned by the applicant, together with any information relating thereto that the Minister may require.

Inclusion of other tenures in licence area.

(8) A management licence shall have included therein, as an integral part of the licence area, all lands of other tenure owned by the applicant that are located within any watershed or drainage-basin or part thereof as defined in the management licence on which the licence area encroaches.

Inclusion of tenures subsequently acquired.

(9) If a licensee acquires any additional forest land subsequent to the issuance of a management licence, he shall, within thirty days of acquisition, advise the Minister that he has acquired such lands, and such lands, if they are located within the boundaries of the licence area, or within any watershed or drainage-basin or part thereof as defined in the management licence on which the management licence encroaches, shall forthwith be included in the licence area and shall be subject to the management licence.

Other tenures to be subject to law applicable to such tenures.

(10) Others tenures incorporated in a management licence shall be subject to the like terms, conditions, taxes, rental, royalties, and stumpage as under any Act of the Legislature and regulations made thereunder, or the "Dominion Lands Act" and regulations made thereunder, or the contract by which the tenure is established, except as provided under subsection (26).

Other tenures not to be sold except as provided.

(11) Other tenures included in a management licence shall not be sold, transferred, or otherwise disposed of except as provided in this section.

Crown lands in licence area to be withdrawn from sale, etc.

(12) (*a*) After a management licence has been awarded and for such time as the Crown lands within the licence area remain subject to such licence, such lands shall be withdrawn from sale and settlement under the "Land Act" and "Taxation Act."

(*b*) In respect of the use and occupancy of the Crown lands in the licence area under the provisions of any other Act, such use and occupancy shall be subject to the provisions of this Act and the regulations

and shall be in accordance with the principles of sustained-yield forest management.

Other tenures when logged to become part of licence area.

(13) Land held under other tenure (other than Crown-granted land) included within a licence area, when logged off, shall revert to the Crown but shall continue to constitute a part of the licence area and shall be operated in accordance with the provisions of the management and working plan. Crown-granted land included in the licence area that has been logged off shall, subject to the provisions hereinafter provided, continue to be a part of the licence area and subject to all the terms and conditions of the management and working plan. At any time during the continuance of the licence after the Crown-granted land has been logged off the licensee may elect that such land shall revert to the Crown and on written notice of such election served on the Minister it shall so revert subject to the reservation to the licensee of the coal or mineral rights of the licensee in such land, if any, and the land shall continue to constitute a part of the licence area and shall be operated in accordance with the provisions of the management licence.

Increase or reduction of licence area.

(14) The Minister may, subject to the terms of the management licence, add lands to the licence area, or may reduce the area thereof, but any such increase or decrease shall be made in accordance with the principles of sustained-yield management of the forest and the estimated yield capacity as set forth in the management and working plan.

Duty of licensee to manage in accordance with this section.

(15) The licensee shall manage the licence area in accordance with the provisions of this section and of the regulations and of the management and working plan for the purpose of growing continuously and perpetually successive crops of forest products to be harvested in approximately equal annual or periodic cuts adjusted to the sustained-yield capacity of the licence area.

Requirement to employ qualified forester.

(16) Except as provided in subsections (17) and (18), a licensee shall employ at least one forester registered under the "British Columbia Foresters Act," being chapter 127 of the "Revised Statutes of British Columbia, 1948," and as many additional registered foresters as the Minister deems necessary. Except as provided in subsection (17), all management and working plans submitted by any person for the purposes of this section shall be prepared, signed, and sealed by a forester registered under said chapter 127.

Exemption from requirement to employ forester.

(17) Where, in the opinion of the Minister, the annual cut on a management licence does not warrant the employment of a forester, the Minister may provide the licensee with all necessary technical advice and assistance, for which the licensee shall pay actual costs as assessed by the Chief Forester, and the licensee in such case shall not be required to employ a forester.

Joint employment of forester.

(18) Where the combined annual cut on any two or more management licences is not large, the Minister may permit the licensees of the said management licences jointly to employ a forester or foresters.

Rental.

(19) A rental of one cent per acre per year shall be due and payable to the Crown on all Crown land in a licence area that is not held under another tenure or subject to provisional reserve under subsection (25).

Stumpage.

(20) (*a*) Except as provided in subsection (21), there shall be due and payable to the Crown on all timber on Crown lands in the licence area not held under other tenure which is deemed to be merchantable at the time the management licence is issued and is so described in the management licence, stumpage, inclusive of royalty, as and when the timber is cut, in such sum per unit of measurement as shall be appraised and assessed by the Forest Service. The method of appraisal shall be the method of appraisals currently in use by the Forest Service at the time the appraisal is made.

(*b*) On all other timber cut on Crown lands in the management licence area not held under other tenure, there shall be due and payable to the Crown, stumpage, inclusive of royalty, in the sum of sixteen per centum of the stumpage value as appraised by the Forest Service by methods currently in use by the Forest Service at the time the appraisal is made.

(*c*) Alternatively to clauses (*a*) and (*b*) and except as provided in subsection (21) there shall be due and payable to the Crown on all timber on Crown lands in the licence area not held under other tenure, stumpage, inclusive of royalty, as and when the timber is cut, in such sum per unit of measurement as is appraised and assessed by the Forest Service; and the appraisal shall allow as a cost of logging such costs of management, protection, and silvicultural treatment of the licence area as the Minister deems to be just and proper charges, but in other respects the method of appraisal shall be the method currently in use by the Forest Service at the time the appraisal is made.

(*d*) A licensee shall elect at the time the licence is issued whether clauses (*a*) and (*b*) or clause (*c*) shall apply to his licence, and thereafter the method of appraisal shall not be changed except with the permission of the Minister, and permission shall not be granted unless compensation is paid to the Crown for any advantages previously enjoyed by reason of the method of appraisal first elected, and the compensation shall be in such sum as the Forest Service determines.

(*e*) In the case of a licence issued and in effect at the time when this clause is enacted, the licensee, within twelve months after the date of such enactment, may elect to use the method of appraisal provided in clause (*c*); and if he does not make an election within the said period of twelve months, his management licence shall continue to be governed by clauses (*a*) and (*b*), subject to the further right of election conferred by clause (*d*).

(*f*) The provisions of clauses (*a*), (*b*), and (*c*) shall not apply to a forest management licence of which a municipality is the licensee, but there shall be due and payable to the Crown on all timber cut on Crown

lands in the area covered by such forest management licence, royalty as provided by this Act.

Provision respecting rates where there are several tenures.

(21) Subject to the provisions of subsection (13), in the case of timber cut on Crown lands in a licence area not held under other tenure, the licensee shall have the privilege of electing that timber cut on such Crown land within the licence area shall be deemed to have been cut, and shall be treated as if it had been cut, on land of other tenure owned or controlled by the licensee within the licence area; and such election having been made, that Crown timber as cut shall be charged and paid for at the appropriate rates applying to the land from which it was deemed to have been cut. For the purposes of this section, every parcel of land of other tenure included in the licence area shall be listed and shall be credited with a quantity of merchantable timber as shall be agreed upon, or with an average stand per acre as shall be agreed upon. When the timber cut from Crown lands not held under other tenure and charged under this section to a parcel of land of other tenure equals the timber agreed to be on the parcel of land of other tenure then in good standing, then that other tenure shall be extinguished and the lands held under the other tenure shall revert to the Crown, but shall continue to constitute a part of the licence area.

Provision as to rates on cancellation of licence.

(22) On the cancellation of a management licence, if timber has been cut and charged to lands of other tenure as provided for in subsection (21) but not in sufficient quantity to extinguish that other tenure, then on the timber so cut and charged to lands in respect of which the tenure has not been extinguished there shall be due and payable to the Crown the difference between the amount that has been paid on such timber and the amount that would have been payable thereon if a licence had been purchased under the provisions of section 17.

Taxation.

(23) Such improvements on a licence area as are designed to facilitate the management and operation of, and the growing and harvesting of wood on, any lands in the licence area shall be exempt from taxes under the "Taxation Act."

Licence not transferable without consent.

(24) Where a forest management licence is given for the maintenance of an existing or proposed mill or manufacturing plant, the Minister may make the licence appurtenant to the mill or manufacturing plant, and any such licence shall not be sold or transferred separately from the mill or plant during the continuance of the licence; and any other forest management licence shall not be transferable except on written consent of the Minister.

Provisional reserve.

(25) At the time a management licence is issued, the Minister may place under provisional reserve any part of the licence area not otherwise alienated. The timber on any area under provisional reserve shall be subject to disposition by the Crown under this Part, and following such disposition any area logged shall be withdrawn from the provisional reserve and become an unencumbered part of the licence area.

Licence area subject to Part X.

(26) Timber cut from lands included in any management licence, regardless of the tenure of the lands, shall be subject in all respects to the provisions of Part X of this Act as they relate to lands granted after the twelfth day of March, 1906.

Forest-protection tax.

(27) Notwithstanding anything elsewhere in this Act contained, the Minister may, by agreement or in the management plan, exempt lands in any licence area from the payment of the forest-protection tax, but he shall not do so unless forest-protection is otherwise adequately provided to the satisfaction of the Minister; but all other provisions of Part XI shall apply to a management licence; and if, after an exemption has been granted, the Minister is of the opinion that forest-protection is not adequately provided, he may withdraw the exemption.

Right of access.

(28) Officers and employees of the Forest Service shall at all times be entitled to free and unhampered access to any part of a licence area and any operation conducted on a licence area for the purpose of inspection, or for such survey, study, or investigation as the Chief Forester may consider to be necessary to maintain adequate forest records or to administer this section.

Power to stop operations on default.

(29) (*a*) Where a licensee is not complying with the provisions of this section or of the regulations or of his licence, the Minister, on the recommendation of the Chief Forester, may, after giving three months' notice in writing of his intention so to do, stop any operation on the licence area.

(*b*) The Minister shall stop an operation pursuant to clause (*a*) by causing to be delivered to the licensee a stop notice in writing, stating the operation that is to be stopped and the reason for the stop notice.

(*c*) When a stop notice has been delivered pursuant to clause (*b*), the licensee shall stop the operation specified in the notice, and shall not recommence until he receives from the Minister a notice countermanding the stop notice.

(*d*) A stop notice shall be deemed to have been delivered if it is mailed by registered letter to the last-known address of the licensee.

(*e*) If within the period of three months mentioned in clause (*a*) the licensee has complied with the provisions of this Part and of the regulations and of his licence a stop order shall not be issued.

Power of cancellation.

(30) If a licensee violates the provisions of this Act or of the management licence in a manner to frustrate the objects of the management licence, the Minister may cancel the management licence.

Appeal to Supreme Court.

(31) (*a*) Where a stop notice has been delivered pursuant to subsection (29), or a management licence has been cancelled pursuant to subsection (30), the licensee may, within two months after the delivery of the stop notice or after the date of cancellation, as the case may be, appeal to the Supreme Court in a summary manner, and such appeal shall be in the form of a petition, verified by affidavit, to any Judge of the Supreme Court, setting out the points relied upon, and a copy of the petition shall be served upon the Minister and such time shall be

allowed for his answer to the petition as to the Judge of the Supreme Court may seem advisable. On the hearing of the appeal the Judge may hear evidence either viva voce or upon affidavit and may confirm, reverse, or alter the stop notice or cancellation appealed from.

Appeal to Court of Appeal.

(*b*) The Minister or licensee, if dissatisfied with the decision of the Judge of the Supreme Court, may appeal to the Court of Appeal upon notice of appeal being filed and given to the opposite party within thirty days after the decision, and such appeal shall be dealt with as nearly as may be as in the case of an ordinary appeal to the said Court from the decision of an action in the Supreme Court. On the hearing of the appeal the Court of Appeal may confirm, reverse, or alter the decision appealed from and its decision shall be final.

(*c*) Notwithstanding an appeal under this section a stop notice or cancellation shall remain in force pending the appeal unless the Minister otherwise orders.

Provision where sawmill dependent on timber from licence area.

(32) Where, at the time a forest management licence is issued, a sawmill or other forest industry is already established and is depending in whole or in part for its wood-supply on some of the lands included within the licence area, the provisions of subsection (33) shall apply.

Further provision.

(33) (*a*) Notwithstanding anything contained in this Act, the Minister may, at his discretion from time to time and in such quantities and for such period as is provided in the licence, give to the owner of such sawmill or other forest industry a licence to cut Crown timber within the licence area, at an appraised stumpage price and without public competition.

Further provision.

(*b*) Every offer to purchase Crown timber under this subsection shall include an offer to pay to the Crown in addition to stumpage the cost incurred by the Forest Service in cruising and surveying the timber limit and an annual rental as provided under section 17.

Further provision.

(34) Where a licence to cut timber is given under this section, the forest management licensee shall be exempted from the obligation to pay rent in respect of the area covered by the licence given under this section so long as such licence remains in force.

Right of appeal to Lieut.-Governor in Council.

(35) (*a*) Where the Minister exercises any power or discretion conferred upon him by this section, any person affected thereby shall have a right of appeal to the Lieutenant-Governor in Council.

(*b*) An appeal under clause (*a*) shall be brought within thirty days after the exercise of the power or discretion. R.S. 1948, c. 128, s. 33; 1949, c. 24, s. 2; 1950, c. 22, s. 7; 1953 (2nd Sess.), c. 9, s. 3; 1954, c. 11, s. 4; 1955, c. 27, ss. 2, 3.

34. [*Repealed.* 1950, c. 22, s. 8.]

PART IV.

TIMBER LEASES.

Renewal of timber leases.

35. Any lease of Crown lands existing on the twenty-seventh day of February, 1912, granted by the Crown in right of the Province pursuant to any statutory authority to any lessee for the purpose of cutting spars, timber, or lumber which was duly surrendered and renewed under the provisions of the " Land Act Amendment Act, 1901," or any other statutory provisions for leasehold renewals, may be renewed for consecutive and successive periods of twenty-one years, subject to such terms, conditions, royalties, and ground-rents as are provided under the provisions of section 36; but no lease shall be renewed under the provisions of this section unless the renewal is applied for within one year previous to the expiration of the existing lease, and all the conditions of the lease and the provisions of the " Forest Act " and the regulations made thereunder and of every other Act of the Legislature and the regulations made pursuant to any such Act have been complied with to the satisfaction of the Minister, and all charges prescribed by or under any Act of the Legislature from time to time in respect of the leasehold for the upkeep of a system of fire prevention and extinguishment, and the royalties, rentals, scaling fees, and other charges have been duly and fully paid. R.S. 1948, c. 128, s. 35.

Terms and conditions to which renewal is subject.

36. Where any lease was renewed under the provisions of section 13 of the " Forest Act," chapter 17 of the Statutes of 1912, or is renewed under the provisions of section 35 of this Act for a period of twenty-one years, the lease and the removal of the timber held thereunder shall during that period and any renewal period be subject to the like terms, conditions, and royalties as under any Act of the Legislature and regulations made thereunder are from time to time in force in respect of timber held or cut under special timber licence in that portion of the Province wherein the lands covered by the lease are situate; and the lease shall also during that period and any renewal period be subject to the payment of ground-rent each year at a rate per acre calculated as the six-hundred-and-fortieth part of the annual renewal fee payable that year in that portion of the Province for a special timber licence covering six hundred and forty acres; and the lease shall during that period and any renewal period entitle the holder to rights and privileges like those to which the holder of a special timber licence is entitled under any Act of the Legislature and regulations made thereunder from time to time in force in respect of special timber licences: Provided that from time to time any area of not less than six hundred and forty acres comprised in the lease may, on the application of the lessee, be eliminated from the lease; and thereupon the annual renewal fee for the lease shall be proportionately reduced as from the next ensuing anniversary of the date of the lease, and all rights of the lessee in respect only of the land comprised in the area so eliminated shall cease and determine. R.S. 1948, c. 128, s. 36.

PART V.

SPECIAL TIMBER LICENCES.

Effect of priority of location.

37. In the event of any dispute between holders of special timber licences as to the areas or timber to which as between themselves the holders of licences are entitled, effect shall be given to priority of location, so that the first locator shall have and take the area and timber comprised in his location; but nothing in this section shall be deemed to validate any special timber licence as against any prior Crown grant, lease, special timber licence, or pre-emption record. R.S. 1948, c. 128, s. 37.

Rights and powers of licensee under a special timber licence.

38. A special timber licence shall vest in the holder thereof all rights of property whatsoever in all trees, timber, and lumber cut within the limits of the licence during the term thereof, whether the trees, timber, and lumber are cut by authority of the licensee, or by any other person with or without his consent; and such licence shall entitle the holder thereof to seize, in revindication of any rights or otherwise, such trees, timber or lumber where the same are found in the possession of any unauthorized person, and also to institute any action against any wrongful possessor or trespasser and to prosecute all trespassers and other offenders to punishment, and to recover damages (if any); and all proceedings pending at the expiration of any licence may be continued to final termination as if the licence had not expired: Provided that upon the expiration of any licence all rights of property of the holder of the licence in any trees, timber, or lumber cut within the limits of the licence and not removed therefrom during the term of the licence shall cease, and the trees, timber, and lumber shall ipso facto vest in the Crown in right of the Province. R.S. 1948, c. 128, s. 38.

Permanent tenure under special timber licences.

39. (1) Every special timber licence the holder of which has complied with the provisions of section 6 of chapter 28 of the Statutes of 1910, and every special timber licence obtained pursuant to the provisions of subsection (3) of section 21 of the "Forest Act," chapter 17 of the Statutes of 1912, shall be transferable and renewable from year to year while there is on the land included in the licence merchantable timber in sufficient quantity to make it commercially valuable.

Expiration of licence where cruise fails to establish existence of merchantable timber.

(2) The Minister may from time to time call upon the holder of any special timber licence, subject to the provisions of this section, to furnish to the Forest Service a cruise of the timber limit comprised in the licence; and if such cruise is not furnished, or if, when furnished, it does not establish to the satisfaction of the Minister the existence of merchantable timber in sufficient quantity to make it commercially valuable, the special timber licence shall expire at the end of its then current year. R.S. 1948, c. 128, s. 39.

Payments to which licences and renewals of licences are subject.

40. Every special timber licence and every renewal thereof shall be subject to the payment of such annual renewal fee, and such tax and royalty, and to such terms and conditions, regulations and restrictions, as are fixed or imposed by any Statute or Order in Council in force at the time the issue or renewal of the licence is made, or at any time thereafter; and no licence or any part thereof shall be renewed in default of payment of any moneys payable to the Crown in respect of the licence, or in respect of any timber cut on the lands comprised in the licence, or in respect of any matter arising out of the cutting or removal of the timber. R.S. 1948, c. 128, s. 40.

Annual renewal fee.

41. (1) The fee for the annual renewal of each special timber licence covering not more than six hundred and forty acres of land shall be as follows:—

(*a*) Where the land comprised in the licence is situate west of the Cascade Mountains and is not within the area comprised in the Electoral District of Atlin as defined at the time the licence was originally issued, a fee of one hundred and forty dollars:

(*b*) In all other cases, a fee of one hundred dollars.

(2) [*Repealed.* 1954, c. 11, s. 5.] R.S. 1948, c. 128, s. 41.

Payment of fees.

42. (1) The fee for the renewal of each special timber licence shall be indivisible and shall be paid annually before the expiry of the licence or within twenty-four hours after the date of expiry.

(2) All fees shall be payable at par at the Forest Service, Victoria, and if made by cheque the same shall be certified.

(3) In the case the holder of the licence fails or neglects to pay the renewal fee to the Forest Service at Victoria within the time mentioned in subsection (1), he shall, at any time within one year after the date of expiry, upon payment of the renewal fee and an additional sum of one dollar and twenty-five cents for each full month or for any part of a month between the date of expiry and the date of payment, be entitled to a renewal of the licence.

(4) In case the holder of the licence fails or neglects to pay the renewal fee to the Forest Service at Victoria within the time mentioned in subsection (3), and when the expiry date is subsequent to the thirty-first day of March, 1937, he shall at any time within two years after the date of expiry, upon payment of renewal fees, forest-protection levy, additional sums, interest, and an additional sum of ten dollars for each full month or for any part of a month between the end of the year after the date of expiry and the date of payment, be entitled to a renewal of the licence. The holder of the licence shall be notified in writing by registered letter at his last-known address of the default, and no further responsibility shall rest on the Forest Service with respect to such notice.

(5) [*Repealed.* 1950, c. 22, s. 9.]

(6) [*Repealed.* 1950, c. 22, s. 9.] R.S. 1948, c. 128, s. 42; 1950, c. 22, s. 9.

Provisions applicable to special timber licences issued in lieu of timber leases.

43. (1) In the case of a special timber licence which has been issued in lieu of a timber lease, pursuant to the provisions of section 15 of the "Forest Act," chapter 17 of the Statutes of 1912, the annual renewal fee shall be calculated on an acreage basis at a rate per acre of the area covered by the licence equal to one six-hundred-and-fortieth part of the annual renewal fee payable at the time of the issue of the licence in that part of the Province for a special timber licence.

(2) Every licence so issued shall be transferable and renewable from year to year while there is on the land included in the licence merchantable timber in sufficient quantity to make it commercially valuable. From time to time any area of not less than six hundred and forty acres comprised in the licence may, on the application of the licensee, be eliminated from the licence, and thereupon the annual renewal fee for the licence shall be proportionately reduced as from the next ensuing annual renewal date of the licence.

(3) Where the annual renewal fee for a licence so issued is not paid within twenty-four hours after the date of the expiry of the licence, additional sums shall be payable in manner provided in section 42, such sums bearing the same ratio respectively to the additional sum mentioned in that section as the area comprised in the licence bears to six hundred and forty acres.

(4) Except as provided in this section, every licence so issued and every renewal thereof shall vest in the holder thereof the same rights and be subject in all respects to the provisions of this Act, including the provisions as to renewal fees, taxes, and royalties, to the like extent and in the like manner as a special timber licence. R.S. 1948, c. 128, s. 43.

Renewal of licences in event of death of holder.

44. Where any person at the time of his death is the holder of or has an interest in a special timber licence, and where it is established by evidence satisfactory to the Minister within six months after the death of the deceased person that he was the holder of or had an interest in the special timber licence at the time of his death, the right to obtain a renewal of that licence shall not become forfeited during the period of one year from the death of the deceased person through failure on the part of the personal representatives of the deceased person to make the payments prescribed by this Act in respect of his interest in the licence; but no person shall have any right to obtain a renewal of the licence after the expiration of the said period of one year unless, before the expiration of that period, the personal representatives of the deceased person have paid in full all sums which during that period have become payable and are unpaid in respect of the licence under this Act, together with interest at the rate of four and one-half per centum per annum on the respective sums so paid from the date they became payable to the date of payment; and where, prior to the application for renewal under this section, any land or timber formerly comprised in the licence has

been alienated or disposed of by the Crown, the renewal of the licence shall be subject to such alienation or disposition. R.S. 1948, c. 128, s. 44; 1951, c. 29, ss. 2–4.

Power to require removal of timber from land fit for settlement.

45. (1) Where, after an inspection has been made by direction of the Minister, the whole or any part of the land included within any special timber licence, or in any pulp licence, is in the opinion of the Minister found to be fit for settlement and to be required for that purpose, he may by notice require the licensee to carry on and complete the removal of the timber thereon within such reasonable time as the Minister may prescribe; and on the expiration of that time, or any extension thereof granted by the Minister, the licence shall, in respect of the land or part thereof described in the notice, be cancelled, and the land or part thereof so required shall be open for settlement or sold on such terms and conditions as the Lieutenant-Governor in Council may think fit.

(2) "Settlement" in this section includes agricultural, industrial, hydro, or townsite development, or any other normal development. R.S. 1948, c. 128, s. 45; 1950, c. 22, s. 10.

Cutting of timber prohibited unless boundaries of lands are defined on the ground.

46. (1) No person shall cut or remove any trees or timber upon or from any timber leasehold or timber limit or lands granted by the Crown unless at the time the trees or timber are cut the boundaries of the timber leasehold, timber limit, or granted lands are defined on the ground to the satisfaction of the Minister.

Power to order further definition of boundaries.

(2) Where the boundaries of any timber leasehold or timber limit are found, in the opinion of the Minister, to be insufficiently defined on the ground, either by reason of the same never having been established or having become wholly or partly obliterated, the Minister may order the holder of the timber leasehold or timber limit to define further the boundaries on the ground by survey at his own expense.

Power to order resurvey.

(3) Where the boundaries of a timber leasehold or timber limit are found to be in error and not in accordance with the field-notes on file in the Department of Lands and Forests, the Minister may order a resurvey of the timber leasehold or timber limit at the holder's expense.

Power to make survey at expense of lessee or licensee in default.

(4) In case an order is made under subsection (2) or (3), if the holder of the timber leasehold or timber limit fails to have the necessary survey or resurvey made in accordance with the regulations governing surveys of timber lands, by a surveyor approved of and acting under instructions from the Minister, within the time fixed by the order, the Minister may cause the necessary survey or resurvey to be made, and the boundaries to be defined on the ground, and the Crown shall have a lien for the amount of the expenses incurred therein, and for all expenses of seizure, detention, or sale incurred in enforcing the lien, upon the saw-mills, engines, logging plant, and equipment of the holder of the timber leasehold or timber limit; and the amount of such expenses shall be deemed to be money payable to the Crown in respect of the lease or

licence, and may also be recovered at the suit of the Crown in any Court of competent jurisdiction. R.S. 1948, c. 128, s. 46.

Annual renewal fees.

47. (1) The annual renewal fee for a pulp licence shall be an amount equal to one-half of the annual renewal fee payable in respect of a special timber licence, and the provisions of this Act relating to payment of annual renewal fees and to the renewal of special timber licences shall apply to the pulp licence except that the additional sum payable on default shall be one-half the additional sum provided in section 42 in respect of special timber licences.

(2) Upon any saw-timber cut or removed from any area held under a pulp licence, there shall be due and payable per thousand feet of the saw-timber, in addition to royalty on saw-timber, an amount equivalent to one-half of the annual rental that would have been payable under the special timber licence that was surrendered for the purpose of obtaining the pulp licence as if it had continued to be held during the rental period ending on the next renewal date of the pulp licence after the scaling of the saw-timber, fifteen thousand feet, board measure, of saw-timber being taken as the equivalent of one acre in computing said amount.

(3) If the holder of a pulp licence sublets, assigns, or transfers any part thereof or interest therein, the right to obtain a renewal of the pulp licence shall become forfeited, but upon surrender of the pulp licence (including one sublet, assigned, or transferred) at any time within the period otherwise allowed for the renewal of the same and upon payment of the difference between the amount of the renewal fees paid under the pulp licence and the amount of the renewal fees that except for the surrender of the special timber licence would have accrued under the special timber licence and interest, the holder may obtain in exchange for the pulp licence a special timber licence covering the lands comprised in the surrendered pulp licence.

(4) Notwithstanding the provisions of this section and except in respect of a licence included under a forest management licence, nothing herein contained shall prevent the holder of a pulp licence from subletting, assigning, or transferring any pulp licence to the operator or the owner of a pulp-mill within the Province. R.S. 1948, c. 128, s. 47; 1954, c. 11, s. 6.

PART VI.

RIGHTS-OF-WAY.

Power to take land for right-of-way for carriage of timber.

48. (1) For the carriage and transport of timber and products of the forest, any land may be taken and used for a right-of-way for, or by, or on behalf of any person desiring to transport any timber or product of the forest, without the consent of the owner of such land, or of any person having or claiming any estate, right, title, or interest in, to, or out of such

land, subject always to the provisions of this Part. With the consent of the Minister, Crown lands may be taken and used under this Part.

(2) Notwithstanding the provisions of this Act, the Minister may, on the granting of consent to the taking and using of Crown lands for the purposes of a right-of-way, sell to the person to whom such consent has been given the timber on such right-of-way, without advertisement, on such terms as the Minister deems advisable. R.S. 1948, c. 128, s. 48; 1954, c. 11, s. 7.

Entry upon highway for construction of logging-railway.

49. (1) For the purpose of constructing, operating, and maintaining a logging-railway, entry may be made upon any highway, upon leave therefor being first obtained:—

(*a*) In the case of a highway which is within the limits of a municipality, by a by-law of the municipality consenting thereto:

(*b*) In the case of a highway which is not within the limits of a municipality, by the consent in writing of the Minister of Public Works.

(2) The person constructing any such railway shall, before obstructing any such highway by his works, turn the highway so as to leave an open and good passage for vehicles, and, on completion of the works, restore the highway to as good a condition as nearly as possible as it was in originally. R.S. 1948, c. 128, s. 49.

Right-of-way as against owner of land.

50. Any person desiring to transport any timber or product of the forest may avail himself of and may obtain a right-of-way for a logging-railway or other method of transportation under the provisions of this Part from and as against the owner of the land across, through, or over which a right-of-way is desired; and the owner of any land shall, for all purposes of this Part, be deemed to be the person who is, by means of being the registered owner of the legal estate, enabled to sell and convey the land, or, as a purchaser of Crown lands or a pre-emptor of Crown lands, is in possession of the land, or, as the holder of a lease from the Crown, is in possession of the land, or, as the holder of a timber lease or timber licence, is entitled to cut and remove the timber upon or from the land; and the person seeking a right-of-way shall not be affected by a notice of and shall not be bound by any trust, and shall not be impeded in the securing of a right-of-way by any trust. R.S. 1948, c. 128, s. 50.

Breadth of land taken.

51. The land which may be taken without the consent of the owner for a right-of-way shall not exceed forty feet in breadth, except in places where the grade-level of the right-of-way is proposed to be more than five feet above or below the surface of the adjacent land, when such additional width may be taken as will suffice to accommodate the slope and side-ditches. R.S. 1948, c. 128, s. 51.

Notice to owner before entry.

52. Before entering upon any land for use as a right-of-way, the person desiring to obtain the right-of-way shall serve upon the owner of the land a notice of desire to obtain the right-of-way, together with a

plan showing the intended location and direction of the desired right-of-way; and in the case of Crown lands, the person desiring to obtain the right-of-way shall, in addition to serving any notice required by this section, obtain the consent of the Minister in writing. R.S. 1948, c. 128, s. 52.

Application of ss. 52 to 73 of "Railway Act."

53. Sections 52 to 73 of the "Railway Act" shall, mutatis mutandis, apply in respect of the taking of lands by any person for use as a right-of-way under this Part. R.S. 1948, c. 128, s. 53.

Conditions governing private road on Crown lands.

53A. (1) Where, for the purpose of removal, carriage, or transport of timber or products of the forest, any road is built on Crown lands by a licensee of Crown timber or by any person authorized under the "Forest Act" or the regulations, the road shall be deemed to be the private property of the licensee or person authorized as aforesaid during the currency of his licence or duration of his authority.

(2) On the expiry or sooner termination of the timber licence or authority permitting the building of the road, the road shall revert to the Crown, and thereafter shall be subject to section 162 of this Act, and no person shall be entitled to any compensation or have any claim against the Crown in respect of such road.

(3) While any road lawfully built on Crown land is deemed to be private property as provided in subsection (1), the public shall be entitled to use the road, but the owner thereof may:—

(*a*) Require any person to obtain, from the owner, permission to use the road:

(*b*) Restrict the use of the road or close the road to public use by means of gates or by notice posted on the road if material damage may result from such use, or if such use may endanger life or property:

(*c*) Remove, at the expense of the owner thereof, any vehicle or animal unlawfully using the road.

(4) When permission to use a road is unreasonably withheld by the owner, the person applying for use of the road may appeal to the Minister, and the Minister may grant the right to use the road on such terms and conditions as he sees fit, and the Minister's decision shall be final.

(5) Roads as defined in this section shall not be deemed to be public highways within the meaning of section 120 of this Act.

(6) Any person making unauthorized use of any private road or roads as described in subsection (1) shall be guilty of an offence under this Act. 1953 (2nd Sess.), c. 9, s. 4.

PART VII.

ROYALTIES.

Timber royalty.

54. (1) Subject to the provisions of sections 56 and 57 of this Act, there is reserved to and for the use of Her Majesty upon and in respect of timber cut upon lands granted on or subsequent to the seventh day of April, 1887, and prior to the second day of March, 1914, royalty as follows:—

(*a*) Upon all timber suitable for the manufacture of lumber and shingles, a royalty of fifty cents for each thousand feet, board measure, or thirty cents per one hundred cubic feet, but where the timber consists of shingle-bolts the royalty shall be twenty-five cents per cord or thirty cents per one hundred cubic feet:

(*b*) Upon all timber suitable for piles and poles cut as aforesaid, a royalty of one cent for each four feet, lineal measure:

(*c*) Upon all timber suitable for hewn railway-ties or for mining-props or lagging cut as aforesaid, a royalty of fifty cents per cord or fifty-five cents per one hundred cubic feet of mining-props or lagging:

(*d*) Upon all other timber, wood, or bark cut as aforesaid, a royalty of twenty-five cents a cord or thirty cents per one hundred cubic feet.

Exemption from payment of royalty on wood for experimental purposes.

(2) The Lieutenant-Governor in Council may remit the royalty upon wood actually consumed for experimental purposes by any corporation engaged in the manufacture of distillates and other by-products from wood.

Certain lands exempt from royalty.

(3) In case of any granted land, the title to which was acquired by virtue of:—

(*a*) A pre-emption claim recorded prior to the seventh day of April, 1887; or of

(*b*) An application to purchase duly made under the "Land Act, 1884," or under any other Land Act before the seventh day of April, 1887,—

the royalties reserved by subsection (1) and sections 55 and 57 shall not apply in respect of the land so granted. R.S. 1948, c. 128, s. 54; 1949, c. 24, s. 3; 1950, c. 22, s. 11.

Royalty in respect of certain lands for certain periods.

55. (1) Subject to the provisions of sections 56 and 57, for the period from the first day of May, 1948, to the thirtieth day of April, 1949, both dates inclusive, there is reserved to and for the use of Her Majesty upon and in respect of timber cut upon Crown lands, or upon lands held under pre-emption entry and record, or upon lands granted subsequent to the first day of March, 1914, royalty as follows:—

(*a*) Timber suitable for the manufacture of lumber and shingles and pulp-wood cut upon lands situate west of the Cascade Mountains:—

(i) Upon No. 1 and No. 2 grades of cedar, cypress, fir, spruce, white pine, and cottonwood, as specified in the table in the Schedule, if cut upon lands situate within the Vancouver Forest District, west of the Cascade Mountains, as established by notice in the Gazette of December thirty-first, 1953, three dollars per thousand feet, board measure, and two dollars per thousand feet, board measure, respectively, or alternatively one dollar and seventy cents per one hundred cubic feet and one dollar and ten cents per one hundred cubic feet respectively; and if cut upon land situate within the Prince Rupert Forest District, west of the Cascade Mountains, as established by notice in the Gazette of December thirty-first, 1953, two dollars and fifty cents and one dollar and seventy-five cents per thousand feet, board measure, respectively, or alternatively one dollar and forty cents and one dollar per one hundred cubic feet respectively:

(ii) Upon No. 1 and No. 2 grades of hemlock, as specified in the table in the Schedule, if cut upon lands situate within the Vancouver Forest District, west of the Cascade Mountains, as established by notice in the Gazette of December thirty-first, 1953, two dollars per thousand feet, board measure, and one dollar and fifty cents per thousand feet, board measure, respectively, or alternatively one dollar and ten cents per one hundred cubic feet and eighty-five cents per one hundred cubic feet respectively; and if cut upon lands situate within the Prince Rupert Forest District, west of the Cascade Mountains, as established by notice in the Gazette of December thirty-first, 1953, two dollars and one dollar and twenty-five cents per thousand feet, board measure, respectively, or alternatively one dollar and ten cents and seventy cents per one hundred cubic feet respectively:

(iii) Upon No. 3 grade, as specified in the table in the Schedule, and upon all species not specified in the table in the Schedule, irrespective of grade, one dollar per thousand feet, board measure, or alternatively fifty-five cents per one hundred cubic feet:

(*b*) Timber suitable for the manufacture of lumber and shingles cut upon land situate east of the Cascade Mountains:—

(i) Upon white pine, two dollars per thousand feet, board measure, or alternatively one dollar and ten cents per one hundred cubic feet:

(ii) Upon yellow pine and spruce, one dollar and fifty cents per thousand feet, board measure, or alternatively eighty-five cents per one hundred cubic feet:

(iii) Upon all other species, one dollar per thousand feet, board measure, or alternatively fifty-five cents per one hundred cubic feet.

Rates of timber royalty after December 31st, 1941.

(2) Royalty as provided in subsection (1), and at the rates therein set out, shall continue in force after the expiration of the period mentioned in that subsection, until other rates are provided by or under Act of the Legislature.

Rates in respect of dates specified in subsection.

(3) For the period from the first day of May, 1948, to the thirtieth day of April, 1949, both dates inclusive, there is reserved to and for the use of Her Majesty upon and in respect of timber cut upon Crown lands, or upon lands held under pre-emption entry and record, or upon lands granted subsequent to the first day of March, 1914, royalty as follows:—

(*a*) Poles, piling, and crib timber, as follows:—

	Per lineal ft.
Under 30 feet	½ cent
30 feet and over	1 cent

All poles, piling, and crib timber over 15-inch tops shall be scaled and graded under clause (*a*) or clause (*b*) of subsection (1):

(*b*) Hewn railway-ties, four cents each:

(*c*) Hewn mine-ties, shingle and other bolts, seventy-five cents per cord or alternatively eighty-five cents per one hundred cubic feet:

(*d*) Mining timber, mining-props, caps, lagging, and hop-poles as follows:—

	Per lineal ft.
Tops 4 inches and under	1/12 cent
Tops over 4 inches to 8 inches	1/7 cent
Tops over 8 inches to 10 inches	¼ cent
Tops over 10 inches to 15 inches	½ cent

Mining timber over 15-inch tops shall be scaled and graded under clause (*a*) or clause (*b*) of subsection (1):

(*e*) Shingle-shakes, one-seventh of one cent each:

(*f*) Fence-posts as follows:—

	Each.
8 feet and under	½ cent
Over 8 feet to 12 feet	1 cent
Over 12 feet to 16 feet	1½ cents

(*g*) Car-stakes, one-half of one cent each:

(*h*) Christmas trees as follows:—

LENGTHS.

	Each.
Up to 12 feet	½ cent
Over 12 feet to 16 feet	2 cents
Over 16 feet to 20 feet	8 cents
Over 20 feet to 25 feet	10 cents
Over 25 feet	25 cents

(*i*) Cordwood, thirty-five cents per cord or alternatively forty cents per one hundred cubic feet:

(*j*) Fuel-logs, fifty cents per thousand feet, board measure, or alternatively thirty cents per one hundred cubic feet:

(*k*) Stakes and sticks not exceeding 2 inches diameter at butt end, ten cents per thousand lineal feet:

(*l*) Other wood products not enumerated in subsection (1) or in clauses (*a*) to (*k*) of this subsection, at rates as fixed by the Lieutenant-Governor in Council from time to time.

Rate of royalty on poles and piling, etc., after December 31st, 1940.

(4) Royalty as provided in subsection (3) and at the rates therein set out shall continue in force after the period mentioned in that subsection until other rates are provided by or under Act of the Legislature.

Rate of royalty where timber is not scaled by licensed scalers.

(5) Where any cut timber suitable for the manufacture of lumber or shingles is not scaled or graded by a licensed scaler or an Official Scaler, as required under Part VIII, royalty shall be paid on the timber at the highest rate then applicable in the royalty district in which the timber is cut; but if satisfactory proof is submitted to the Minister that the timber is of a lower grade than that for which royalty has been paid, the Minister may, in his discretion, allow a corresponding rebate to be made from the amount of royalty paid.

Payment of royalty at rate in force when timber scaled.

(6) Royalty on all timber scaled during any period shall be paid at the rate established for that period, irrespective of the time when the timber was cut.

Application of section.

(7) The provisions of this section shall not apply to pulp-wood as defined by section 57.

Application of s. 136 of the "Land Act."

(8) Every provision of this section respecting the reservation of royalty in respect of timber upon lands held under pre-emption entry or record and upon lands granted after the first day of March, 1914, shall be a special provision applying to those lands within the meaning of section 136 of the "Land Act." R.S. 1948, c. 128, s. 55; 1951, c. 29, s. 5; 1955, c. 11, s. 8.

Rebate of royalty on fire-killed timber.

56. Where standing timber has been killed by fire and a material decrease in the value of the timber has resulted therefrom, upon a report of the Forest Service showing the extent of the damage so caused to the timber and that the damage was not caused through any negligence or design on the part of the owner or holder of the timber or other person interested therein, and where other timber has a salvage value only, upon the recommendation of the Deputy Minister the Minister may, in his discretion, allow a reduction of royalty in respect of the damaged or salvage timber, such reduction not to exceed seventy-five per centum of the royalty otherwise payable in respect thereof. R.S. 1948, c. 128, s. 56; 1950, c. 22, s. 12.

Royalty on pulp-wood.

57. (1) In this section "pulp-wood" means timber:—

(*a*) Cut into lengths not exceeding four feet; or

(*b*) [*Repealed.* 1954, c. 11, s. 9.]

(*c*) Declared by the Minister to be pulp-wood for the purposes of this section, upon it being shown to his satisfaction that the timber is below the standard of utilization for sawmilling purposes in the district in which it is cut;

and that is used in the manufacture of wood-pulp or paper.

(2) There is reserved to and for the use of Her Majesty upon and in respect of pulp-wood cut upon lands granted on or subsequent to the seventh day of April, 1887, and before the second day of March, 1914, a royalty of twenty-five cents per cord.

(3) For the period from the first day of May, 1948, to the thirtieth day of April, 1949, both dates inclusive, there is reserved to and for the use of Her Majesty upon and in respect of pulp-wood cut upon Crown lands, or upon lands held under pre-emption entry and record, or upon lands granted subsequent to the first day of March, 1914, a royalty of one dollar per thousand feet, board measure, or alternatively fifty-five cents per one hundred cubic feet or per cord.

(4) Royalty as provided in subsection (3) and at the rates therein set out shall continue in force after the expiration of the period mentioned in that subsection until other rates are provided by or under Act of the Legislature.

(5) Royalty on all pulp-wood shall be paid at the rate in force at the date of scaling, irrespective of the time when the pulp-wood was cut.

(6) The provisions of subsection (3) shall be deemed to be special provisions applying to the lands referred to in that subsection within the meaning of section 136 of the "Land Act." R.S. 1948, c. 128, s. 57.

Royalty or stumpage on merchantable timber left uncut or destroyed.

58. Where any merchantable timber is left uncut or is destroyed on any logging operation upon Crown lands, or upon lands held under pre-emption entry or record, or upon lands acquired and granted on or subsequent to the seventh day of April, 1887, and where the timber if utilized would have been subject to royalty or stumpage under this Act, all timber that in the opinion of the Minister is merchantable so left uncut or destroyed by the intentional act or negligence of the operator may be subject to royalty or stumpage at the same rates to which it would have been subject if it had been cut at the time the logging operation ceased. R.S. 1948, c. 128, s. 58.

Declaration that railway land grants subject to timber royalty.

59. (1) It is hereby declared and enacted that all grants of Crown land made before the twenty-fifth day of April, 1901, to railway companies by the Lieutenant-Governor in Council in aid of, or as a subsidy for, construction of railways were subject to the provisions of the Land Act then in force with respect to the reservation of a royalty to the Crown upon all timber and other wood cut upon lands to be granted by the Crown, and with respect to the power conferred for the enforcement of said royalty.

Grants subject to changes in statutory provisions.

(2) It is hereby further declared and enacted that said grants of lands were subject to said provisions as from time to time amended and

re-enacted by any Act of the Legislature, and are subject to said provisions as they appear in this Act.

Timber royalty not to be deemed taxation.

(3) It is hereby further declared and enacted that the said provisions reserving a royalty to the Crown are not to be considered as taxation within the meaning of any provision exempting a railway company or its property, real or personal, from taxation. R.S. 1948, c. 128, s. 59.

Royalty on resin.

60. (1) There is reserved to Her Majesty a royalty on resin of three-quarters of one cent per gallon, eight pounds of resin being taken as equivalent to one gallon, in respect of all resin obtained from trees on lands comprised in:—

(*a*) Any resin licence; or

(*b*) Any timber lease or timber licence, whether the lease or licence was issued or constituted before or after the commencement of this Act; or

(*c*) Any pre-emption record made after the thirty-first day of March, 1920; or

(*d*) Any application for purchase of Crown lands in respect of which notice of the favourable decision of the Minister has been given to the applicant after the thirty-first day of March, 1920; or

(*e*) Any Crown grant issued after the thirty-first day of March, 1920, except where the title to the lands so granted is acquired by virtue of a pre-emption record made before that date, or by virtue of an application for purchase in respect of which notice of the favourable decision of the Minister was given to the applicant before that date, or by virtue of a contract for the disposition of the lands entered into, or a right to acquire the lands obtained before that date.

Lien for resin royalty.

(2) The Crown shall have a lien for the amount of any royalty payable under this section, and for all expenses of seizure or detention incurred in enforcing the lien, upon the resin in respect of which the royalty is payable, and upon all teams, wagons, machinery, plant, and material used or that have been used in obtaining the resin, and upon all resin belonging to the holder of the licence or permit under which the resin was obtained; such lien to constitute a charge to the like extent and to confer the same rights and to be enforceable in the same manner as the liens created by the provisions of this Act for the recovery of royalty, including an absolute, unconditional power to sell; and the amount of any royalty payable under this section shall also be a debt due to the Crown recoverable by action in any Court of competent jurisdiction from the holder of the licence or permit under which the resin was obtained. R.S. 1948, c. 128, s. 60.

PART VIII.

TIMBER-SCALING.

Interpretation.

61. In this Part, unless the context otherwise requires:—

"Licensed scaler" includes any person licensed as a scaler or appointed as an acting-scaler under this Part:

"Official Scaler" includes any person appointed as an Official Scaler or Acting Official Scaler under this Part:

"Scale," "scaled," and "scaling" refer to the measurement of timber by a licensed or official scaler in accordance with the provisions of this Act and the regulations. R.S. 1948, c. 128, s. 61.

Duty of lumbermen to have timber scaled by licensed scaler.

62. (1) Where timber is cut in any lumbering operation on land within the jurisdiction of the Legislature, the timber shall be scaled forthwith by a licensed scaler, who shall be employed and paid by the person carrying on the lumbering operation, unless otherwise provided by this Act; and upon failure of that person to comply with the provisions of this subsection, the Deputy Minister may designate and direct a licensed scaler to scale the timber; and the cost of such scaling shall be payable to the Crown by that person.

Appointment of acting-scaler.

(2) Where it is shown to the satisfaction of the Deputy Minister that the services of a person licensed as a scaler under this Part cannot be obtained by the person in charge of the lumbering operation, the Deputy Minister may appoint an unlicensed person as an acting-scaler to perform the duties of a licensed scaler temporarily until a person licensed as a scaler under this Part is available.

Power to designate scaler east of Cascade Mountains.

(3) Notwithstanding anything in this section contained, the Deputy Minister may designate and direct a licensed scaler to scale the timber cut on land within the jurisdiction of the Legislature situate east of the Cascade Mountains, and the costs of such scaling shall be recoverable by the Crown from the person carrying on the lumbering operation at the discretion of the Minister. R.S. 1948, c. 128, s. 62.

Sawing of unscaled timber prohibited.

63. No person shall saw or otherwise manufacture any timber until it has been scaled, and every person violating the provision of this section shall be guilty of an offence and liable, on summary conviction, to a penalty not exceeding five hundred dollars, and, in addition to the penalty so imposed, to have all timber in respect of which the offence was committed and lumber and other manufactured wood products produced from the timber seized and forfeited to the Crown, either wholly or in part, as the Minister may direct. R.S. 1948, c. 128, s. 63; 1953 (2nd Sess.), c. 9, s. 5.

Export of unscaled timber or timber on which royalty is unpaid prohibited.

64. (1) No person shall export or remove from the Province any timber or lumber in respect of which any royalty, tax, or revenue is payable to Her Majesty in right of the Province, unless a permit is

obtained from an officer of the Forest Service certifying that the timber has been scaled, and all royalty, taxes, and revenue so payable in respect thereof have been paid.

Penalty.

(2) Every contravention of the provisions of this section shall render the offender liable to forfeit and pay to Her Majesty the sum of one thousand dollars, to be recovered, with all costs as between solicitor and client, in an action brought in the name of Her Majesty in any Court of competent jurisdiction.

Seizure.

(3) The Minister, or any person authorized by him, may do all things necessary to prevent a breach of the provisions of this section and to secure compliance therewith, and may for such purpose take, seize, and hold all timber which is, or is suspected to be, in course of transit out of the Province in contravention of the provisions of this section, and may also take, seize, and hold every boat which is towing any such timber; and if the Minister decides that it is not the intention of the holder, owner, or person in possession of the timber to use it in the Province, or to manufacture it or cause it to be manufactured into sawn lumber or other manufactured wood product in the Province, or to dispose of the timber to others who will use the same in the Province, or have the same so manufactured in the Province, the Minister may sell or cause to be sold such timber and boat by public auction, and the proceeds of the sale shall be the property of Her Majesty, and shall form part of the Consolidated Revenue Fund. In case the boat escapes after having been so seized, or in case its seizure is avoided by the removal of the boat outside the waters of the Province, it may at any time afterwards be seized, if found in any of the waters of the Province, and sold as above provided. R.S. 1948, c. 128, s. 64; 1950, c. 22, s. 13.

Timber scaling.

65. (1) Timber shall be scaled either in feet board measure or in cubic feet, as elected by the person for whom the scale is made.

(2) The scale used shall in either case be the official scale as determined by subsections (3) and (4).

(3) For scale in feet, board measure, the scale known as the British Columbia Log Scale shall be the offical scale.

(4) For scale in cubic contents the British Columbia Cubic Scale, as established by the Minister, shall be the official scale. R.S. 1948, c. 128, s. 65.

Examination of applicants for scaler's licence.

66. (1) The Lieutenant-Governor in Council shall appoint a Board of Examiners, one or more members of which shall examine and test the ability and knowledge of every person applying to be licenced as a scaler under this Part.

(2) Each candidate for examination shall make application to the Forest Service in the manner prescribed by the regulations, accompanied by the payment of an examination fee of five dollars.

(3) Examinations shall be held at such times and places and shall be conducted in such manner and on such subjects as are prescribed by the regulations. R.S. 1948, c. 128, s. 66.

Issuance of scalers' licences.

67. The Board of Examiners shall issue to each candidate who passes the prescribed examinations in a satisfactory manner, and who is judged by the Board to be trustworthy and of good character, a licence entitling him to act as a scaler of timber under this Part; but no person shall be licensed as a scaler unless he is a British subject residing in the Province. R.S. 1948, c. 128, s. 67.

Oath of office.

68. Every licensed scaler, before entering on his duties, shall make and file in the Forest Service an affidavit in the form following:—

> I, *A. B.*, do solemnly swear that I will, while acting as scaler, without fear, favour, or affection, and to the best of my ability and judgment, classify correctly, scale and measure, according to law, all sawlogs, spars, piles, poles, railway-ties, shingle-bolts, and other cut timber which I may be employed to scale or measure, and that I will make true returns of the same to the District Forester or any other officer of the Forest Service as required.
>
> Sworn before me at the , of , in the Province of British Columbia, this day of , 19 .
> *C. D.*,
> *J.P.*
>
> *A. B.*

R.S. 1948, c. 128, s. 68.

Duties of licensed scalers.

69. (1) It shall be the duty of licensed scalers to measure fairly and correctly, to the best of their skill, knowledge, and ability, and to classify all timber cut on land within the jurisdiction of the Legislature, and to enter in a record, in a form approved by the Forest Service, what they believe to be the proper contents and grades of the timber.

(2) After measuring and classifying any timber, each licensed scaler, at such times as the Forest Service requires, shall transmit to the Forest Service a correct copy of the record of its measurement and classification as entered in his record, and shall, when called upon to do so, submit his record to any duly authorized officer of the Forest Service, and shall give all information asked for in his power to give, and shall furnish any statements or copies of statements which the Forest Service may from time to time require. R.S. 1948, c. 128, s. 69.

Arbitration in case of disputes.

70. Upon request of any party to the dispute, any District Forester, Supervisor of Scalers, or other duly authorized officer of the Forest Service shall act as arbitrator in any dispute that arises between a vendor or a purchaser and a licensed scaler as to the measurement or classification of any timber, and his award shall be final and binding on all parties without appeal. Where a District Forester, Supervisor of Scalers, or other officer acts as arbitrator under this section, he shall collect from the person requesting his services the costs of measurement and classification.

and shall transmit the amount collected to the Forest Service; but where he finds the disputed measurement or classification made by the licensed scaler to be inaccurate, no charge shall be collected. Where the salary of the official who so acted as arbitrator is payable from the Scaling Fund, the amount received by the Forest Service under this section shall be paid into the Scaling Fund, but otherwise shall be accounted for as Provincial revenue. R.S. 1948, c. 128, s. 70.

Departmental supervision of licensed scalers.

71. The Deputy Minister may suspend the licence of any licensed scaler who is not performing properly the duties of his position, and upon proof to the satisfaction of the Deputy Minister that any licensed scaler has wilfully undermeasured or overmeasured any timber, or has wilfully and wrongfully culled or rejected any timber, or has made a false return of any timber for the purpose of deceiving or defrauding, the Deputy Minister may cancel the licence of the licensed scaler. R.S. 1948, c. 128, s. 71.

Scale by Official Scaler as basis of sales of timber in certain districts.

72. (1) In the district comprising that part of the Province situate west of the Cascade Mountains, and in such other districts of the Province as the Lieutenant-Governor in Council, by Proclamation, may from time to time prescribe, it shall be a term of every sale or other dealing with timber that the sale or other dealing shall be based on the scale of the timber made under this Act by an Official Scaler, and any person who buys, sells, or otherwise deals with timber contrary to the provisions of this section shall be liable, on summary conviction, to a penalty not exceeding five hundred dollars.

(2) This section does not apply to:—

(*a*) Timber which has previously been scaled under this Act by an Official Scaler, unless the timber is lumber reject logs or logs from pulp leases or licences on which additional charges are due to the Crown, or unless such logs are in the possession of or have been salvaged by a log salvage permittee or beachcomber:

(*b*) Timber cut on lands, other than Crown lands, which carry no reservations of royalty or other like charges in favour of the Crown if the Forest Service has exempted such timber from the provisions of subsection (1). R.S. 1948, c. 128, s. 72; 1956, c. 20, s. 3.

Official scaling service.

73. (1) The Forest Service shall maintain a sufficient staff of Official Scalers for each district, with such equipment as in the opinion of the Deputy Minister is necessary.

Appointment of Official Scalers.

(2) Official Scalers shall be appointed pursuant to the provisions of the " Civil Service Act," and shall hold office during pleasure. All Official Scalers shall for all purposes be deemed members of the Civil Service within the meaning of the " Civil Service Act," notwithstanding the fact that their salaries may be paid from the Scaling Fund of the district and

not by way of yearly salary voted by the Legislative Assembly. R.S. 1948, c. 128, s. 73.

Acting Official Scalers.

74. No person shall be appointed or act as an Official Scaler unless he holds a licence as a scaler under this Part, but where the Deputy Minister considers that, on account of the location of the timber to be scaled, the cost of sending an Official Scaler to carry out the provisions of this Act would be excessive, he may appoint an unlicensed person as an Acting Official Scaler to perform the duties of an Official Scaler, and the appointment may be for a specified time, or for specified work, or until the appointment is cancelled by the Deputy Minister. R.S. 1948, c. 128, s. 74.

Scaling Fund.

75. (1) There shall be established and continue to be maintained in the Provincial Treasury a fund for the providing of adequate service for the scaling of timber in each district constituted by or under this Part, to be known as the " Scaling Fund " of the district, into which shall be paid all moneys received under this Act for the scaling of timber in the district, whether for fees or expenses. All salaries, expenses, and outgoings incurred in maintaining the scaling service in each district shall be chargeable to the Scaling Fund of the district, and shall be payable directly from that fund upon vouchers approved by the Minister, or may be paid in the first instance from any moneys appropriated by the Legislative Assembly for that purpose, and subsequently charged to the Scaling Fund.

Scaling fees.

(2) The cost of maintaining the scaling service in each district shall be estimated by the Forest Service, and the Minister may from time to time make rules prescribing the fees and expenses to be charged by the Forest Service for the scaling of timber; and the Minister shall fix such fees as in his opinion will be sufficient to meet the actual cost of maintaining the scaling service.

Advances to Scaling Fund.

(3) If at any time the amount at the credit of the Scaling Fund is insufficient to meet the salaries and expenses chargeable thereto, the Minister of Finance shall advance to the Scaling Fund out of the Consolidated Revenue Fund such sums as may be necessary. All moneys so advanced shall be repaid to the Consolidated Revenue Fund out of moneys collected by the Forest Service under this section. R.S. 1948, c. 128, s. 75; 1949, c. 24, s. 4.

Delivery of copy of scale.

76. Upon demand of the vendor or owner of any timber scaled by an Official Scaler, and upon payment of the fees and charges payable therefor, the Forest Service shall deliver to the vendor or owner a certified copy of the scale of the timber. R.S. 1948, c. 128, s. 76.

Rescale.

77. In the event of a vendor or purchaser objecting to any Official Scaler, or to his scaling, then, on application to the District Forester or Supervisor of Scalers, another Official Scaler may be selected to scale the timber in question; and the person requiring such services shall pay

the additional fees and expenses occasioned by the substitution of another Official Scaler; but where an original scale made by an Official Scaler is, in the opinion of the District Forester or Supervisor of Scalers, proved inaccurate, no charge other than the correct fees and expenses for scaling the timber shall be imposed. R.S. 1948, c. 128, s. 77.

Crown lien for fees.

78. The Crown shall have a lien for the amount of all costs, fees, and expenses chargeable by the Forest Service or payable to the Crown under this Part, and for all expenses of seizure, detention, or sale incurred in enforcing the lien, upon the timber in respect of which the costs, fees, or expenses are chargeable or payable, and upon all sawmills or other factories, and lands appurtenant thereto, in or for which the timber has been or is being manufactured, used, or consumed and also upon machinery, equipment, and material that were used in the logging operation, or that belong to the person from whom the costs, fees, and expenses are due; such lien to constitute a charge to the like extent, and to confer the same rights, and to be registrable and enforceable in the same manner as the liens created by the provisions of this Act for the recovery of royalty, including an absolute, unconditional power to sell; and such costs, fees, and expenses shall also be a debt due to the Crown recoverable by action in any Court of competent jurisdiction from the person against whom they are chargeable or by whom they are payable. R.S. 1948, c. 128, s. 78.

Burden of proof.

79. In any prosecution or action brought against any person for any contravention of this Act, the burden of proving that the requirements and provisions of this Part have been complied with shall be upon the defendant. R.S. 1948, c. 128, s. 79.

PART IX.

TIMBER-MARKING.

Floating or rafting of unmarked timber prohibited.

80. (1) Subject to subsection (2), no person shall float or raft any timber on the salt or fresh waters of the Province unless each piece of the timber bears in a conspicuous place, so that it is readily discernible when the piece of timber is floated, a registered timber-mark issued under this Part for the marking of that timber.

(2) Any District Forester may grant such exemptions from the provisions of this section as he considers advisable. R.S. 1948, c. 128, s. 80.

Duty of lumbermen to obtain and use registered timber-marks.

81. (1) Subject to subsection (3), every person engaged in the business of cutting and removing timber shall, before cutting any timber, apply for and obtain from the Forest Service, in the manner prescribed by the regulations, such number of registered timber-marks as the Deputy Minister considers necessary to distinguish clearly the classes of timber subject to different conditions of tenure, royalty, tax, or manufacture which the person proposes to cut.

(2) The holder of a registered timber-mark prescribed under this Part for the marking of any timber which is cut by him shall, before removing the timber so cut from the land on which it is cut, put that timber-mark in a conspicuous place on each piece of the timber.

(3) The Deputy Minister may grant such exemptions from the provisions of subsection (1) as he considers advisable. R.S. 1948, c. 128, s. 81.

Evidence of registered timber-mark.

82. A certificate, purporting to be signed by the Deputy Minister, to the effect that a timber-mark has been issued to any person and duly registered under this Part shall be received in all Courts in the Province as prima facie evidence of the facts therein stated without proof of the handwriting or official position of the person by whom the certificate is signed. R.S. 1948, c. 128, s. 82.

Assignability of registered timber-mark.

83. Subject to the regulations, every timber-mark registered under this Part shall be assignable in law. R.S. 1948, c. 128, s. 83.

Exclusive right of holder to use registered timber-mark.

84. The holder of a timber-mark registered under this Part shall have the exclusive right to use the same, and to mark therewith the timber cut by him. R.S. 1948, c. 128, s. 84.

Extension of use of registered timber-mark.

85. (1) Upon application being made to the Forest Service, in the manner prescribed by the regulations, by the holder of a registered timber-mark who desires to use the timber-mark for the marking of timber other than that in respect of which the timber-mark was issued, and upon the application being approved by the Deputy Minister, the registration of the timber-mark may be amended, and a certificate may be issued to the holder authorizing the use of the timber-mark in accordance with the application.

(2) A person who uses a timber-mark registered under this Part for the marking of timber other than that in respect of which the timber-mark was issued, or to which its use is extended by certificate under subsection (1), shall be guilty of an offence against this Act. R.S. 1948, c. 128, s. 85.

Cancellation of timber-mark.

86. The Deputy Minister may at any time, in his discretion, cause any registered timber-mark to be cancelled by entry of the cancellation in the timber-mark register kept in the Forest Service. R.S. 1948, c. 128, s. 86.

Wrongful use of registered timber-mark.

87. Every person other than the holder of the registered timber-mark who marks any timber with that timber-mark, or with any part of it, shall, on summary conviction, upon complaint of the holder of the registered timber-mark, or of some person authorized by the holder to act on his behalf, be liable for each offence to pay compensation, not exceeding one hundred dollars and not less than twenty dollars, to the holder of the registered timber-mark. R.S. 1948, c. 128, s. 87.

Seizure of unmarked timber.

88. All timber removed, or floated, or rafted, or transported in anywise howsoever, and not so marked as to comply with the provisions of this Part, may, in addition to all other penalties provided in this Act, be seized by the Crown, and sold by private sale or public auction, and the proceeds of such sale shall form part of the Consolidated Revenue Fund. R.S. 1948, c. 128, s. 88.

PART X.

MANUFACTURE WITHIN PROVINCE.

Use or manufacture of Crown timber in Province.

89. All timber cut on Crown lands, or on lands granted after the twelfth day of March, 1906, or on lands held under pre-emption record, shall be used in the Province, or be manufactured in the Province into boards, deal, joists, laths, shingles, or other sawn lumber, or into wood-pulp or paper, except as hereinafter provided; and all logging and manufacturing camps or premises used or occupied for any purpose of or in connection with the cutting or manufacture of such timber shall be located in the Province. R.S. 1948, c. 128, s. 89.

Cancellation of leases and licences for violation of s. 89.

90. If the holder of any timber lease or timber licence, or forest management licence or the holder of any pre-emption record, or any servant or agent of the lessee, licensee, or pre-emptor, or any person acting for the lessee, licensee, or pre-emptor, or under the authority or permission of the lessee, licensee, or pre-emptor, violates or refuses to keep and observe the provisions contained in the last preceding section, the lease of the lessee or licence of the licensee or pre-emption record of the pre-emptor, respectively, shall be cancelled by the Lieutenant-Governor in Council. R.S. 1948, c. 128, s. 90.

Seizure and sale of timber dealt with in violation of provisions of Part.

91. (1) The Minister may do all things necessary to prevent a breach of the provisions of this Part, and to secure compliance therewith, and may for such purpose take, seize, and hold all timber so cut or suspected to have been cut as aforesaid, and to be in course of transit out of the Province in contravention of the provisions of this Part, and may also take, seize, and hold every boat which is towing any such timber; and if the Minister decides that it is not the intention of the lessee, licensee, owner, holder, or person in possession of the timber to use it in the Province, or to manufacture or cause it to be manufactured into sawn lumber or wood-pulp or paper in the Province, or to dispose of the timber to others who will use it in the Province, or have it so manufactured in the Province, the Minister may sell or cause to be sold the timber and boat by public auction, and the proceeds of the sale shall be the property of Her Majesty, and shall form part of the Consolidated Revenue Fund. In case any boat escapes after having been so seized, or in case its seizure is avoided by the removal of the boat outside the waters of the Province, it may at any time afterwards be seized, if

found in any of the waters of the Province, and sold as provided in this section.

Burden of proof.

(2) Where a seizure is made of timber or a boat on account of a suspected contravention of the provisions of this Part, the onus of proving that no part of the timber seized was Crown timber or cut on Crown lands or on Crown lands granted after the twelfth day of March, 1906, or on lands held under pre-emption record, or on lands included in any forest management licence, and that no part of the timber seized had been dealt with, or was about to be dealt with, in a manner contrary to the provisions of this Part, shall be upon the owner, holder, and any person in possession of the timber or boat. R.S. 1948, c. 128, s. 91.

Permit for export of certain unmanufactured cut timber.

92. The Lieutenant-Governor in Council may, on such terms and conditions and upon payment of such charges as may be imposed by him, authorize the export of piles, poles, railway-ties, crib-timber, and other minor forest products cut on Crown lands, or lands held under pre-emption entry and record, or lands granted after the twelfth day of March, 1906, or lands included in a forest management licence. R.S. 1948, c. 128, s. 92.

Permit for export of unmanufactured timber from areas adjacent to Provincial boundary.

93. The Lieutenant-Governor in Council may, upon such terms and conditions as he may impose, permit the export of unmanufactured timber from areas adjacent to the boundary of the Province in cases where it is proved to his satisfaction that such timber cannot, owing to topographical reasons, be profitably manufactured within the Province. R.S. 1948, c. 128, s. 93.

Power to permit export.

94. Notwithstanding anything in this Act contained, the Lieutenant-Governor in Council may until the thirtieth day of June, 1958, permit the export from the Province of unmanufactured timber cut on Crown lands, or lands held under pre-emption entry and record, or lands granted after the twelfth day of March, 1906, upon such terms and conditions as he sees fit. R.S. 1948, c. 128, s. 94; 1949, c. 24, s. 5; 1951, c. 29, s. 6; 1953 (2nd Sess.), c. 9, s. 6.

PART XI.

FOREST-PROTECTION.

Application of Part to railways.

95. The provisions of this Part shall apply to every railway company and every railway subject to the legislative jurisdiction of the Legislature; but the provisions of this Part shall be deemed to be in extension of all other statutory provisions applying to railway companies and railways, and not to repeal, abrogate, or derogate from any such other statutory provision. R.S. 1948, c. 128, s. 95.

Application of Part to municipalities.

96. The provisions of this Part shall apply to every municipality within the Province; but the provisions of this Part shall be deemed to be

in extension of all other statutory provisions applying to municipalities, and not to repeal, abrogate, or derogate from any such other statutory provision or any municipal by-law made pursuant to any such other statutory provision. R.S. 1948, c. 128, s. 96.

Close season.

97. The period from the first day of May to the last day of October, both dates inclusive, in each year shall be known as the close season in respect of the setting of fire; but where circumstances render it necessary in the public interest, the Lieutenant-Governor in Council may, by Proclamation, advance, extend, or terminate the period of the close season in any year. R.S. 1948, c. 128, s. 97; 1953 (2nd Sess.), c. 9, s. 7.

Setting of fires during close season.

98. (1) Except as provided in subsections (2) and (3), no person shall set out, start, or kindle any fire during the close season in or within one-half of a mile from any forest or woodland or any slash or forest debris or any peat or shrub lands.

(2) Subject to the obtaining of a permit therefor under section 99, and to the observance of all obligations and precautions imposed by the permit or by this Act or the regulations, a person may set out, start, or kindle a fire for:—

(*a*) Cooking or preparing food:

(*b*) Obtaining necessary warmth for any person:

(*c*) Clearing land:

(*d*) Burning slash, brush, grass, or other inflammable material; or

(*e*) Any necessary industrial purpose permitted by the Minister;

but every person setting out, starting, or kindling any fire pursuant to a permit so obtained for cooking or obtaining warmth shall totally extinguish the fire before leaving the vicinity of the fire.

(3) Every person who in contravention of any provision of this section sets out, starts, or kindles any fire, or fails to extinguish any fire set out, started, or kindled by him for cooking or obtaining warmth, before leaving the vicinity of the fire, shall be guilty of an offence against this Act, and shall, in addition to all other penalties imposed by this Act, be liable for all expenses incurred by the Forest Service in controlling or extinguishing the fire or any fire originating or spreading therefrom, which expenses may be recovered as a debt due to the Crown; but no person shall be convicted of a violation of any provision of this section by reason only of his having started or kindled a fire in any stove, furnace, or similar device designed to confine the fire and suitable for that purpose, nor by reason only of his having in good faith and with reasonable care set a back-fire for the purpose of stopping the progress of a fire then actually burning. R.S. 1948, c. 128, s. 98.

Issuance of permits.

99. (1) Subject to section 100, the Forest Service or any person authorized in writing by the Minister may issue permits authorizing

the use of fire for the purpose of clearing land, or for burning slash, brush, grass, or other inflammable material, or for any industrial purpose, and the Forest Service or any person authorized in writing by the Minister may issue permits authorizing the setting-out, starting, and kindling of fires for cooking or obtaining warmth, which permits shall be subject to the regulations and to such conditions, restrictions, and provisions as the Forest Service in the case of any permit may consider necessary or expedient to incorporate therein. If at any time the Minister on account of the existence of hazardous fire conditions deems it advisable, he may by order cancel or suspend for such time as is specified in the order, and in respect of the whole Province or of such area in the Province as is described in the order, all or any permits issued pursuant to this section, or he may attach to all or any of such permits such conditions and restrictions as he thinks proper, and the order shall thereupon become effective according to its tenor.

Contravention of permit an offence.

(2) Every person holding or acting under any permit issued under this section who contravenes any condition, restriction, or provision incorporated therein shall be guilty of an offence against this Act, and shall, in addition to all other penalities imposed by this Act, be liable for all expenses incurred by the Forest Service in controlling and extinguishing any fire originating on the area covered by the permit, in case it spreads beyond the boundaries of such area or threatens so to do, which expenses may be recovered at the suit of the Crown in any Court of competent jurisdiction. R.S. 1948, c. 128, s. 99.

Control vested in Lieut.-Governor in Council.

100. The Lieutenant-Governor in Council may:—

(*a*) Prohibit the issuing of permits, or the setting of fires thereunder, in any portion of the Province for such period as he thinks fit:

(*b*) Exempt any portion of the Province from the provisions of such sections of this Part as he thinks fit, and alter or revoke any such exemptions. R.S. 1948, c. 128, s. 100.

Duties and liabilities of persons using explosives or dropping burning substances near any forest.

101. Every person who, during the close season, uses any explosive, or throws or drops any burning match, ashes of a pipe, lighted cigarette or cigar, or any other burning substance, in or on any forest or woodland or at a distance of less than one-half of a mile therefrom, shall before leaving the spot completely extinguish the fire of the match, ashes of a pipe, lighted cigarette or cigar, or other burning substance, or explosive, and any fire caused thereby; and every such person shall be liable for all expenses incurred by the Forest Service in controlling or extinguishing any fire so caused, which expenses may be recovered from him at the suit of the Crown. R.S. 1948, c. 128, s. 101.

Watchmen for stationary engines.

102. During the close season, where any stationary or portable engine is located or where any explosives from which fire might result are used in or within one-half of a mile from any forest or woodland, the person

operating the engine or using the explosives shall maintain a watchman at that place for at least two hours following the time when operations cease, to prevent the occurrence or spread of fire therefrom. R.S. 1948, c. 128, s. 102.

Safety appliances required on engines and wood-burners.

103. (1) During the close season no person shall:—

(*a*) Use or operate any locomotive, traction-engine, logging-engine, portable engine, or stationary engine in or within one-half of a mile from any forest or woodland which is not provided with safe and efficient devices for arresting sparks and for preventing the escape of fire or live coals from all ash-pans and fire-boxes, complying in all respects with the regulations:

(*b*) Operate any river steamboat on any of the rivers or lakes in the Province which is not provided with a safe and efficient device for arresting sparks from the smoke-stack thereof, complying in all respects with the regulations:

(*c*) Destroy any wood-waste material by fire within any burner or destructor operated at or near any mill or manufactory, or to operate any power-producing plant using in connection therewith any smoke-stack, chimney, or other spark-emitting outlet, without installing and maintaining on such burner or destroyer or on such smoke-stack, chimney, or other spark-emitting outlet a safe and suitable device for arresting sparks, complying in all respects with the regulations:

(*d*) Destroy, in connection with the manufacture of lumber or shingles or other forest products, any wood-waste material by burning the same at or near any mill without properly confining the place of the burning, and without further safeguarding the surrounding property against danger from the burning by such additional devices as are required by the regulations.

Fire-fighting equipment.

(2) It shall be the duty of every person using or operating any engine referred to in this section, or conducting any industrial or logging operation, to provide and maintain equipment in the way of tools, hose, and other fire-fighting appliances in accordance with the regulations.

Duty of engineers.

(3) It shall be the duty of every engineer in charge of any locomotive, steamboat, or engine upon which safety appliances are required to be maintained under this section to see that all such appliances are properly used and applied.

Injunction to prohibit use of improperly equipped engine.

(4) Upon proof that any prosecution has been instituted under this section by any duly authorized officer of the Forest Service, any Court of competent jurisdiction shall enjoin the further use of the locomotive, engine, steamboat, burner, or destructor in respect of which the prosecution was instituted until the defendant has been acquitted of the charge preferred, or the locomotive, engine, steamboat, burner, or destructor

has been equipped with safety appliances to the satisfaction of said officer. R.S. 1948, c. 128, s. 103.

Depositing live coals from locomotive.

104. During the close season no deposit of fire or live coals shall be made from any railway locomotive in or within one-half of a mile from any forest, woodland, or hay land upon any railway right-of-way outside of yard limits, unless the same are immediately extinguished. R.S. 1948, c. 128, s. 104.

Patrol of railway rights-of-way.

105. Where in the judgment of the Minister there is danger of the setting and spreading of fires from the operation of any railway, the Minister may order any railway company to provide such patrolmen for the following of its trains and the prompt extinguishing of fires as he considers necessary. Where the Minister has given any railway company notice to provide such patrolmen, the company shall immediately comply with such instructions throughout the territory designated; and upon any failure so to do, the Minister may employ patrolmen with the necessary equipment to patrol the right-of-way of the company, and the expense of the same shall be charged to the company, and may be recovered from it at the suit of the Crown. The Minister may appoint officers of the Forest Service to act as supervisors of railway patrolmen, whether the patrolmen are employed by the railway company or by the Minister, and the expense of any such supervision shall be chargeable to the company and recoverable as aforesaid. R.S. 1948, c. 128, s. 105.

Liability of railway companies as to fires.

106. Any fire originating on any land within three hundred feet of the railway-track of any railway company operating within the legislative jurisdiction of the Province shall be presumed to have been caused by the railway company, and shall be fought and extinguished by the railway company at its own expense, and the railway company shall have the right to enter upon any lands adjoining its right-of-way for the purpose of extinguishing the fire. The railway company shall also be liable for all expenses incurred by the Forest Service in preventing the spread of and extinguishing the fire, which expenses may be recovered as a debt due to the Crown: Provided that, if the fire so originating was not caused by the railway company or its employees, the railway company may by action in any Court of competent jurisdiction recover the amount of the expenses incurred by it in fighting or extinguishing the fire or paid by it to the Crown pursuant to this section from the person who caused the fire; and that, if it is proved to the satisfaction of the Minister that the fire so originating was not caused by the railway company or its employees, the railway company shall thereupon be relieved from any further liability imposed on it by this section, and if the railway company is unable to recover the expenses theretofore incurred or paid by it from any person who caused the fire, the railway company shall be entitled to have the expenses paid from moneys appropriated by the Legislature for fire suppression. R.S. 1948, c. 128, s. 106; 1955, c. 27, s. 4.

Clearing of new railway rights-of-way.

107. No railway company completing the construction of any line of railway shall operate locomotives on the line for passenger or freight traffic until a certificate has been obtained by the company from the Minister, to certify that its right-of-way has been cleared of inflammable material, in accordance with this Act, the "Railway Act," and the regulations issued thereunder, and that all debris on adjoining lands caused by construction of the line has been removed and destroyed to the satisfaction of the Minister. R.S. 1948, c. 128, s. 107.

Supervision of railway construction.

108. (1) For the enforcement of any provisions of this Act, or the "Railway Act," or any regulations issued thereunder governing the construction of railways in the matter of the prevention of fire, the Minister may appoint such number of patrolmen as he considers necessary, under a Chief Ranger, to supervise any railway-construction.

Duty of railway companies to assist in extinguishing forest fires.

(2) The railway company and its contractors shall at any time, upon demand, place at the disposal of the Chief Ranger as many of their employees, respectively, as he may need for the extinguishing of any fire or the protection from fire of any forest or woodland along or adjacent to the line of railway under construction, and the expense incident to and connected with such appointment of patrolmen and Chief Ranger and protection of the forests from fire shall be a debt due to the Crown from the company constructing the line of railway, payable upon demand to the Minister, and may be recovered at the suit of the Crown. R.S. 1948, c. 128, s. 108.

Liability of railway company to fine where fire spreads from railway.

109. In case a fire is started by sparks or hot or burning material from a railway locomotive or carriage, and either begins outside of the railway right-of-way or spreads therefrom to the adjoining land, the railway company which is operating the railway at the time shall be liable, on summary conviction, to a penalty not exceeding one thousand dollars; but it shall be a sufficient defence against any prosecution under this section if it is shown by the railway company:—

(*a*) That the company has used upon the locomotive the best available modern appliance for the purpose of preventing sparks and burning material spreading therefrom, and upon the carriage such appliances as the Minister may have prescribed; and

(*b*) That no negligence conducing to the starting or spreading of the fire has been shown by the engineer or fireman of the locomotive or by any other servant of the company, and that the regulations governing the actions of such persons have been obeyed; and

(*c*) That the company has maintained in accordance with the requirements of the Minister an efficient staff of patrolmen properly equipped with all suitable appliances for fighting fires, and provided with proper and efficient means of travelling from

place to place along the line of railway, and that said staff has been prompt and diligent in taking all possible means to prevent the fire from spreading. R.S. 1948, c. 128, s. 109.

General penalty for infringement of Act by railway companies.

110. Except as provided in the last preceding section, any railway company committing an offence against this Act, or violating any regulation governing the operation of railways in the matter of prevention of fire or any requirement of the Minister under this Act, shall be liable, on summary conviction, to a penalty of two hundred dollars; and it shall not be necessary in any prosecution to prove the name or number of any locomotive, or the name of the engineer or fireman in charge of the same. R.S. 1948, c. 128, s. 110.

Disposal of debris and patrol of logging-railways.

111. Every person operating any logging-railway or other railway not under charter as a common carrier shall pile and burn or otherwise deal with debris alongside the track of the railway in accordance with the orders of the Minister, and shall maintain after the passage of any locomotive along the railway such patrol as the Minister may direct. If any such person fails when notified immediately to comply with the provisions of this section, the Minister may by the officers of the Forest Service deal with the debris and maintain the patrol, and the Crown shall have a lien for the amount of the expenses incurred therein, and for all expenses of seizure or detention incurred in enforcing the lien, upon the locomotives, engines, logging plant, and equipment of the person so making default; such lien to constitute a charge to the like extent and to confer the same rights and to be enforceable in the same manner as the liens created by the provisions of this Act for the recovery of royalty, including an absolute, unconditional power to sell; and such expenses shall also be a debt due to the Crown recoverable by action in any Court of competent jurisdiction from the person so making default. R.S. 1948, c. 128, s. 111.

Disposal of slash from lumbering operations.

112. (1) Where as a result of the carrying-on of any operation for the cutting or removal of trees or timber any slash, including in that expression any brush or debris, is occasioned or accumulated, the person carrying on the operation shall, on the demand of any officer authorized by the Minister, dispose of the slash by burning or otherwise to the satisfaction of the Minister.

Power of Minister to dispose of slash at expense of operator.

(2) Where any person fails or neglects to dispose of any slash at the time and in the manner required under this section, the Minister may dispose of the slash, in which case all expense incurred therein shall be forthwith due and payable to the Crown from that person. The Crown shall have a lien for the amount of any expense so payable to the Crown, and for all expenses of seizure, detention, or sale incurred in enforcing the lien, upon all engines, logging plant, equipment, and material used in the operation in which the slash was occasioned or accumulated, or belonging to the person carrying on the operation, and also against the

lands upon which the operation in which the slash was occasioned or accumulated was in whole or in part carried on; and such lien shall constitute a charge to the like extent, and shall confer the same rights, and shall be registrable and enforceable in the same manner as the liens created by the provisions of this Act for the recovery of royalties, including an absolute, unconditional power to sell. All moneys payable under this subsection may also be recovered at the suit of the Crown in any Court of competent jurisdiction. R.S. 1948, c. 128, s. 112; 1955, c. 27, s. 5.

Provisions for fire-protection.

113. (1) The provisions of subsections (2) to (20) shall apply to that portion of the Province administered by the Forest Service as the Vancouver Forest District as established by notice in the Gazette of December thirty-first, 1953, and shall be in force from and after the first day of January, 1946.

(2) Where as a result of the carrying-on of any operation for the cutting or removal of trees or timber any dead tree is left standing, the person carrying on the operation shall dispose of every such dead standing tree by falling it concurrently with the progress of logging operations.

(3) The Deputy Minister or any officer of the Forest Service authorized in that behalf by the Deputy Minister may exempt any part of the district referred to in subsection (1), or any operation or part of any operation, or any class of operations from the provisions of subsection (2).

(4) Where any slash, including in that expression brush or debris, is occasioned or accumulated, the person carrying on the operation shall dispose of the slash by burning as and when instructed so to do by the Deputy Minister or any officer of the Forest Service authorized by the Deputy Minister to give such instructions; and in the case of written instructions they will be deemed to have been duly delivered two days after being posted to the addressee's last-known or business or camp address.

(5) The Deputy Minister or officer of the Forest Service in his instructions may require any part of the slash to be left on the ground, and may require any measures to be taken by the operator to safeguard forest soil, seedlings, young trees, standing timber, or other property from damage likely to result from disposal measures, and may prohibit the burning of slash where in his opinion excessive damage is likely to result from burning.

(6) The operator in the disposal of slash ordered under subsection (4) shall use all reasonable precautions to prevent the escape of fire or damage to property.

(7) Upon every area of slash not disposed of as required by this section, or in the disposal of which reasonable precautions and safeguards have not been used to prevent the escape of fire or damage to property to the satisfaction of the Deputy Minister, there shall be due

and payable to the Crown such compensation per acre as the Lieutenant-Governor in Council from time to time determines.

(8) Upon every area of logged lands on which dead standing trees have not been disposed of as required by this section and to the satisfaction of the Deputy Minister, there shall be due and payable to the Crown such compensation per acre as the Lieutenant-Governor in Council from time to time determines.

(9) The number of acres in the area involved in subsections (7) and (8) shall be determined by the Deputy Minister.

(10) [*Repealed.* 1955, c. 27, s. 6.]

(11) In the event of the subsequent disposal, with the prior written consent and to the satisfaction of the Deputy Minister, of slash or standing dead trees in respect of which payment has been made under subsection (7) or (8), the Minister may refund all or any part of the amount paid in respect of the acres in the area on which slash or standing dead trees have been disposed of with such written consent.

(12) The Crown shall have a lien for the amount payable to the Crown under this section, and for all expenses of seizure, detention, or sale incurred in enforcing the lien, upon all engines, logging plant, equipment, motor-vehicles, and material used or that have been used in the operation in which the slash or dead standing trees were occasioned or accumulated or belonging to the person carrying on the operation, upon all cut timber and wood cut upon the lands on which the slash or dead standing trees were occasioned or accumulated, and also upon all cut timber and wood belonging to that person, and also against the lands upon which the operation in which the slash or dead standing trees were occasioned or accumulated was in whole or in part carried on; and such lien shall constitute a charge to the like extent, and shall confer the same rights, and shall be registrable and enforceable in the same manner as the liens created by the provisions of this Act for the recovery of royalty, including an absolute, unconditional power to sell.

(13) All moneys payable under subsection (12) may also be recovered with costs at the suit of the Crown in any Court of competent jurisdiction.

(14) Any person disposing of slash or dead standing trees under this section who does not use all reasonable precautions and safeguards to prevent the escape of fire or damage to property, all to the satisfaction of the Deputy Minister or to the satisfaction of any officer of the Forest Service authorized by him, shall be guilty of an offence against this Act and shall, in addition to all other penalties imposed by this Act, be liable to pay all the expenses incurred by the Forest Service in controlling and extinguishing the fire in case it spreads beyond the boundary of the area required to be burned pursuant to this section, or threatens to do so, which expenses may be recovered at the suit of the Crown in any Court of competent jurisdiction.

(15) Notwithstanding anything in this section contained, where in that portion of the Province administered by the Forest Service as the Vancouver Forest District, as a result of the carrying-on of any operation for the cutting or removal of trees or timber, any slash, including in that expression brush or debris, is occasioned or accumulated or any dead trees left standing, the Deputy Minister may at any time require the person carrying on the operation to deposit with him a cash security deposit for the purpose of guaranteeing that he will fulfil his obligations under this section.

(16) If the provisions of this section are carried out to the satisfaction of the Deputy Minister the cash security deposit will be refunded; but if not the Deputy Minister may retain the whole of the cash security deposit, or such part thereof as he thinks is necessary to enable the Deputy Minister to carry out the provisions of this section.

(17) If any person from whom a cash security deposit has been demanded fails to furnish such deposit within such time as is fixed by the Deputy Minister there shall be due and payable to the Crown such compensation per acre as the Lieutenant-Governor in Council determines for every acre of every area of slash created and not disposed of and for every acre of every area of logged lands on which are dead standing trees.

(18) The Crown shall have a lien for every sum payable under subsection (17) and the provisions of subsection (12) shall be applicable.

(19) All money retained by the Crown under subsection (16) and received under subsection (17) shall be paid into the Consolidated Revenue Fund.

(20) The decision of the Deputy Minister with regard to the acres in the area involved under subsection (17) shall be final. R.S. 1948, c. 128, s. 113; 1950, c. 22, ss. 14, 15; 1951, c. 29, s. 7; 1954, c. 11, s. 10; 1956, c. 20, s. 4.

Interpretation.

114. For the purpose of this Part, the phrase "person carrying on the operation," the word "operator" and the word "person" shall include not only the person in actual charge of the operation and a contractor who contracts to carry on the operation but also the person for whom the operation is carried on and the person with whom a contractor has made a contract under which the contract is carried on. R.S. 1948, c. 128, s. 114; 1951, c. 29, s. 8.

Power of Minister to order disposal of debris.

115. (1) Where the safety of any forest or woodland or timber is endangered by the debris or inflammable material caused by any lumbering or other operation or where inflammable material endangers life or property, the Minister, or any officer of the Forest Service authorized by him, may require the person carrying on or who has carried on the operation, or the owner or occupier of the land on which the debris or inflammable material exists, to dispose of the debris or inflammable material by burning or any other manner, and to cut down all dead standing trees and stubs within the area, and to provide such

labour and take such precautions to prevent the escape of fire or damage to property as the Minister or any officer of the Forest Service acting for him may direct, all to the satisfaction of the Minister.

Fire-guard around camps and engines.

(2) Every camp, mine, sawmill, portable or stationary engine located in or within one-half of a mile from any forest or woodland shall have such space surrounding the camp, mine, sawmill, or engine cleared of inflammable material as the Minister, or any officer of the Forest Service authorized by him, may direct, and the person in charge of the camp, mine, sawmill, or engine shall forthwith clear and maintain that space as so directed.

Burning of debris from clearing rights-of-way.

(3) Every person clearing a right-of-way for any road, trail, telephone, telegraph, power, or pipe line, tote-road, ditch, or flume shall pile and burn on the right-of-way all refuse timber, slash, choppings, and brush cut thereon as rapidly as the clearing or cutting progresses and the weather conditions permit, or at such other times as the Minister, or any officer of the Forest Service authorized by him, may direct, and during the close season shall obtain, before burning any material, a permit from the Forest Service.

Causing debris on land of another prohibited.

(4) No person slashing brush or timber for the purpose of clearing land, or in the conduct of any lumbering operation, or in the cutting of any road or right-of-way shall fell or permit to be felled trees or brush in such a manner that the trees or brush fall and remain on land not owned by the person felling or permitting the felling of the trees or brush.

Burning of debris caused within 300 feet of railway.

(5) Every person who within three hundred feet of the right-of-way of any railway causes any accumulation of inflammable debris shall immediately pile and, subject to the requirements of this Act concerning permits, burn the same.

Power of Minister to carry out section and recover expenses.

(6) Where, after due notice, any person fails to carry out any requirements of this section to the satisfaction of the Minister, then, in addition to any other penalty imposed by this Act, the Minister may by his officers enter upon the land on which the debris, dead trees, stubs, inflammable material, refuse timber, slash, choppings, or brush in question exist and carry out the requirements of this section and the orders of the Minister issued thereunder; and the Crown shall have a lien for the amount of the expenses incurred therein, and for all expenses of seizure, detention, or sale incurred in enforcing the lien, upon the lands, sawmills, engines, logging plant, and equipment of the person so making default; such lien to constitute a charge to the like extent and to confer the same rights and to be registrable and enforceable in the same manner as the liens created by the provisions of this Act for the recovery of royalty, including an absolute, unconditional power to sell; and such expenses shall also be a debt due to the Crown recoverable by action in any Court of competent jurisdiction from the person who cut the trees or timber from which the debris or other material in question was made. R.S. 1948, c. 128, s. 115; 1950, c. 22, ss. 16–18.

116. [*Repealed.* 1950, c. 22, s. 19.]

Duty of adults to prevent and report fires.

117. It shall be the duty of every adult person resident in the Province who finds that a fire has started or exists in or within one-half of a mile from any forest or woodland to do his utmost to prevent the spread of the fire, and, if the fire has not been reported to the Forest Service, to report the same to the Forest Service by the quickest possible means. R.S. 1948, c. 128, s. 117.

Duty of occupant of land to extinguish fires thereon.

118. In the case of a fire burning on land or that has burned on or across land on which any person is conducting any land-clearing, lumbering, industrial, engineering, or construction operation, or which any person is otherwise occupying, no matter how, where, or by whom the fire may have been set, that person shall, by himself or his agents or contractors, diligently attend to the controlling and extinguishing of the fire, and for that purpose shall employ the services of as many of the men employed by him, up to the total number of such men, and any of his equipment suitable for fire-fighting as may be necessary, and shall, if called upon by any officer of the Forest Service, place at the disposal of such officer for the purpose of controlling and extinguishing the fire the services of such men and equipment, and shall himself pay for the services of the men and equipment so employed: Provided that:—

(*a*) When the obligation imposed by this section has been diligently discharged in the case of fire originating on other lands spreading to occupied lands on which the tax imposed by section 124 has been assessed; or

(*b*) When the obligation imposed by this section has been voluntarily assumed and diligently discharged in the case of fire spreading to, or originating on, unoccupied land on which the tax imposed by section 124 has been assessed, if the fire did not originate on lands on which the person aforesaid, or his agents or contractors, is conducting any land-clearing, lumbering, industrial, engineering, or construction operation, or is otherwise occupying; and

(*c*) If the annual tax imposed by section 124 has been paid; and

(*d*) If the provisions of this Act and the regulations have been complied with; and

(*e*) If proof is submitted showing that immediate notice of the fire was dispatched to the Forest Service by the best available means of communication; and

(*f*) If such information as the Forest Service may require is submitted showing how and where the fire started, together with evidence satisfactory to the Forest Service of the payments made for the services of the men so employed,—

then the total amount expended by such person in controlling and extinguishing the fire shall be paid from the moneys appropriated by the

Legislature for fire suppression, except that the amounts allowed for wages paid for the services of the men so employed shall not exceed the rates prescribed by the Forest Service for such work. R.S. 1948, c. 128, s. 118; 1950, c. 22, s. 20; 1955, c. 27, s. 7.

Liability of persons who neglect to fight fires or who continue industrial operations during fires.

119. Any person who, in the case of a fire burning on land or that has burned on or across land on which he is conducting any land-clearing, lumbering, industrial, engineering, or construction operation, or which he is otherwise occupying, no matter how, where, or by whom the fire may have been set, fails to do his utmost to control and extinguish the fire, or refuses to place at the disposal of any officer of the Forest Service for the purpose of controlling and extinguishing the fire, at the person's own expense, his services and the services of any men employed by him, or who, without the written consent of an officer of the Forest Service, continues to carry on, in whole or in part, any land-clearing, lumbering, industrial, engineering, or construction operations while the fire is burning, or who without such consent resumes any such operations before the fire is wholly extinguished, shall be guilty of an offence against this Act, and shall, in addition to all other penalties imposed by this Act, be liable for all expenses incurred by the Forest Service or by any other person in controlling and extinguishing the fire. The Attorney-General, on behalf of Her Majesty, may bring action to recover such expenses incurred by the Forest Service, and any other person who has incurred expenses under this section may bring action for the recovery thereof in any Court of competent jurisdiction; but no action shall be brought under this section unless it is commenced within twelve months from the incurring of the expenses. R.S. 1948, c. 128, s. 119.

Power to declare district closed to industrial operations.

120. (1) Where, in the opinion of the Minister, the safety of life and property in any area of the Province is endangered through the hazardous condition of the forest-cover or the occurrence or spread of fire burning in any forest or woodland, the Minister may by an order in writing signed by him declare that area a closed district that, notwithstanding anything in any other Act contained, no person shall enter or be in for the purpose of travelling, camping, fishing, hunting, recreation, prospecting for minerals, or any other like purpose, and within which no operations of any class specified in the order shall be carried on in or within one-half mile of any forest or woodland situate within the area so declared a closed district, without first obtaining from an officer of the Forest Service a written permit therefor, until the Minister by a subsequent order has declared the danger abated and the closed district abolished; but the provisions of this section shall not apply to permanent residents or land-owners in gaining access to or egress from their property, nor to persons travelling along any of the public highways of the Province, and persons engaged on any operation not specified in the order shall have free access to and egress from that operation and shall not require a permit for the

carrying-on of that operation. Upon a prosecution for violation of the provisions of a closure order made under this subsection it shall not be necessary for the prosecuting authority to prove that the person against whom the prosecution is laid had knowledge of the closure order, and if he pleads or alleges that he had no such knowledge the burden of proof thereof shall be upon him.

Control of fire in closed district.

(2) In any closed district created under this section any officer of the Forest Service authorized by the Minister may take any action he considers necessary to control fires and to safeguard life and property, and may summon, either orally or by writing, any male person between the ages of eighteen and sixty years, except only trainmen, telegraphers, and dispatchers on duty, medical practitioners, and persons physically unfit, to work under the direction of the officer for the purpose of controlling and extinguishing such fires.

Penalties.

(3) Every person who, in violation of any provision of this section or of any order of the Minister thereunder, enters or is in or carries on any operation within the area of any closed district, or who, being summoned by any officer of the Forest Service pursuant to subsection (2), refuses or fails to attend and work under his direction for the purpose of controlling and extinguishing any fire burning in any closed district, shall be liable, on summary conviction, to a penalty of not less than twenty-five dollars and not more than three hundred dollars; and every day's continuance of the carrying-on of any such operation shall be deemed a separate offence. R.S. 1948, c. 128, s. 120; 1950, c. 22, ss. 21, 22.

Equipment of fire-prevention force.

121. (1) The Minister, through the Forest Service, by means of money appropriated by the Legislature for forest-protection, shall maintain and equip a forest-protection force. Without thereby limiting the generality of the provisions of this section, it is declared that forest-protection shall mean all measures designed to protect the forests, forest lands, and waste lands of the Province from the destructive effects of fire, insects, and disease.

Construction of trails, etc.

(2) The Minister, through the Forest Service, by means of moneys appropriated by the Legislature for forest-protection, or jointly with other moneys appropriated from the Consolidated Revenue Fund, shall acquire or construct necessary trails, look-out stations, ranger-stations, telephone-lines, and other permanent improvements and any property necessary for the purposes of this Act. Every building, erection, or property so acquired or constructed may, when no longer required for the purposes of this Act, be sold or disposed of on the directions of the Minister; and the proceeds of every sale or disposition shall be paid into the Consolidated Revenue Fund.

Payment of expenditures incurred in fighting fires.

(3) The Minister may in his discretion, from moneys appropriated by the Legislature for fire suppression, pay to any person an amount equal to the whole or any part of the expenditures incurred by that person in fighting and controlling any fire burning in or within one-half

of a mile from any forest or woodland; but every payment under this subsection shall be subject to the following provisions:—

(*a*) Payment shall be made only where the expenditures were incurred for the protection of forest-growth:

(*b*) No payment shall be made for fire-fighting costs incurred in the discharge of duties or obligations imposed by any provision of this Act on any owner or occupier of land:

(*c*) Proof shall be submitted to the Minister showing that immediate notice of the fire and of the control measures being undertaken was dispatched to the Forest Service by the best available means of communication:

(*d*) The decision of the Minister in regard to any payment applied for under this subsection shall be final. R.S. 1948, c. 128, s. 121; 1949, c. 24, s. 6; 1953 (2nd Sess.), c. 9, s. 8; 1955, c. 27, ss. 8–10.

Rights of entry of officials of patrol and fire-prevention force.

122. Every person employed in any capacity in connection with any patrol or fire-prevention force maintained pursuant to this Act shall have lawful right, while in performance of his duties in connection with the prevention of fire, to enter into and upon any lands and premises other than dwelling or other houses; and any person hindering, obstructing, or impeding the performance of any duty in connection with any patrol or fire-prevention force shall be guilty of an offence against this Act. R.S. 1948, c. 128, s. 122.

Power to arrest offenders and to compel assistance in fire-fighting.

123. (1) Such officers and employees of the Forest Service as the Lieutenant-Governor in Council considers necessary may be appointed constables for the enforcement of the provisions of this Act, and as such may arrest without warrant any person found violating any provisions of this Act, and take him before a Justice and there make complaint. Any officer or constable of the Provincial Police Force and any officer or employee of the Forest Service may employ or summon the assistance of any male person between the ages of eighteen and sixty, except only trainmen, telegraphers, and dispatchers on duty, medical practitioners, and persons physically unfit, for the purpose of controlling and extinguishing any fire, and the compensation for such voluntary or compulsory assistance shall be such as the Lieutenant-Governor in Council may provide.

(2) Every person refusing or failing to render assistance when called upon by any officer or employee of the Forest Service under this section shall be liable, on summary conviction, to a penalty of not less than twenty-five dollars and not more than one hundred dollars.

(3) Where any person has been appointed as a Forest Fire Prevention Officer by the holder of any timber licence or timber lease, or by the owner of any forest or woodland, or by any person carrying on any land-clearing, lumbering, industrial, engineering, or construction operation in or within one-half of a mile from any forest or woodland, or by any

municipality, and where the appointment has been approved by the Minister, the officer so appointed shall have and may exercise the like powers and authority which an officer or employee of the Forest Service has or may exercise under this section. R.S. 1948, c. 128, s. 123.

Tax payable to Crown.

124. (1) From the owner of wild land in excess of six hundred and forty acres and from the owner of timber land not included in a forest management licence, there shall be payable and paid to the Crown, on the first day of April in each year, an annual tax at the rate of six cents for each acre; and from the holder of every timber lease, pulp lease, timber licence, pulp licence, timber berth, or resin licence not included in a forest management licence, six cents for each acre comprised in the lease, licence, or berth, payable annually upon the anniversary of the issuance of the lease or licence, or upon the annual renewal date of the licence or berth, as the case may be; and from the holder of every forest management licence and from the owner of a tree-farm (in excess of six hundred and forty acres) certified by the Minister, nine cents for each thousand feet, board measure, or five cents for each one hundred cubic feet, of the approved annual productive capacity of the licence or tree-farm, payable annually upon the anniversary of the issuance of the licence or of the certification of the tree-farm, as the case may be; and all such payments shall be added to the moneys appropriated by the Legislature for forest protection. All moneys payable as aforesaid may be recovered with costs by action at the suit of the Crown. To the amounts received by the Crown pursuant to this subsection there shall be added an annual appropriation by the Legislature of not less than two million dollars for forest protection.

(2) Each year there shall be voted by the Legislature for the purpose of suppression of forest fires an amount not less than the average annual cost of fire suppression in the preceding ten years: Provided, however, that should such sum prove insufficient in any year, the additional expenditure shall be paid from Consolidated Revenue Fund. R.S. 1948, c. 128, s. 124; 1949, c. 24, ss. 7, 8; 1953 (2nd Sess.), c. 9, s. 9; 1955, c. 27, s. 11.

Power to require disposition of timber infested with injurious insects.

125. (1) Where any trees or timber or any slash (including in that expression any brush or debris) on any lands are found by the Forest Service to be infested with any species of injurious insect under such circumstances as, in the opinion of the Minister, to constitute a menace to adjacent timber or a dangerous source for the spread of such insects, if the Minister gives to the holder of any timber lease or timber licence covering the lands, in the case of Crown lands, or to the owner of the lands, in the case of other lands, notice in writing requiring the owner, lessee, or licensee, as the case may be, to dispose of the trees, timber, or slash so infested, in the manner directed in the notice, the owner, lessee, or licensee to whom the notice is given shall forthwith dispose of the infested trees, timber, or slash as directed. The notice shall be deemed

to be duly given to the owner, lessee, or licensee when a copy has been mailed to him at his last-known place of address and a copy has been posted in a conspicuous position on the land.

Powers in event of default.

(2) Where the owner, lessee, or licensee refuses or neglects to dispose of the trees, timber, or slash in the manner directed in the notice, the Forest Service may enter upon the lands and cause the trees, timber, or slash to be disposed of.

Cost of disposal.

(3) Where the trees or timber disposed of pursuant to this section are on timber land, within the meaning of the " Land Act " or within the meaning of the " Taxation Act," one-half the net cost of disposing of the trees or timber shall be borne by the Crown and one-half by the owner of the land; and where the trees or timber disposed of are on Crown lands held under timber lease or timber licence, one-half of the net cost of disposing of the trees or timber shall be borne by the Crown and one-half by the lessee or licensee; and where the trees or timber disposed of are not on Crown land or on timber land as so defined, the Crown shall bear the entire net cost of disposing of the trees or timber. The entire cost of disposing of slash pursuant to subsection (1) or (2) shall in all cases be borne by the owner, lessee, or licensee.

" Net cost."

(4) For the purpose of this section, the expression " net cost " shall mean the amount by which the total cost reasonably incurred in disposing of the trees or timber exceeds the amount which has been or can be realized from the disposal of the same.

Timber on Crown lands.

(5) Where the trees, timber, or slash so infested are on Crown lands held under any lease or licence other than a timber lease or timber licence, the Forest Service may, upon notice to the lessee or licensee, enter upon the lands and cause the trees, timber, or slash to be disposed of in such manner as the Minister may direct, and the entire cost of disposing of the trees, timber, or slash shall be borne by the Crown.

Recovery of moneys payable to Crown.

(6) All moneys due from any owner, lessee, or licensee in respect of any disposal of trees, timber, or slash by the Forest Service under this section shall be payable upon demand of the Minister, and the Crown shall have a lien for the amount thereof, and for all expenses of seizure, detention, or sale incurred in enforcing the lien, upon the lands of the owner and upon the sawmills, engines, logging plant, and equipment of the owner, lessee, or licensee, as the case may be, constituting a charge to the like extent and conferring the same rights and registrable and enforceable in the same manner as the liens created by the provisions of this Act for the recovery of royalty, including an absolute, unconditional power to sell. All moneys payable under this subsection may also be recovered at the suit of the Crown in any Court of competent jurisdiction. R.S. 1948, c. 128, s. 125.

Burden of proof.

126. In any prosecution or action brought against any person for any contravention of this Act, the burden of proving that the require-

ments and provisions of this Part have been complied with shall be upon the defendant. R.S. 1948, c. 128, s. 126.

Civil rights preserved.

127. Nothing in this Part shall be held to limit or interfere with the right of any person to bring and maintain a civil action for damages occasioned by fire. R.S. 1948, c. 128, s. 127.

128 to **143** (Part XII, Parks). [*Repealed.* 1957, c. 23, s. 3.]

PART XIII.

GENERAL PROVISIONS.

Collection of Moneys due to Crown.

Scaling and grading of timber.

144. All timber upon which any stumpage, royalty, or tax is payable to the Crown shall be scaled, classified, and graded in accordance with the provisions of this Act and the grades set out in the table in the Schedule, except that the limitations as to length of logs contained in that table shall not apply in the case of logs intended for export which are cut shorter than twenty feet to meet the market specifications for any foreign market. The grades set out in the table in the Schedule shall apply only to timber cut upon lands situate west of the Cascade Mountains. R.S. 1948, c. 128, s. 144.

Lien on timber for rental, stumpage, royalty, and tax.

145. All timber, wood, or bark cut upon Crown lands or upon lands granted in respect of which any rental, stumpage, royalty, or tax is reserved or payable shall be subject to a lien in favour of the Crown, and shall be liable for the payment of the rental, stumpage, royalty, or tax by or under this Act or any contract reserved or payable, so long and wheresoever the timber, wood, or bark, or any part of it, may be found in the Province, whether in the original logs or manufactured into lumber or shingles; and in case such timber, wood, or bark has been made up with other timber, wood, or bark into a crib or raft, or in any other manner has been so mixed up as to render it impossible or difficult to distinguish the timber, wood or bark liable to the payment of rental, stumpage, royalty, or tax from timber, wood, or bark not so liable, such other timber, wood, or bark shall also be liable for all rental, stumpage, royalty, or tax so reserved or payable; and every officer or agent entrusted with the collection of the rental, stumpage, royalty, or tax may follow all such timber, wood, or bark and seize and detain the same wherever it is found until the rental, stumpage, royalty, or tax, and all expenses of seizure and detention, are paid or secured. R.S. 1948, c. 128, s. 145.

Lien on premises in which timber manufactured.

146. (1) The Crown shall have a lien for the amount of any stumpage, royalty, or tax reserved or payable under this Act or any contract or stumpage and other charges payable under a forest management licence, and for all expenses of seizure, detention, or sale incurred in enforcing the lien, upon all sawmills or other factories and lands appurtenant thereto, steamships, railway and stationary engines, smelters, concentrators, and

all furnaces, machinery, equipment, and material in or for which any timber or wood in respect of which the stumpage, royalty, or tax is reserved or payable in any way or manner, or for any purpose, has been or is being manufactured, used, or consumed, or which belong to the person from whom the stumpage, royalty, or tax is due, and upon all cut timber and wood and lumber and other manufactured wood products belonging to that person; and also upon all steamships, tow-boats, scows, or other vessels, and upon all engines, logging plant equipment or material, and upon all railway-lines, teams, wagons, and motor-vehicles in any way engaged or that have been engaged in taking out or in transporting such timber or wood, or belonging to the person from whom the stumpage, royalty, or tax is due; such lien to constitute a first charge in priority to all other liens and to all encumbrances or charges created by any contract or arising under any Statute or otherwise howsoever, and to confer the same rights and to be enforceable in the same manner as the lien and rights of recovery of royalty conferred by the provisions in that behalf of this Act, including an absolute, unconditional power to sell.

Lien on lands upon which timber cut.

(2) The Crown shall also have a lien for the amount of any such stumpage, royalty, or tax against the lands upon which the timber or wood in respect of which the stumpage, royalty, or tax is reserved or payable was cut, and shall also have a lien for the amount of any tax levied under section 124 against the land in respect of which the tax is payable, and a statement under the hand of the Minister stating the amount due and describing the lands affected shall be sufficient evidence of the existence of the lien and of the amount secured thereby for the purpose of registration thereof under the "Land Registry Act." Where a lien has been acquired pursuant to this Act the Crown may enforce the lien by selling the land upon which the lien exists by public auction or private sale. Before any sale is made one month's notice in writing shall be given to persons having any interest in the land as shown by the Land Registry records. The notice shall be sufficiently given if sent by prepaid registered mail addressed to the persons to whom notice is to be given at their last-known address. The Crown shall be entitled to all costs incurred in enforcing the lien. R.S. 1948, c. 128, s. 146.

Accounts and returns of timber.

147. (1) Every owner of granted lands and every holder of a timber lease or timber licence or forest management licence on lands whereon any timber or wood is cut in respect of which any stumpage, royalty, or tax is reserved or payable under this Act or any contract, and every person dealing in any timber or wood cut from any such lands, and every person operating a mill or other industry which cuts or uses timber or wood upon or in respect of which any stumpage, royalty, or tax is by this Act or any contract reserved or payable, shall keep correct books of account of all timber and wood cut for or received by him, and shall render monthly statements thereof within ten days after the end of each month to the District Forester, and, if demanded, shall within ten days

after the demand furnish a true copy of the tallyman's or scaler's daily work, duly sworn to, which shall contain all such particulars as the Minister may require, and shall within five days after every transfer of ownership of any boom of timber notify the District Forester of the transfer; and such books of account shall be open at all reasonable hours for the inspection of any officer of the Forest Service; and the owner, lessee, or licensee, and the person dealing in the timber or operating the mill or other industry as aforesaid, shall be jointly and severally liable to pay to the Minister monthly all such sums of money as are shown to be due. All moneys payable under this section may be recovered with costs by action at the suit of the Crown.

Payment of arrears.

(2) If, after inspection of such books of account, it is found that in respect of any previous statement there is still an amount of timber or wood not reported, and which is subject to stumpage, royalty, or tax, the owner, lessee, or licensee, or person dealing in the timber or operating the mill or other industry as aforesaid, who is in arrear for the stumpage, royalty, or tax, shall forthwith pay the arrears, and for the purpose of the collection and recovery of the same shall be subject to all the provisions of this Act for the collection and recovery of stumpage, royalty, or tax. R.S. 1948, c. 128, s. 147.

Power of railway companies and mill-owners to collect moneys due to Crown.

148. (1) It shall be lawful for any railway company, in respect of timber purchased by it, and for any person owning or operating any mill, in respect of timber purchased by him or brought to his mill, to collect the stumpage and timber royalty or tax due to the Crown, and to give receipts therefor. All moneys so received shall be accounted for and paid over to the Minister.

Crown lien for moneys collected.

(2) The Crown shall have a lien upon the mill and all timber thereat, and on any lands appurtenant thereto, for all stumpage, royalty, and tax collected under this section, and for all expenses of seizure, detention, or sale incurred in enforcing the lien; such lien to confer the same rights and to be registrable and enforceable in the same manner as the liens created by the provisions of this Act for the recovery of royalty, including an absolute, unconditional power to sell. All moneys payable under this section may also be recovered at the suit of the Crown in any Court of competent jurisdiction. R.S. 1948, c. 128, s. 148.

Power of officer making seizure to obtain assistance.

149. Every officer or agent making any seizure under this Act may call in any assistance necessary for securing and protecting the timber or thing seized. R.S. 1948, c. 128, s. 149.

Forfeiture and sale of seized timber.

150. (1) All timber, wood, or bark of any person seized under this Act shall be deemed to be forfeited to the Crown unless the amounts due for rental, stumpage, royalty, or tax, or stumpage and other charges payable under a forest management licence and all expenses of seizure and detention, are paid within ten days from the day of seizure, or unless the person from whom it was seized, or the owner thereof, within ten

days from the day of seizure, gives notice in writing to the person who made the seizure or to the District Forester or the Forest Service that he disputes the seizure; and failing such payment or notice, the Minister may order the sale of the timber, wood, or bark, or of so much thereof as may be sufficient to pay all rentals, stumpage, royalties, or taxes due, or stumpage and other charges payable under a forest management licence, and all expenses of seizure, detention, and sale.

Filing of petition disputing seizure and determination of validity of seizure.

(2) Any person who gives notice pursuant to subsection (1) that he disputes a seizure shall, within twenty days of the day of the seizure, serve upon the Deputy Minister of Forests and file with the Registrar of the County Court for the county within which the seizure was made a petition verified by affidavit and setting forth the facts and the reason for disputing the seizure, and the Judge of the County Court may thereupon try and determine such seizure in a summary way, and may order the delivery of the timber, wood, or bark to the alleged owner upon his complying with the following requirements:—

(*a*) He shall first pay into Court the full amount of the rental, stumpage, royalty, or tax claimed, together with a sum equal to the expenses up to that time incurred in respect of the seizure, and shall give sufficient and acceptable security for such amount to meet further costs and expenses as the Judge trying the case may consider requisite for that purpose:

(*b*) Such security shall be taken in the name of the Minister to Her Majesty's use, and shall be delivered up to and kept by the Minister:

(*c*) If the seizure of the timber, wood, or bark is approved by the Court or Judge trying the case, the amount paid into Court for the rental, stumpage, royalty, or tax claimed, and the said costs and expenses, shall forthwith be paid out to the Minister, and the alleged owner shall further pay to the Minister any moneys due for costs and expenses over and above the sum so paid into Court as aforesaid. If the alleged owner fails to make such payment, the Minister may forthwith proceed to recover the same under the said security.

Service of petition.

(3) The petition referred to in subsection (2) shall be sufficiently served if a true copy is left during office hours at the office of the Deputy Minister of Forests in the City of Victoria.

Procedure in event of no petition.

(4) Failing the filing and service of a petition as required by subsection (2) within the time limited thereby, the Minister may proceed in accordance with the provisions of subsection (1) as though no notice of dispute of the seizure had been given. R.S. 1948, c. 128, s. 150; 1951, c. 29, ss. 10–12.

Penalty for making false statements to evade payment of moneys due to Crown.

151. Every person availing himself of any false statement or oath to evade the payment of any rental, stumpage, royalty, or tax payable to the Crown with respect to timber, or endeavouring to convey out of the

Province any timber in respect of which rental, stumpage, royalty, or tax is payable, without first paying the rental, stumpage, royalty, or tax, shall forfeit the timber in respect of which payment of such moneys is attempted to be evaded, and shall, on summary conviction, be liable, in addition, to a penalty not exceeding five hundred dollars. R.S. 1948, c. 128, s. 151.

Offences and Penalties.

Offences against Act.

152. (1) Every person who violates any provision of this Act or of the regulations shall be guilty of an offence against this Act, whether otherwise so declared or not.

(2) Every person upon whom the performance of any act or the fulfilment of any duty is imposed by any provision of this Act or of the regulations, and whether by express words or necessary intendment, who refuses, neglects, or fails to perform such act or to fulfil such duty, as the case may be, shall be guilty of an offence against this Act, whether otherwise so declared or not.

(3) Every person who unlawfully destroys, defaces, or removes any notice posted by any officer of the Forest Service as a fire warning, or for any purpose of this Act, or purporting to give information respecting the ownership of any property or removes property under seizure without the written consent of an officer or employee of the Forest Service shall be guilty of an offence against this Act. R.S. 1948, c. 128, s. 152.

General penalties.

153. Every person guilty of an offence against this Act for which no specific penalty is otherwise provided by this Act shall be liable, on summary conviction, to a penalty of not less than twenty-five dollars and not more than three hundred dollars. Notwithstanding any law to the contrary, all penalties paid or received under this Act shall be paid to the Minister of Finance and form part of the Consolidated Revenue Fund. R.S. 1948, c. 128, s. 153.

Limitation of time for laying information.

154. Any information for or in respect of any violation of any provision of Part XI shall be laid before the expiration of six months from the time of the happening of such violation. Any information for or in respect of any violation of any of the other provisions of this Act shall be laid before the expiration of thirty months from the time of the happening of such violation. R.S. 1948, c. 128, s. 154.

Responsibility of employer for acts of servants.

155. Every offence against this Act arising out of the violation of any of the provisions of Part VIII, Part IX, Part X, or Part XI, other than the provisions of section 101, but not excepting the provisions of section 101 concerning the use of explosives, committed by the employee, servant, agent, or workman of any person holding or owning or occupying a timber leasehold or a timber limit, or carrying on any land-clearing, lumbering, industrial, engineering, or construction operation in or within one-half of a mile from any forest or woodland, shall be deemed to be the offence of the person so owning, holding, or occupying the timber lease-

hold or timber limit, or carrying on the land-clearing, lumbering, industrial, engineering, or construction operation; and he shall be liable to the penalties prescribed for the offence as a principal offender, notwithstanding the fact that the offence was committed by a person who is not proved to have committed it under or by the direction of the person so owning, holding, or occupying the timber leasehold or timber limit, or carrying on the land-clearing, lumbering, industrial, engineering, or construction operation; but nothing in this section shall relieve the person actually committing the offence from liability therefor. R.S. 1948, c. 128, s. 155; 1951, c. 29, s. 13.

Actions by Attorney-General.

Actions for cancellation of timber leases and licences.

156. (1) The Attorney-General, acting in the name of Her Majesty, may bring, maintain, and recover judgment in the Supreme Court in an action against any person who has obtained any timber leasehold or timber limit or Crown timber by fraud, or in contravention of, or by means of any breach of, or in derogation of any of the provisions of this Act.

Actions at instance of relator, by leave of Supreme Court.

(2) The Attorney-General may, by leave of a Judge of the Supreme Court, bring any action under the provisions of this section on behalf or at the instance of any relator, upon such terms as to security for costs by such relator and otherwise as to the Judge seems just.

Notice to defendant.

(3) Upon application made to a Judge for leave so to bring any such action, the Judge may direct notice to be given to the defendant, and may allow the defendant to show cause why such leave should not be granted.

Joinder of actions.

(4) If it appears to the Judge on any such application that the rights of several persons affecting or relating to the timber leasehold or timber limit or Crown timber or matter in respect of which the application is made may be tried and determined in one action, the Judge may direct notice of the application to be given to all such persons, and may allow or cite such persons to appear and show cause for or against the application, and may make such order in respect of the application, and if leave is given to bring an action as to the joinder of parties therein, as to the Judge seems just. R.S. 1948, c. 128, s. 156.

Jurisdiction of Court and scope of judgment.

157. (1) In any action brought under the provisions of the last preceding section, the Supreme Court may adjudge that any defendant has obtained any timber leasehold or timber limit or Crown timber in question in the action by fraud or in contravention of, or by means of any breach of, or in derogation of any of the provisions of this Act, and that the timber lease or timber licence be cancelled or assigned to the party equitably entitled thereto, if the rights of such party are before the Court in the action for determination, and may deliver the Crown timber to be dealt with in such manner as to the Court may seem just and equitable, having regard to the rights of the parties which are before the Court for determination in the action.

Right of appeal.

(2) Every adjudication made in an action so brought shall, as to all interlocutory orders made therein, and as to the final order, judgment, and decree pronounced therein, be subject to the same right of appeal as exists and is given in the case of civil actions brought in the Supreme Court, and the Rules of Court for the time being in force shall apply to and regulate all proceedings in every action brought under the last preceding section. R.S. 1948, c. 128, s. 157.

Miscellaneous.

Filing of assignments of timber leases and licences.

158. Every assignment of a timber lease or timber licence shall be filed in the Forest Service, and a fee of ten dollars shall be payable in respect of each lease or licence assigned. R.S. 1948, c. 128, s. 158; 1951, c. 29, s. 14.

Removal of trees from timber leasehold or timber limit by holder of subsequent lease for industrial purposes.

159. In the case of any lease granted by the Lieutenant-Governor in Council for industrial or quarrying purposes, or for the digging of clay or marl, of any lands held under timber lease or timber licence, if the holder of the lease (in this section referred to as the "lessee") cannot agree with the holder of the timber lease or timber licence affected by the lease (in this section referred to as the "timber-holder") as to the removal of the trees and timber within the limits of the lease, the lessee may proceed under this section to obtain the right to cut and remove all trees and timber within the limits of his lease, in which case the following provisions shall apply:—

(*a*) The lessee shall serve upon the timber-holder a notice of the lessee's desire to obtain the right to cut and remove all trees and timber within the limits of his lease:

(*b*) The notice shall contain a description of the lands covered by the lease, and an offer by the lessee to pay a sum named in the notice as compensation for the trees and timber within the limits of the lease:

(*c*) Prior to the service of the notice, the lessee shall deposit the sum named in the notice, in cash, with the Minister, in trust for the purposes set out in this section:

(*d*) The notice shall be accompanied by a receipt for the money so deposited, and by a certificate signed by the Deputy Minister stating that the sum so offered is in his opinion a fair compensation for the trees and timber within the limits of the lease:

(*e*) The notice may be served by mailing it by registered mail, postage prepaid, addressed to the timber-holder at his last-known address as shown by the records of the Forest Service:

(*f*) If, within twenty-one days after the service of the notice by the lessee, the timber-holder gives notice in writing to the lessee and to the Minister that the timber-holder agrees to accept the sum offered by the lessee as compensation under

this section, the Minister shall pay over the money so deposited with him to the timber-holder:

(*g*) Unless within twenty-one days after the service of the notice by the lessee the timber-holder gives notice in writing to the lessee that the timber-holder agrees to accept the sum offered by the lessee as compensation under this section, the question of the amount of compensation to be paid shall be decided by arbitration pursuant to the "Arbitration Act" as if the arbitration were pursuant to a submission to which the lessee and timber-holder were parties; in which case the money so deposited with the Minister shall be paid over by him in accordance with the terms of the award:

(*h*) If the sum awarded under the arbitration exceeds the sum offered by the lessee in his notice, the costs of the arbitration shall be borne by the lessee; otherwise the costs shall be borne by the timber-holder, and shall be deducted from the compensation:

(*i*) After deposit with the Minister of the sum offered and after service of the notice upon the timber-holder pursuant to this section, the lessee may cut and remove all trees and timber within the limits of his lease, and, subject only to the right of the timber-holder to institute arbitration proceedings under this section, and to recover the amount of compensation as fixed by agreement of the parties or by the arbitration, no action at the suit of the timber-holder either for damages or for injunction shall lie against the lessee by reason of the cutting and removal of the trees and timber within the limits of his lease. R.S. 1948, c. 128, s. 159.

General power to make regulations.

160. (1) The Lieutenant-Governor in Council may make such regulations not inconsistent with the spirit of this Act as he considers necessary or advisable for carrying out the purpose and provisions of this Act, including matters in respect of which no express or only partial or imperfect provision has been made.

Special power to make regulations.

(2) Without thereby limiting the generality of the provisions contained in subsection (1), it is declared that the power of the Lieutenant-Governor in Council to make regulations shall extend to the making of regulations:—

(*a*) Governing the standards of utilization, methods of logging, reservation of seed-trees, and disposal of debris in respect of any timber leasehold or timber limit or forest management licence:

(*b*) For ensuring the future forest crop of any timber leasehold or timber limit or forest management licence:

(*c*) Prescribing the terms and conditions on which resin licences and permits to tap trees for the purpose of obtaining resin may be issued and held under this Act:

(*d*) Requiring every person carrying on any land-clearing, lumbering, industrial, engineering, or construction operation to maintain at his own expense such fire-fighting equipment and such number of forest fire prevention officers for the purpose of preventing the occurrence or spread of fire from that operation as are prescribed in the regulations:

(*e*) Providing for the disposition of timber on Crown lands within the boundaries of forest reserves constituted under section 30, and for the leasing of such Crown lands for any use or occupancy consistent with the purposes for which forest reserves are established:

(*f*) For ensuring the renewal of the forest-crop by the leaving of trees for seed purposes on any lands unsuitable for agriculture as determined by the Minister, heretofor or hereafter granted, that are logged after the first day of January, 1938:

(*g*) [*Repealed.* 1957, c. 23, s. 4.]

(*h*) Providing (if no other provision is made by Statute) for the conservation and protection of trees, shrubs, and plants; and for the harvesting of the products thereof; and for the granting of permits or licences in respect of such harvesting; and for fixing licence fees and other charges to be paid by persons permitted to harvest such products:

(*i*) Providing for the sale or disposition by the Crown of Crown timber and Crown forest products from lands in a forest management licence area, and providing generally for the regulation of forest management licences:

(*j*) Governing marking, measuring, and grading of all timber, wood, and products of the forest, and prescribing rules, terms, and conditions with respect to scaling:

(*k*) Providing for the registration of mills and logging camps:

(*l*) Governing roads, bridges, and trails built or acquired under this Act, and generally for the administration of all roads, bridges, and trails built or acquired under this Act. R.S. 1948, c. 128, s. 160; 1950, c. 22, s. 24; 1953 (2nd Sess.), c. 9, s. 11; 1954, c. 11, s. 13; 1956, c. 20, s. 5.

161. [*Repealed.* 1953 (2nd Sess.), c. 9, s. 12.]

Power to build roads and trails.

162. (1) Notwithstanding anything in this Act or any other Act contained, it shall be lawful for the Minister in his absolute discretion to build roads and trails or to acquire and maintain roads and trails for any purpose of administration under the provisions of this Act.

Power to enter on lands.

(2) For the construction and maintenance of any road or trail under this section the Minister shall have the same powers in respect of entering

upon and taking possession of lands and otherwise as are vested in the Minister of Highways by Part I of the "Highway Act," and the powers shall be subject to the same conditions as to compensation and otherwise as are contained in said Part I.

Roads and trails under this section to be private.

(3) Roads and trails built or acquired under this section, or heretofore built or acquired by the Forest Service, shall be private roads and trails; and the Minister or any officer of the Forest Service acting in his behalf may, notwithstanding anything in this or any other Act contained, close such roads or trails to public travel or prohibit persons from travelling on or using any such road or trail without first obtaining a permit in writing from the Minister or an officer of the Forest Service acting on behalf of the Minister.

Permits subject to conditions.

(4) A permit issued pursuant to subsection (3) shall be subject to such conditions as are expressed therein.

Trespass an offence.

(5) Where the Minister has prohibited persons from travelling on or using a road or trail referred to in the preceding subsections, any person who travels upon or uses such road or trail without first obtaining a permit pursuant to subsection (3) shall be guilty of an offence against this Act.

Violation of conditions an offence.

(6) If any person who has obtained a permit pursuant to subsection (3) violates any condition expressed in the permit he shall be guilty of an offence against this Act. R.S. 1948, c. 128, s. 162; 1956, c. 20, s. 6.

Appeal from decision of Deputy or other officer.

163. Where this Act empowers the Deputy Minister or any officer of the Forest Service to make any decision or determination there shall be an appeal from the decision or determination to the Lieutenant-Governor in Council. R.S. 1948, c. 128, s. 163.

Forest Development Fund.

164. (1) There shall be established in the Treasury a fund in the sum of two million five hundred thousand dollars, to be known as the "Forest Development Fund."

(2) The Forest Development Fund shall be used by the Minister at his discretion for the building, or financing the building, of forest roads, road systems, and bridges designed for the better, more orderly, or more economical harvesting of timber and forest products in the interests of sustained-yield forest management, and for the maintenance and repair thereof.

(3) Subject to the provisions of subsection (4), the Minister may himself, through the agency of the Forest Service, build and maintain forest-development roads and bridges, or contract the building of such roads and bridges, or may enter into an agreement with any private operator to finance the building of forest-development roads and bridges on privately owned or controlled lands.

(4) It shall be an express condition of the building, maintenance, and repair, or financing, of any forest-development road or bridge that that part of the cost of the road or bridge paid from the Forest Development

Fund shall be repaid to the Forest Development Fund at a rate per unit of measurement of timber or other forest products transported over the road or bridge.

(4*a*) Where timber or other forest products are sold from Crown lands, the rate per unit for the purposes of subsection (4) may be included in the stumpage or the upset price fixed by the Minister as provided in clause (*c*) of subsection (2) of section 17, and the amount so included shall not be deemed revenue and shall be credited to the Forest Development Fund.

(5) The Crown shall have a lien for the amount payable to the Crown under this section, and for all expenses of seizure, detention, or sale incurred in enforcing the lien, upon all engines, logging plant, equipment, motor-vehicles, and material used or that have been used in the operation in connection with which the roads or bridges were used or financed, or belonging to the person carrying on the operation, upon all cut timber and wood cut upon the lands upon which the operation was carried on, and also upon all cut timber and wood belonging to that person, and also against the lands upon which the operation was in whole or in part carried on; and such lien shall constitute a charge to the like extent and shall confer the same rights, and shall be registrable and enforceable in the same manner, as the liens created by the provisions of this Act for the recovery of royalty, including an absolute unconditional power to sell.

(6) All moneys payable under this section may be recovered with costs by action at the suit of the Crown. R.S. 1948, c. 128, s. 164; 1950, c. 22, s. 25; 1951, c. 29, s. 15.

Establishment of log salvage districts.

165. (1) The Minister may establish log salvage districts, and he shall describe the boundaries of any log salvage district so established, and he shall assign to it an identification by way of a name or a number.

Notification of establishment.

(2) As soon as a log salvage district is established, the Minister shall cause notification to be published in the Gazette setting out the boundaries and identification of the district.

Licence for log-receiving station.

(3) The Minister may grant a licence to any person authorizing him to operate a log-receiving station in a log salvage district.

Licence fee.

(4) A person to whom a licence is granted under subsection (3) (hereinafter called a "licensee") shall pay to the Minister a licence fee to be fixed by the regulations, and he shall also pay an annual licence fee to be fixed by the regulations, the annual licence fee to be payable to the Minister on the anniversary date of the licence.

Duties of licensee.

(5) It shall be the duty of a licensee to provide facilities in his receiving station for receiving, storing, and sorting logs, and for disposing of logs according to ownership or otherwise, all as provided in regulations made pursuant to subsection (9), and he shall operate his station in accordance with these regulations.

Remuneration.

(6) A licensee shall pay remuneration in respect of all salvaged logs received by him in accordance with regulations made pursuant to subsection (9), and he shall be entitled to such service and other fees and charges as are prescribed by these regulations.

Disposal of salvaged logs.

(7) After the expiry of thirty days from the date of publication under subsection (2), if a log-receiving station is in operation in the log salvage district, no person shall dispose of a salvaged log in the district except to a licensee of a station operating in that district, and no person anywhere other than such a licensee shall purchase or accept delivery of a log salvaged in the district.

Delivery to owner.

(8) Subsection (7) shall not prevent delivery of a salvaged log to the owner thereof.

Power of Lieut.-Governor in Council to make regulations.

(9) The Lieutenant-Governor in Council may make regulations to carry out the purpose and intent of this section and, without limiting the generality thereof, may make regulations:—

(*a*) Governing the operations of a licensed log-receiving station:

(*b*) Fixing the licence fee and the annual licence fee to be paid by a licensee:

(*c*) Governing the hours during which the licensee shall operate; the facilities to be maintained for the receiving and sorting of logs; the disposal of logs according to ownership or otherwise; the remuneration to be paid by a licensee in respect of salvaged logs; and the service and other fees and charges to which a licensee is entitled:

(*d*) To provide for the issuing of permits for salvaging logs in a specified log salvage district and governing the operations of the permittee:

(*e*) To provide that no person shall have the right to salvage logs unless he is the holder of a permit:

(*f*) To fix the fee for a permit and to provide for the time for payment thereof.

Penalty for violation.

(10) A person who violates any of the provisions of this section shall be guilty of an offence against this Act and shall be liable, on summary conviction, to a penalty of not less than one hundred dollars and not more than one thousand dollars, and any logs in respect of which a conviction under this section is obtained shall be confiscated by the Crown and shall be disposed of by the Crown to a log-receiving station under such terms and conditions as the Minister may direct, or may be restored by the Crown to the owner thereof.

Definition of "log."

(11) For the purposes of this section, "log" means any log, bolt, pole, pile, boom-stick, swifter, or other unmanufactured wood product that has been lost or gone adrift from a boom or raft or barge or booming-ground, or that has otherwise escaped in any manner from the owner or other person having an interest in or entitled to the possession or control thereof.

Definition of "salvaged log."

(12) For the purposes of this section, "salvage log" or "salvaged log" means any log that has been taken into custody by any person who himself is not the owner of the log or otherwise lawfully entitled to the possession, control, and disposal thereof. 1949, c. 24, s. 9.

Agreement for forestation of alienated lands.

166. (1) The Chief Forester, with the approval of the Minister, may enter into an agreement with the owner or occupier of Crown-granted or otherwise alienated lands for the forestation of such lands on such terms and conditions as the Minister deems advisable.

Moneys for forestation.

(2) The Minister may spend moneys voted or otherwise provided for afforestation or reforestation for the purposes of forestation of lands subject to agreement as provided in subsection (1).

Repayment by owner or occupier.

(3) Subject to subsection (5), all moneys expended pursuant to subsection (2) shall be repaid to the Crown by the owner or occupier with whom an agreement is made, within the time limited in the agreement.

Crown lien.

(4) The Crown shall have a lien on lands forested pursuant to an agreement under subsection (1) for the costs of the forestation, and the lien shall constitute a charge to the like extent and shall confer the same rights and shall be enforceable in the same manner as a lien created by the provisions of this Act for the recovery of royalty, including an absolute, unconditional power to sell.

Supply of young trees.

(5) The Chief Forester, with the approval of the Minister, may supply young trees from Forest Service tree nurseries, at cost or less than cost, or free of cost, to an owner or occupier of Crown-granted or otherwise alienated lands for the purposes of forestation. 1950, c. 22, s. 26.

Afforestation of certain land.

167. (1) In this section, "land" means land that has been alienated by the Crown.

(2) The Minister may from time to time cause land west of the Cascade Mountains designated by him to be examined by the Forest Service for the purpose of ascertaining:—

(*a*) What area in the land is such that it will have its best economic use under forest crop:

(*b*) The extent to which such area is satisfactorily stocked with forest-growth.

(3) Where the Minister has ascertained that an area of land is such that it will have its best economic use under forest crop, he shall classify that area as forest land.

(4) The Minister shall further classify all forest land as satisfactorily stocked with forest-growth of commercially valuable species of trees or as unsatisfactorily stocked with forest-growth of commercially valuable species of trees, as the case may be.

(5) When classifications have been made under subsections (3) and (4), the Forest Service shall:—

(*a*) Give notification thereof by registered mail to all persons known by the Forest Service to have any interest in the land:

(*b*) Make an appropriate filing or registration in the proper Land Registry Office in accordance with regulations made by the Lieutenant-Governor in Council.

(6) The officials, employees, and agents of the Forest Service shall be entitled to free and uninterrupted access to land for the purpose of examination thereof.

(7) When land is classified as forest land that is unsatisfactorily stocked with forest-growth, the Minister by direction in writing may require the owner to stock the land in the manner, to the extent, and at the times specified in the direction.

(8) An owner to whom a direction is given under subsection (7) shall carry out the direction.

(9) If an owner to whom a direction is given under subsection (7) fails to carry out the direction or any part thereof, the Minister shall have power to enter on the lands and to plant or otherwise reforest them.

(10) The owner of lands planted or otherwise reforested under subsection (9) shall pay to the Crown the cost of the planting and reforesting, and such cost may be recovered with costs by action at the suit of the Crown.

(11) Where lands have been entered upon and afforested or reforested under this section, the indebtedness of the owner shall be the actual cost of the operation to the Crown, and the owner of the land shall repay the indebtedness at an annual rate to be fixed by the Minister, but such annual rate shall not, without the consent of the owner, exceed ten per centum of the cost of the operation. The Minister may direct that the indebtedness from time to time outstanding shall bear interest at a rate to be fixed by him.

(12) The Crown shall have a lien on lands planted or otherwise reforested under subsection (9) for the cost of the planting and reforesting, and the lien shall constitute a charge to the like extent and shall confer the same rights and shall be enforceable in the same manner as a lien created under this Act for the recovery of royalty, including absolute and unconditional power to sell. 1953 (2nd Sess.), c. 9, s. 13; 1955, c. 27, s. 13.

SCHEDULE.

TABLE OF GRADES OF TIMBER.

(Section 144.)

CEDAR AND CYPRESS.

No. 1.—Logs 16 feet and over in length, 20 inches and over in diameter, that will cut out 50 per centum or over of their scaled contents in clear inch lumber: Provided that in cases of split timber the foregoing diameter shall not apply as the minimum diameter for this grade.

No. 2.—Shingle grade. Logs not less than 16 inches in diameter and not less than 16 feet in length that are better than No. 3 grade, but do not grade No. 1.

No. 3.—Rough logs or tops suitable only for shiplap or dimension.

Culls.—Logs lower in grade than No. 3 shall be classed as culls.

FIR.

No. 1.—Logs suitable for flooring, reasonably straight, not less than 20 feet long, not less than 30 inches in diameter, clear, free from such defects as would impair the value for clear lumber.

No. 2.—Logs not less than 14 inches in diameter, not over 24 feet long or not less than 12 inches in diameter, and over 24 feet, sound, reasonably straight, free from rotten knots or bunch-knots, and the grain straight enough to ensure strength.

No. 3.—Logs having visible defects, such as bad crooks, bad knots, or other defects that would impair the value and lower the grade of lumber below merchantable.

Culls.—Logs lower in grade than No. 3 shall be classed as culls.

SPRUCE, PINE, AND COTTONWOOD.

No. 1.—Logs 12 feet and over in length, 30 inches in diameter and over up to 32 feet long, 24 inches if over 32 feet long, reasonably straight, clear, free from such defects as would impair the value of clear lumber.

No. 2.—Logs not less than 14 inches in diameter and not over 24 feet long, or not less than 12 inches in diameter and over 24 feet long, sound, reasonably straight, free from rotten knots or bunch-knots, and the grain straight enough to ensure strength.

No. 3.—Logs having visible defects, such as bad crooks, bad knots, or other defects that would lower the grade of lumber below merchantable.

Diameter measurements, wherever referred to in this Schedule, shall be taken at the small end of the log.

Culls.—Logs lower in grade than No. 3 shall be classed as culls.

HEMLOCK.

No. 1.—Logs 16 feet and over in length, 26 inches and over in diameter, that will cut out 50 per centum or over of their scaled contents in No. 2 clear, B, or better grade of lumber, and that are free from spiral grain or twist to the extent of a variation of not more than 1 inch per lineal foot for logs 35 inches in diameter and under, and not more than 1½ inches per lineal foot for logs 36 inches in diameter and over for the entire length of the log.

No. 2.—Logs not less than 20 inches in diameter and not less than 16 feet in length that will cut out 65 per centum or over of their scaled contents in merchantable or better grade of lumber or 20 per centum or better of a clear grade of lumber

with only slight spiral grain or twist in logs 20 inches to 25 inches in diameter, logs 26 inches to 35 inches in diameter, not over 1 inch per lineal foot, and logs 36 inches in diameter and over, not over 1½ inches per lineal foot for the entire length of the log.

No. 3.—Logs lower in grade than No. 2, suitable for the manufacture of pulp and lumber.

Logs containing less than 50 per centum of their gross scale in sound wood content shall be graded No. 3.

Culls.—Logs containing less than one-third of their gross scale in sound wood content shall be classed as culls.

R.S. 1948, c. 128, Sch.

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