PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES

HON. R. G. WILLISTON, *Minister* F. S. MCKINNON, *Deputy Minister of Forests*

REPORT

of the

FOREST SERVICE

YEAR ENDED DECEMBER 31

1966

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in right of the Province of British Columbia.
1967

VICTORIA, B.C., February, 1967.

To Major-General the Honourable GEORGE RANDOLPH PEARKES,
V.C., P.C., C.B., D.S.O., M.C., C.D.,
Lieutenant-Governor of British Columbia.

MAY IT PLEASE YOUR HONOUR:

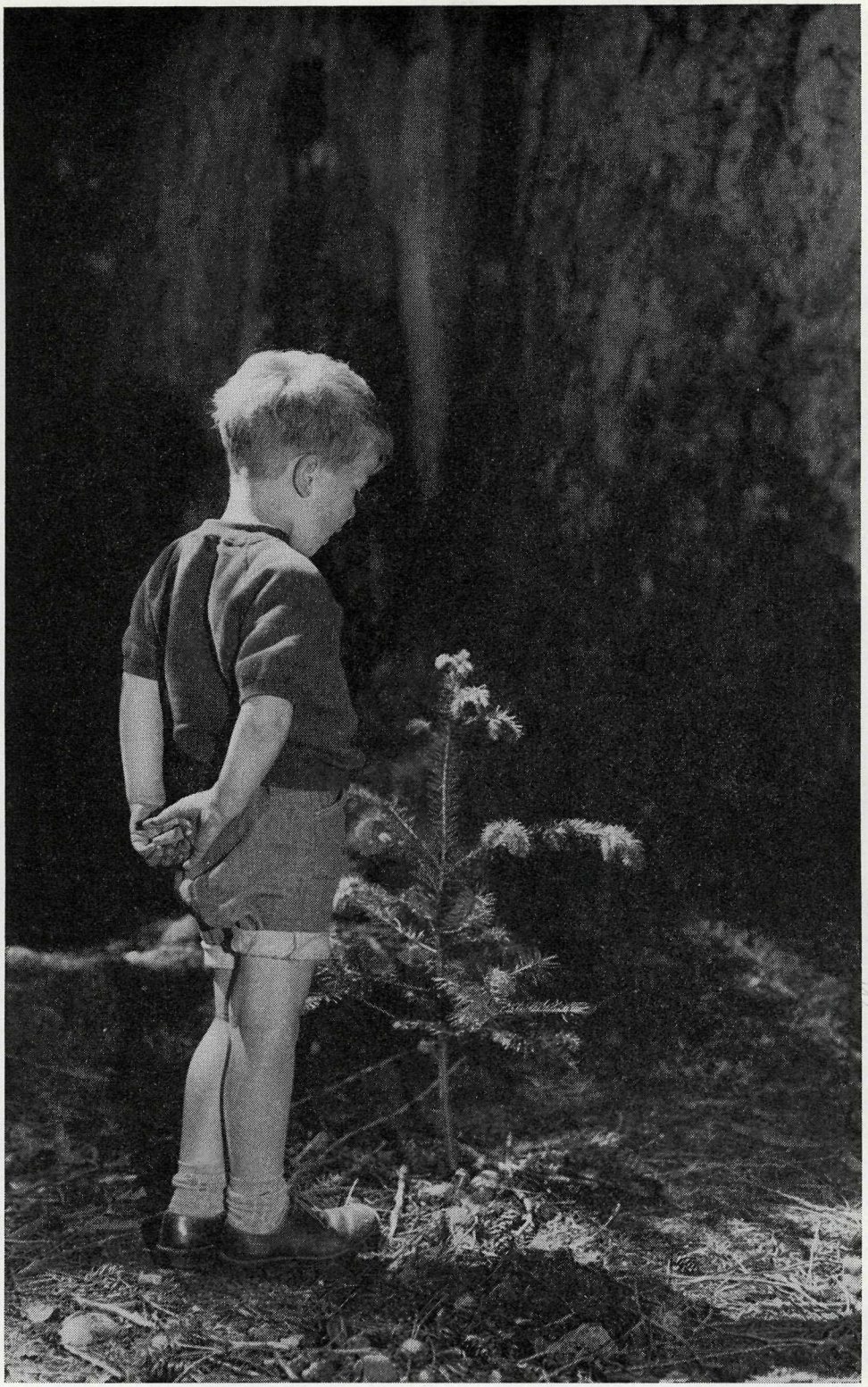
Herewith I beg respectfully to submit the Annual Report of the Forest Service of the Department of Lands, Forests, and Water Resources for the calendar year 1966.

R. G. WILLISTON,
Minister of Lands, Forests, and Water Resources.

The Honourable R. G. Williston,
Minister of Lands, Forests, and Water Resources,
Victoria, B.C.

SIR,—There is submitted herewith the Annual Report on activities of the Forest Service during the calendar year 1966.

F. S. McKINNON,
Deputy Minister of Forests.



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REPORT OF THE FOREST SERVICE, 1966

CHIEF FORESTER'S REPORT

Developments during 1966 were cause for general satisfaction with the progress of forest-management policy. Not only did diversification of the forest industry stand up under mixed market conditions to allow a new record to be set in forest-production value, but the total area of productive forest land under sustained yield had been increased to nearly 85,000,000 acres by the end of the year, and there was growing acceptance of the British Columbia Forest Service's year-old close-utilization policy.

Production value rose to $1,037,000,000, to set an all-time record for British Columbia despite a slump in the lumber market during the fourth quarter. A major factor in this over-all stability in the forest economy was the expansion of the pulp and paper industry.

While all three major divisions of the industry showed increases, the pulp, paper, and allied industries accounted for more than 55 per cent of the $49,000,000 rise over the previous record set in 1965. The figures were: Logging, $400,000,000, an increase of $10,000,000 over 1965; wood industries, $347,000,000, an increase of $12,000,000; and pulp, paper, and allied industries, $290,000,000, an increase of $27,000,000.

The timber scale for the year was 1,602,437,488 cubic feet, compared to 1,533,112,794 cubic feet in 1965, an increase of 4½ per cent, and the highest scale ever recorded in the history of the Province. Of the 1966 total, 68 per cent or 1,091,795,803 cubic feet came from forests operated under sustained-yield management.

The number of public sustained-yield units at the end of the year totalled 76, covering 75,536,237 acres of productive forest land, an increase of approximately 6½ million acres over 1965. At the same time there was a large increase in privately operated sustained-yield acreage which brought the over-all total for all types of sustained-yield units to nearly 85,000,000 productive acres. More than half of the increase under private sustained-yield operations was accounted for by the award of Tree-farm Licence No. 41, which contains over 473,000 productive acres.

Another large area brought into the sustained-yield programme was the Vancouver Public Sustained-yield Unit, covering the previously unregulated area in the Lower Fraser Valley, extending west to Howe Sound. The total area of this unit is 516,980 acres, with an annual commitment of 8,425,000 cubic feet of timber.

Fourteen additional public sustained-yield units were gazetted as pulp harvesting forests, bringing the total to 21 at the end of the year.

Forest revenue reached a new high of $50,348,464, an increase of 5.8 per cent over 1965. However, more than half this increase was due to the inclusion of some items formerly shown as " offsets " to expenditures. Timber-sale stumpage, the major source of revenue, rose by 1.4 per cent to $42,643,936, while timber-sale rentals and fees increased by a substantial 23.8 per cent.

A contributing factor in the record forest production for the year was the relatively quiet fire season enjoyed throughout the Province. The total of 1,967 fires recorded was well below the 10-year average of 2,117. Lightning was again the

principal cause, accounting for 19 per cent of the total. This was in sharp contrast to the 1965 fire season, when lightning caused 37 per cent of the fires, slightly higher than the 10-year average of 36 per cent.

Average fire-suppression cost to the Forest Service was $886 per cost fire, compared to $2,041 the previous year. The Forest Service accounted for $700,400 of the entire year's suppression cost of $1,028,100, which was less than half the 10-year average.

The 54,788 acres of forest cover burned were only 12 per cent of the 10-year average of 438,000 acres, while the damage to forest cover was $757,000, compared to the 10-year average of $3,252,637.

The hemlock needle miner outbreak in north-west Vancouver Island continues to be surveyed as a joint field project of the industry and the Canada Department of Forestry and Rural Development, with the British Columbia Forest Service continuing on a cost-sharing basis. Because of a marked decline in population levels through natural causes, chemical treatment was not undertaken.

The continuing balsam woolly aphid survey was expanded and extended in 1966. This is basically a joint Federal-Provincial programme in which the Federal Forestry Department concentrates on research aspects and technical guidance, while British Columbia conducts the operational survey functions.

There were no major changes during the year involving senior personnel, but, in the interest of economy and improved administration, the Working Plans Division at headquarters was absorbed by the Inventory and Management Divisions.

Intensive inventory of public sustained-yield units continued during the year, and, inclusive of 1965 field work, unit survey information now is available for 50,000,000 acres. Growth, loss-factor, and volume studies were continued, providing basic compilation information for inventory and allowable-cut calculations.

There were important gains in reforestation during the year. Forest Service crews made a record collection of 35,000 bushels of cones, which will provide a good foundation for the increasing planting programme. Nursery facilities were expanded in all locations, resulting in a net increase in productive area despite retirement of some inferior fields. Perhaps the most important development was the acquisition, near Prince George, of the Red Rock Nursery site, which eventually will be the largest producer in the Province.

Over 19,000,000 trees were planted by all agencies during the year, and planting of Crown lands was the most extensive since 1954.

The growth of the Forest Service work load placed increased demands on the Engineering Services Division for housing, mechanical, marine, and communications services.

A total of 39 miles of new all-weather road was completed, with an additional 12 miles finished except for gravel surface and drainage structures. Despite unfavourable construction weather in the summer, work was completed on the Gold River, Kispiox River, and Parsnip River projects. Road-location survey crews flagged 70.7 miles of line for construction of low-order protection roads and established 59.3 miles of centre line for future haul roads. Map location and design were completed for another 20.7 miles on the Chilcotin South Forest Road.

In the Portage Mountain Dam flood area, work was continued on a further 14,830 acres in the development of navigation channnels and landings.

A new programme of the Research Division deals with systems analysis with a view to computerizing various Forest Service procedures. The first task consisted of redesigning the system of official scale computing, calculation of charges, printing of accounts, and maintenance of statistical records in the Vancouver scaling office.

The Grazing Division reports the ranching industry enjoyed a reasonably successful year. Both range forage and hay production were generally good. The price of cattle rose appreciably during the year, but the benefit of this was offset to a considerable degree by higher costs in wages, machinery, and material. Although the number of cattle on Crown range was again higher, the rate of increase was considerably less than during the previous five years as the ranges are becoming full. Range sheep production continued to drop, and use of Crown range by sheep now is insignificant.

Several amendments to the *Forest Act* repealed a number of sections and set up new procedures for other matters.

The definition of timber was extended to include standing timber. The right of entry for members of the Forest Service was added to the jurisdiction of the Service. Designation of pulpwood harvesting areas now can be made only east of the Cascade Mountains. The provision respecting half rental rates was repealed, as were provisions respecting hand-loggers' licences and resin licences, together with the sections relating to them. The marking sections were revised, and one section was repealed. Licences now can be issued to purchasers and occupiers to cut timber on Crown land.

The Lieutenant-Governor in Council now can make regulations with respect to nursery stock and quarantine areas and with respect to the destruction of infected plant nursery stock. Provision was made for the prorating of royalty where more than one rate of royalty applies to timber. The section establishing the Forest Development Fund was repealed.

A regulation was passed under the *Grazing Act* providing for rates on natural range and improved pastures in the Peace River area.

FOREST INVENTORY DIVISION

Intensive inventry of public sustained-yield units continued during the year. Inclusive of 1965 field work, unit survey information is now available for 50,000,000 acres. A further 21,000,000 acres are covered by maintenance surveys.

Growth, loss-factor, and volume studies were continued, providing basic compilation information for inventory and for allowable cut calculations. Application of 70-mm. photography to sampling logging-residue volumes and detection of balsam woolly aphid information was studied. Regeneration plantability surveys were made in several large burns, and one regeneration survey was carried out on the Coast.

The continuous staff employed by the Division numbered 146, including 61 foresters, 16 technical personnel, 35 draughting and clerical staff, and 16 mechanical, warehouse, launch crew, and operations personnel. To supplement the professional and technical staff during the field season, 77 seasonal employees were engaged.

Financial assistance for the inventory programme was provided again under the Federal-Provincial Forestry Agreement.

FIELD PROGRAMME

Forest Classification and Sampling

Forest inventories to unit survey standard were completed for six public sustained-yield units in 1966. Some 13,280,000 acres were classified and sampled. The area involved in each unit is shown in Table B, which outlines the production of interim base maps for the year.

Classification crews of the Division completed 14,349 air calls and 6,677 ground examinations. Sampling crews established 1,817 multi-plot samples. In a co-operative arrangement with the Division, tree-farm licensee crews established an additional 863 samples. Although these samples may not apply to stands in areas of current field work, they can be used to supplement information on similar forest types in public sustained-yield units.

Growth Studies

In the 1966 growth and yield programme, 103 permanent plots were established in three Interior public sustained-yield units. These plots were distributed as follows: Nehalliston, 79; Salmon Arm, 14; and Niskonlith, 10. The types sampled were: 52 Douglas-fir, 29 larch, and 22 lodgepole pine. Conditions sampled were: Ages ranging from 21 to 120 years; sites from good to poor, with the majority in the medium and poor class; and elevations ranging from 1,600 to 4,100 feet.

During the year the Growth Section has produced 140 sets of local and zonal volume-over-age curves. These curves, or site-class yield tables in graphic form, supply mean annual increment at any age.

The calculation of allowable annual cuts for public sustained-yield units is now a function of the Growth Section. In 1966 allowable cuts were calculated for 27 approved units and six proposed units.

Over 30 inquiries and miscellaneous requests for growth information were processed during the year.

Loss-factor Studies

Loss-factor crews felled and measured 2,508 trees in one Coast and three Interior public sustained-yield units. In the Coastal unit, 976 tree measurements

BRITISH COLUMBIA FOREST SERVICE
INVENTORY DIVISION

MAINTENANCE SURVEYS
(1958-1960)

1.	Babine		12.	Naver	
2.	Big Valley		13.	Niskonlith	
3.	Bowron	**	14.	Nootka	
4.	Carp		15.	Purden	
5.	Cottonwood	***	16.	Quadra	
6.	Creston		17.	Quesnel Lake	
7.	**Crooked River**		18.	Robson	
*	8. Kingcome		19.	Spallumcheen	
9.	Lac la Hache		20.	**Stuart Lake**	
10.	Longworth		21.	Williams Lake	
11.	Morice		22.	Willow River	

Mapped area includes:- * Cape Scott
** Barkley, Kyuquot
*** Redonda, Sayward, Sechelt

AVAILABLE INFORMATION

(a) Maps--majority at 1/4 mile to 1 inch; balance at 1/2 mile to 1 inch.
(b) Statements--area statement for each map.
(c) Reports--for each P.S.Y.U., a maintenance survey report.

UNIT SURVEYS (1961 +)

COMPLETED (1961-65 fieldwork)

1.	Arrowhead	**	11.	Kingcome		21.	Salmon Arm
2.	Big Bar		12.	Narcosli		22.	Shuswap
3.	Blueberry		13.	Nechako	****	23.	Skeena
4.	Burns Lake		14.	Nehalistan		24.	Smithers
5.	Cranbrook		15.	Nicola		25.	Soo
6.	Dean		16.	Ootsa		26.	Special Sale Area
*	7. Dewdney		17.	Okanagan		27.	Stum (part)
8.	Fernie		18.	Parsnip		28.	Upper Kootenay
9.	Hecate	***	19.	Quadra		29.	Westlake
10.	Kettle		20.	Salmo		30.	Windermere
						31.	Yalakom

Mapped area includes:- *Chilliwack, Harrison, Yale
**Seymour
***Texada
****Kitwanga, Terrace

AVAILABLE INFORMATION

(a) Maps--all at 1/4 mile to 1 inch except Dean Block 1, Hecate.
(b) Statements--area and volume statement for each map.
(c) Reports--for each P.S.Y.U. a unit survey report.

IN PROGRESS (1966 fieldwork)

32.	Chilko	***	36.	Skeena	
*	33. Kingcome		37.	Smithers (extension)	
+	34. Monkman		38.	Stum (extension)	
**	35. Quadra				

Mapped area includes:- *Klinaklini
**Redonda
***Hazelton, Skeena extension

BRITISH COLUMBIA
DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES

HONOURABLE R. G. WILLISTON, MINISTER

Scale
40 30 20 10 0 40 80 120 160 MILES

PROGRESS OF FOREST-COVER MAPPING
BASED ON MAINTENANCE SURVEYS AND UNIT SURVEYS
OF AREAS UNDER PUBLIC MANAGEMENT
AS AT DECEMBER 31, 1966

were made on 40 sample plots located in the south-western half of the Dewdney Public Sustained-yield Unit, while the Interior units produced 564 trees from 12 sample plots in the Raft Public Sustained-yield Unit, 426 trees from eight sample plots in the Hazelton Public Sustained-yield Unit, and 542 trees from the 10 sample plots in the Bell-Irving Public Sustained-yield Unit.

Six of the samples on the Coast were double sampled in connection with the study of 70-mm. helicopter photography. Experiments were carried out with black-and-white, coloured, and infra-red films in an attempt to arrive at a decadence classification similar to the residual-suspect classification used for standing samples.

The samples in the Raft Public Sustained-yield Unit are the start of a field study into cull factors for the Hemlock-Cedar Wet Belt.

Through continuing co-operative work by tree-farm licensees, measurements were submitted for 762 trees from 12 samples.

Butt-taper Tables for Coastal Tree Species and Zonal Net Volume (Loss) Factors were published in Forest Survey Notes 7 and 8.

Special Field Projects

Plantability studies were carried out in several large burns in the Prince George and Prince Rupert Forest Districts. In the Prince George District's "Grove" and "Straw" burns, 8,769 and 8,964 acres respectively were examined. In the Prince Rupert District, 5,600, 5,171, 803, and 7,524 acres were examined in the "John," "Van," "Pope" and "Tintagel" burns respectively.

A regeneration study to determine the restocking condition of cut-over areas in Timber Licences 1136 and 1137 of the Vancouver Forest District showed the entire area to be restocked satisfactorily. A total of 1,113 acres was examined.

Studies in the use of 70-mm. fixed-base photography for forest sampling continued. Six hemlock-balsam-yellow cedar samples were photographed with three different films—Tri-X panchromatic, Ektachrome ER colour reversal, and Ektachrome infra-red colour reversal films. Individual trees were studied on each film to determine the possibility of photo detection of decay in the trees. Results are encouraging and warrant further study.

Co-operative studies are being carried out jointly with the Management and Research Divisions in the development of ground and 70-mm. fixed-base photo sampling methods for logging-residue volumes. Preliminary results are encouraging.

A co-operative study is being carried out with the Federal Department of Forestry in the use of this type of photography on colour and infra-red colour films for the detection of balsam woolly aphid infestation. No results are available at the present time.

Two Linhof aero-electric 70-mm. cameras were tested. Results were excellent, but some additions are required to make them completely suitable for this work.

Operations

Prefabricated base camps were established for five forest inventory projects in the Interior and one on the Coast. The launch "Forest Surveyor," in conjunction with barge "LC 6," was used as a floating base for field crews and helicopter operations for much of the Redonda portion of the Quadra Public Sustained-yield Unit. All project headquarters, launches, sub-bases, and helicopters were provided with effective communication through the Division's radio network. Division mechanics continued regular inspections and maintenance of mechanical units assigned to field

projects. Owing to the concentration of vehicles at three projects in the Chilcotin and the adverse operating conditions encountered, a mechanic was assigned to the area full time to ensure adequate servicing.

River boats were used extensively on the Monkman project, an area of very limited access, to traverse the lengthy waterways of the McGregor River and lower Herrick Creek. Inflatable boats proved useful on some tributaries of the McGregor, and on the upper Dean and Klinaklini Rivers on the Chilko project. Several outboard cabin cruisers operated on the waters about the Redonda project and on Chilko and Taseko Lakes in the Chilcotin.

Helicopters again enabled forest classifiers to tape-record information during low-level flights and to make ground checks in less accessible forest stands. Helicopters also transported sampling crews into remote areas. Three machines were obtained under contract—two Bell 47 G-5's for the more mountainous terrain, and a Bell 47 G-2 for areas of moderate topography in the Chilko projects. Over 1,100 hours were flown on these contracts, and an additional 70 hours expended on local charters or district machines, as required. Some 800 hours were utilized on forest classification—240 on sampling, and the balance for ferry, training, and supervisory inspections. Frequent unseasonable rainstorms and persistent cloud conditions in the mountainous areas of the Hazelton project hampered flying operations considerably.

Wherever feasible, float-equipped aircraft transported crews to remote lakes, principally in the Chilcotin and Hazelton projects. Seventy-five hours were flown on this duty.

Planning liaison was continued with the Air Division of the Lands Service to provide photography for future forest inventory projects. Complete photo coverage at a scale of 20 chains to 1 inch was obtained for 1967 projects, as follows: Queen Charlotte, Purden, Bowron, Edgewood, Granby, Nakusp, Slocan, and North Thompson Public Sustained-yield Units, the Sayward portion of the Quadra Public Sustained-yield Unit, and the Kamloops Region Special Sale Area. Additional coverage included parts of the Rivers Inlet Public Sustained-yield Unit and the Sechelt area of the Quadra Public Sustained-yield Unit, which are scheduled for field work in 1968. This photography covered an area of 15,925 square miles. On special request, as an aid to forest classification, the Air Division flew 364 line miles of 40-chains-to-1-inch photography over areas of recent forest activity near Hazelton.

OFFICE PROGRAMME

Forest Mapping

Table A outlines the final forest-cover mapping, planimetry, and volume estimates completed during 1966, based on the 1965 field projects. Unit survey reports, maps, and map-area and map-volume statements have been issued on all but the partial inventories of the Chilko and Skeena Public Sustained-yield Units. On completion, in 1967, of compilation and mapping for the Chilko and Skeena, unit survey reports will be issued for the entire units.

Table A.—Production of Final Forest-cover Maps for 1965 Projects

Public Sustained-yield Unit	Number of Maps	Scale (Chains to Inch)	Forest and Non-forest Area in Acres			Volume in M Cu. Ft. on Mature Crown Area
			Crown	Alienated	Total	
Chilko (part)	61	20	1,125,247	10,668	1,135,915	(1)
Hecate (north half)	43	40	2,039,978	131,755	2,171,733	4,855,055[2]
Narcosli (extension)	47	20	904,275	12,185	916,460	975,162[3]
Nehalliston	23	20	395,196	20,031	415,227	370,372[3]
Ootsa	132	20	2,658,653	93,360	2,752,013	4,220,130[3]
Parsnip	77	20	1,475,932	3,396	1,479,328	2,297,293[3]
Skeena (part)	12	20, 40	322,252	12,981	335,233	(1)
Upper Kootenay	66	20	1,361,177	52,411	1,413,588	1,281,143[3]
Yalakom	86	20	1,838,356	79,682	1,918,038	1,743,157[3]
Totals	547	----	12,121,066	416,469	12,537,535	----------

[1] Not yet calculated.
[2] Volumes, 9.1″+d.b.h. close-utilization standard less decay.
[3] Volumes, 7.1″+d.b.h. close-utilization standard less decay.

Table B indicates the extent of base maps prepared for the 1966 field projects. These areas were base-mapped from 20-chains-to-1-inch air photos flown in 1965. Forest-cover mapping of these projects is now in progress, and maps and reports should be available by the fall of 1967.

Table B.—Production of Interim Base Maps for the 1966 Field Work

Public Sustained-yield Unit	Number of Maps	Scale (Chains to Inch)	Total Estimated Acreage
Chilko (part)	198	20	5,249,539
Kingcome (Klinaklini)	38	20	649,287
Monkman	69	20	1,359,548
Quadra (Redonda-Southgate)	121	20	1,851,184
Skeena (Hazelton)	93	20	1,825,140
Smithers (extension)	23	20	267,607
Stum (extension)	103	20	2,077,421
Totals	645	----	13,279,726

Area and Volume Summaries and Distribution of Information

In addition to the planimetry of 12,537,000 acres required for unit survey reports, 62 inventory summaries were completed for Forest Service management planning purposes and 120 were completed for the Lands Service which involved applications to lease or to purchase. These requests accounted for a total area of 95,000,000 acres and a net timber volume of 54,000,000,000 cubic feet.

The sale and distribution of maps and other information continued at a high level. The material included 19,700 maps, 220 survey reports, 660 volume-over-age curves, and over 2,000 sample volume statements.

All of the 2,680 Provincial samples established during the 1966 field season have been compiled on the basis of the 1962 standard cubic foot volume tables. The Provincial sample total, 1953 to 1966, inclusive, after deletion of some reject samples, stands at 31,034, exclusive of permanent growth plots. Prints of any compiled sample statement in cubic feet per acre are available at a nominal charge.

Although there have been no changes in equipment during 1966, centralization and improved control in the Data Processing Division have resulted in better service to Forest Inventory. All samples established since 1953 are now recorded on magnetic tape, thus allowing disposal of several million punched cards.

Development Planning

Since amalgamation of the two divisions of Working Plans and Forest Surveys and Inventory on May 3rd, formal approval has been given for one public sustained-yield unit, one pulpwood harvesting area, and eight pulp harvesting forests. Concurrently, development planning study has progressed on 13 proposed public sustained-yield units and on one special sale area in the unregulated area of Northern British Columbia.

In more detail, Ministerial approval was given for establishing the Vancouver Public Sustained-yield Unit from what formerly was the Vancouver Region. Pulpwood Harvesting Area No. 5 agreement was signed, formally granting to Cariboo Pulp and Paper Company Limited an option to purchase pulpwood from the Cottonwood, Narcosli, and Quesnel Lake Public Sustained-yield Units.

The 13 proposed public sustained-yield units and the special sale area which cover the remaining unregulated northern part of the Province are Alsek, Boundary, Dease, Fontas, Fort Nelson, Kechika, Klappan, Kotcho, Liard, Sikanni, Stikine, Taku, and Wapiti, and the Dawson Creek Special Sale Area.

BRITISH COLUMBIA

DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES

HONOURABLE R. G. WILLISTON, MINISTER

Scale

40 30 20 10 0 40 80 120 160 MILES

STATUS OF SUSTAINED-YIELD FORESTRY PROGRAMME AS AT DECEMBER 31, 1966

PUBLIC SUSTAINED YIELD UNITS (P.S.Y.U.'s)

P.S.Y.U.'s — Inside Pulpwood Harvesting Areas

P.H.A.		
NO. 1		
9. Big Valley	40. Naver	67. Stuart Lake
15. Carp	41. Nechako	71. Westlake
20. Crooked River	49. Parsnip	73. Willow River
NO. 2		
1. Adams	42. Nehalliston	55. Raft
5. Barriere	43. Nicola	59. Salmon Arm
6. Barton Hill	44. Niskonlith	60. Shuswap
11. Botanie	46. North Thompson	66. Spallumcheen
23. Eagle		
NO. 3		
12. Bowron	36. Monkman	57. Robson
34. Longworth	51. Purden	
NO. 4		
4. Babine	37. Morice	64. Smithers
13. Burns Lake		
NO. 5		
17. Cottonwood	39. Narcosli	54. Quesnel Lake
NO. 6		
8. Big Bar	68. Stum	75. Yalakom
32. Lac la Hache	72. Williams Lake	
NO. 7		
50. Peace	69. Takla	

P.S.Y.U.'s — Outside Pulpwood Harvesting Areas

2. Arrowhead	26. Finlay	52. Quadra
3. Ashnola	27. Granby	53. Queen Charlotte
7. Bell-Irving	28. Hecate	56. Rivers Inlet
10. Blueberry	29. Kettle	58. Salmo
14. Canoe	30. Kinbasket	61. Similkameen
16. Chilko	31. Kingcome	62. Skeena
18. Cranbrook	33. Lardeau	63. Slocan
19. Creston	35. Moberly	65. Soo
21. Dean	38. Nakusp	70. Upper Kootenay
22. Dewdney	45. Nootka	76. Vancouver
24. Edgewood	47. Okanagan	74. Windermere
25. Fernie	48. Ootsa	

OTHER PUBLIC UNITS

S.S.A. - Special Sale Area (O-I-C 2811/62)

K.R. - Kamloops Region Special Sale Area (O-I-C 1826/66)

TREE FARM LICENCES

AWARDED

T. F. L. No.	
1. Celgar Limited	21. MacMillan, Bloedel Industries Ltd.
2. Elk Falls Company Limited	22. British Columbia Forest Products Limited
3. Pacific Logging Company Limited	23. Celgar Limited
5. Weldwood of Canada Limited	24. Rayonier Canada (B. C.) Limited
6. Rayonier Canada (B. C.) Limited	25. Rayonier Canada (B. C.) Limited
7. MacMillan, Bloedel Limited	26. The Corporation of the District of Mission
8. Boundary Sawmills Ltd.	27. British Columbia Forest Products Limited
9. S. M. Simpson Limited	28. Shelley Development Limited
10. Timberland Development Co. Limited	29. Eagle Lake Sawmills Limited
11. Olinger Lumber Company Ltd.	30. Sinclair Spruce Lumber Company Ltd.
12. Bendickson Logging Ltd.	32. Vernon Box & Pine Lumber Co. Ltd.
13. Galloway Lumber Company Ltd.	33. Shuswap Timbers Ltd.
14. Crestbrook Timber Ltd.	35. B. C. Interior Sawmills Ltd.
15. Oliver Sawmills Limited	36. F. &R. Logging Co. Ltd.
16. Pondosa Pine Lumber Company, Ltd.	37. Canadian Forest Products Ltd.
17. Evans Products Company Limited	38. Empire Mills Limited
18. Clearwater Timber Products Ltd.	39. MacMillan, Bloedel Limited
19. Tahsis Company, Ltd.	40. Skeena Kraft Limited
20. MacMillan, Bloedel Industries Ltd.	41. Eurocan Pulp and Paper Co. Ltd.

FOREST RESEARCH DIVISION

A detailed report on the research programme for 1966 will appear in the annual Forest Research Review, compiled at the end of the fiscal year.

COWICHAN LAKE EXPERIMENT STATION

For the second year in a row, heavy snowfall resulted in considerable damage to the clone banks. Many of the 1965 grafts were torn off the rootstock by the weight of snow. Overgrowth of the older grafted stock continues to be a problem, but a promising treatment has been developed, consisting of removing strips of bark from each side of the union. Callus growth follows, resulting in a better union of rootstock and scion. An unusually late frost on May 26th over most of Vancouver Island severely damaged the strobili of a number of controlled crosses at Gordon River.

The first series of intraspecific crosses of Douglas-fir was planted in four areas on Vancouver Island. The number of 1+0 seedlings in the nursery increased from 8,500 to 20,000. The majority of these seedlings are from intraspecific crosses and inbred lines, the remainder being from various provenances and from rootstock of known parentage. This was the first year in which some of the older clones of selected plus trees produced both male and female strobili in sufficient numbers for pollinations to be made.

No cruising for plus trees was carried out in 1966, as, for the time being, a sufficient number has been selected throughout the range of Douglas-fir on the Coast. Work was concentrated on the propagation of trees already registered, in the Experiment Station clone bank. The register contains 615 individual trees, 445 of which are selected plus trees. The remaining 170 are specimen trees retained for research purposes and include a number of veterans and trees from outside British Columbia. Some 536 clones are now represented in Forest Service clone banks.

The research nursery and clone bank areas have been enlarged. The transplant area has been doubled in size, and all stumps have been piled and burned on the 40-acre block cleared last year. The nursery and clone bank are now linked by a quarter-mile of new road.

FIELD PROGRAMME

Seedling Seed Orchards

The past year was notable for an exceptionally good seed crop. Advantage was taken of the Coastal Douglas-fir cone crop to collect wind-pollinated seed from the plus trees located at higher elevations on Vancouver Island and the Mainland. Pacific Logging Company Limited, Western Forest Industries Limited, and Tahsis Company Limited co-operated. The seed will be used to establish seedling orchards. Seeds from 36 trees on Vancouver Island and 54 trees on the Mainland were collected.

Douglas-fir Provenance

In 1962 a Douglas-fir provenance study was planned but has had to be postponed until this year's seed crop made implementation possible. A total of 90 collections was obtained between southern Oregon and Kemano in the north, representing a comprehensive range of climate.

Planting-stock Tests

Second-year survival exceeds 86 per cent in two experiments testing Douglas-fir planting stock. Valley-bottom sites have not yet " brushed in " sufficiently to affect plantations, and while the larger stocks are growing significantly faster, there

are no differences in survival between large and small grades, between seedlings and transplants, or between mattock and shovel planting. These early results emphasize the overriding importance of care in handling and planting the stock.

In Forest Service test plots of Douglas-fir seedlings in 2½-inch plastic bullets, survival fell during the second year from 16.6 to 9.3 per cent.

Nursery Fertility Studies

At Koksilah nursery, fertilizer response of Douglas-fir seedlings to pre-sowing application of up to 60 pounds per acre of phosphorus (as superphosphate) was confirmed by increased growth of 2+0 stock. A factorial experiment in which nitrogen was applied to Douglas-fir seed-beds at the rate of 40 and 80 pounds per acre in April or June suggested that time of application was as important as the 40-pound-per-acre difference in application rate. Several different sources of nitrogen failed to cause any difference in 1+0 Douglas-fir seedling size but did affect seedling density. The optimum levels of nitrogen in the tissues of Douglas-fir and Sitka spruce seedlings of different ages have been determined, using sand culture in the greenhouse.

Soil Classification

In the Sayward Forest, 100 square miles have been studied in an investigation of the soil and its relationship to the growth of Douglas-fir plantations.

Cleaning and Thinning

In the same area, a small experimental cleaning programme, commenced in 1959, was continued, and sample plots were thinned for the third time. The scope of the experiment was enlarged to include 10 more thinning prescriptions. The present levels of growing stock range from 400 to 1,200 trees per acre.

Prince Rupert Forest District

The research headquarters was changed from Prince Rupert to Smithers.

Two blocks of 40 white and Engelmann spruce provenances were planted—one near Quick and the second near Verdun Mountain—as part of a Province-wide spruce provenance study.

A start was made on implementing proposals put forward in a problem analysis published as Research Note 40. " Silvics and Silviculture of Lodgepole Pine in the North-Central Interior of British Columbia." This included direct seeding studies at Taltapin Lake and Verdun Mountain, also establishment of traps to study seed dissemination of pine at the latter site. Weather stations were set up at both areas.

Further study has been given to the classification of lodgepole pine site types in order to provide information for the Burns Lake-Smithers region. Plots were established to provide vegetation and mensurational data.

Prince George Forest District

A long-term study on the influence of time on the effectiveness of scarified seed-beds will be completed with the publication of Research Note 42, " The Durability of Scarified Seedbeds for Spruce Regeneration."

The main effort has been to complete a problem analysis of the spruce and pine forest types of the region. This entailed a comprehensive field reconnaissance, having due regard to the pronounced changes in forest practice incurred by the establishment of four large pulp companies in the region.

A replication of the spruce provenance study was established on the Aleza Lake Forest Reserve.

Exploratory direct-seeding studies continue to provide valuable information. The latest comprised the seeding of lodgepole pine on snow after a controlled slash burn.

Kamloops Forest District

The second year of direct seeding mixed species in the Wet Belt produced much better results than the first year's seeding. Significant differences in germination and survival were obtained for seed treatment and seed-bed preparation. The favourable results may be attributed more to climate than to any other factor. A substantial amount of delayed germination was obtained from the first year's white pine seeding.

DATA PROCESSING AND STATISTICAL ANALYSIS

A major effort consisted of redesigning the system of official scale computing, calculation of charges, printing of accounts, and maintenance of statistical records in the Vancouver scaling office. The change was necessary because of an administrative decision to utilize an I.B.M. 1440 data-processing system to do this work instead of utilizing Friden desk calculators and I.B.M. unit record equipment. Within the over-all systems design, 45 programmes were designed and written, 15 disk files were designed and organized, the staff of the scaling office were retrained in their duties, and the flow of files in the Vancouver office was altered to accommodate the new system.

In May, 1966, systems design and retraining had progressed to the stage that the computing of accounts could be changed from the one system to the other, and this was done. Since the change, work has been concentrated on preparing programmes for producing statistics for annual reports. In addition, changes have been made to improve the efficiency of the system. It can now be said that the I.B.M. 1440 data-processing system is fully operational. However, changes are still being made to increase its efficiency.

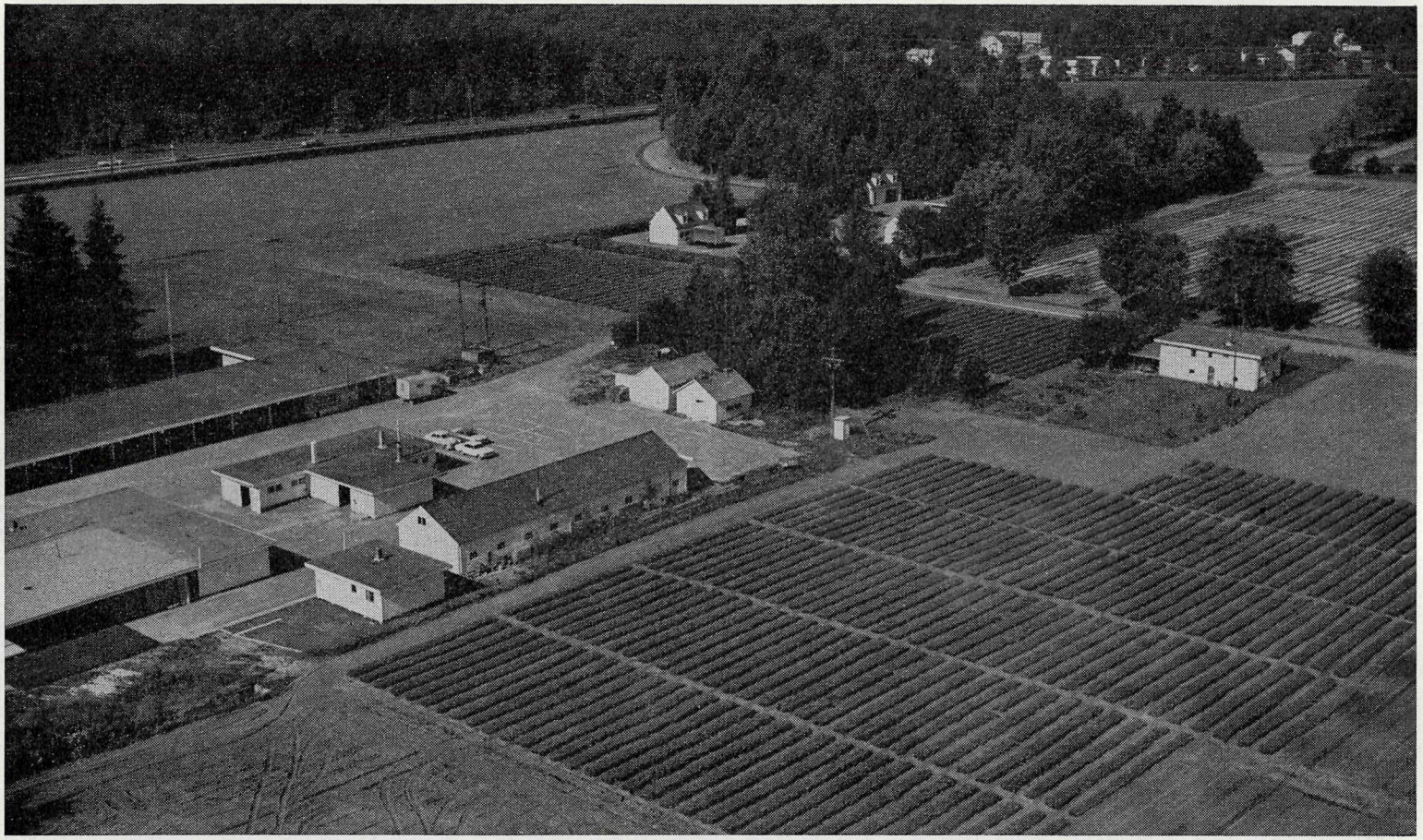
All research data are now processed through the computer facilities of the Department of Industrial Development, Trade, and Commerce. Several temporary and five general programmes were written. The three most frequently used programmes were the multiple regression analysis, analysis of variance, and simple descriptive statistics.

Implementation of management policies related to sale of timber, which are conducive to closer utilization, has stimulated a need for reliable methods of estimating residue volumes following logging. Conventional sample plots prove to be unduly expensive in this low-value material. Alternative methods are being investigated in co-operation with the Federal Forest Products Laboratory and divisions of the Forest Service.

CANADA LAND INVENTORY

The Research Division is actively associated with several Provincial and Federal organizations in the British Columbia programme of the Canada Land Inventory. During the past year a survey and report on the special sale area, Prince George, has been completed and a survey conducted in the southern part of the Rocky Mountain Trench and the Princeton-Tulameen map-sheets. Climatic studies have been conducted in these areas. Many temporary or seasonal weather stations have been established to supplement official Department of Transport stations in areas of high elevation and remote access.

The objective of the programme is to provide basic data for better land-use decisions. The Forest Service is concerned, since a sustained-yield policy can only be effective if there is a stable land resource dedicated to this purpose.



Major expansion of the Forest Service nursery programme is under way with a production objective of 75,000,000 seedlings a year. Shown here is Green Timbers, North Surrey, the oldest nursery in the Service and one of the four major nurseries in the programme.

REFORESTATION DIVISION

FOREST NURSERIES

Although weather conditions are one of the major factors with which the nurseryman has to be concerned, there are ways in which he can, to a certain extent, control the effect of the weather on his crop. By the proper use of irrigation and drainage, he can overcome the effect of drought, heavy precipitation, and frost. In recent years more attention has been given to these factors and good results have been achieved.

A favourable growing season was reported from all nurseries in 1966, and this has been reflected in the quality of the planting stock produced. At the Coast nurseries heavy snowfall in midwinter provided cover for seedlings during the coldest part of the year, and losses from frost heaving were minimal. However, late spring frosts were prevalent, and some damage was reported. The spring and early summer months were generally cloudy and cool with slightly more than normal rainfall. These conditions made heavy watering of nursery stock unnecessary. Fall frosts were not severe but did occur early enough so that irrigation was needed to protect the stock. Some damage was sustained where water was not applied soon enough.

Major developments took place in both Coast and Interior nursery programmes during the year. Development work was carried out on the new sites which were acquired, while expansion was carried out at all other nurseries. Preliminary tests indicate that satisfactory germination and growth of all species at Rayleigh can be expected, and this prompted an increase in production at this nursery in 1966. In the Chilliwack Valley, a new nursery development was undertaken toward the consolidation of present facilities, and, by the end of the year, clearing by inmates was almost complete on sufficient area for the sowing of 600 beds next spring. The first stock was produced at Alouette Nursery, where Alouette Unit crews completed development of the initial area and are now preparing an additional 8 acres. At the nearby Haney Nursery, development of an additional 2 acres is under way. The entire area at the Snowdon transplant nursery near Campbell River is now ready for use in the coming season, and a start was made toward the building of a dam to improve the water supply. In addition to the initial development of these nursery areas, the operation of them and the production of planting stock are carried out by inmate crews.

Perhaps the most important development of the year was the final acquisition of the Red Rock Nursery site near Prince George. As soon as snow left the area, sufficient land was cleared and prepared for 222 seed-beds and 700,000 transplants. A further 516 seed-beds were sown in the fall, and more land has been prepared for next year. The only serious problem encountered at the new nursery was an attack of white grub (*Phyllophaga*), which did considerable damage to all classes of stock. Measures were taken to eliminate this pest from future crops. Germination and growth in Douglas-fir and lodgepole pine were good, but spruce was initially much slower in developing. It did improve later in the season so that seedlings of a fair size were produced. It was expected that in a light well-drained soil such as that at Red Rock, some nutrient deficiencies would develop. In August a chlorotic condition did develop in the transplanted stock, but a foliar application of nitrogen fertilizer appeared to correct this condition almost immediately. All planting stock was lifted from Aleza Lake Nursery, and with the removal of usable material and equipment, final closure was almost complete.

In the major Coast nurseries, a considerable increase in usable area was attained. At Koksilah, 3 acres of productive area were added by hauling topsoil and grading, and the 10 acres leased from the Koksilah Indian Band was levelled, cultivated, and fenced in preparation for seed-beds next spring. Hauling of topsoil and peat soil has likewise increased the Duncan Nursery area by 1 acre, and at Green Timbers a new area was cleared for an additional 100 seed-beds.

In all, some 35 acres of new land were prepared for nursery production, but this was partly offset by eliminating certain fields where productive capacity has proven inferior.

A record number of 5,989 seed-beds was sown this past season (fall, 1965, to spring, 1966) with a planned production of over 27,000,000 seedlings. Germination of the spring-sown Douglas-fir was fairly good, but, in some cases, spruce and hemlock were below expectations. Fall-sown beds in the Coast nurseries were generally poor, whereas, in the Interior, germination of fall-sown beds continues to be much better, especially with spruce. Fall, 1966, sowing of 1,023 beds in Interior nurseries was completed, but on the Coast sowing schedules were delayed because of inclement weather. In some cases, seed was not available until extraction from 1966 cone collections was finished.

Planting stock shipped during the year amounted to a new record of 19,070,700 trees. It is to be noted that, of this total, 3,636,700 were transplanted trees. It is expected that the production of transplant stock will continue to increase, not only because of the increase in production of Interior species, but also because of the enlarged capacity of the co-operative transplant nurseries and the need to salvage as much stock as possible to meet current demands for planting.

Weeding continues to be a major item in nursery production costs. In the past few years greater emphasis has been placed on weed control, the results of which should become apparent in the near future. Fumigation trials at the Duncan and Koksilah Nurseries, although undertaken primarily to investigate the effect of this treatment on diseases, have shown extra benefit in a small measure of weed control. Since diseases, and perhaps nematodes as well, have been responsible for appreciable seedling losses in the past, this type of pest control would be all the more desirable if the added benefit of weed control could help offset the cost.

Trials in drill sowing were continued during 1966 at Duncan. In the Koksilah Nursery, some loss of planting stock was caused by Botrytis, a fungus which thrives in dense patches of vegetation where dead material and humid conditions are conducive to its development. It is thought that drill sowing, once perfected, may also serve to reduce these losses as well as permit further mechanization of nursery production.

FOREST TREE SEED

The largest collection of seed in the history of British Columbia forestry was made in 1966. The combined total of collections by industry and government approximates 50,000* bushels of cones. Of the 35,000 bushels collected under Forest Service supervision, the following distribution is noted: Vancouver Forest District, 74 per cent; Prince Rupert Forest District, 11 per cent; Kamloops Forest District, 12 per cent; Nelson Forest District, 3 per cent.

In conjunction with the Kamloops and Vancouver Forest Districts' collections, inmate crews accounted for over 10,000 bushels. Collectable crops were not as general as in 1959, since late frosts, insects, and rusts severely decimated what earlier appeared to be a " bumper " crop. Nevertheless, the occurrence of a seed crop was

* All figures subject to correction when extraction is complete.

fortuitous in that seed inventories for the Vancouver and Prince Rupert Forest Districts were critically low. Because of these natural losses, considerable time was spent by field staff in locating collectable crops in which seed values were at a desirable level. In some areas where the quantity and quality of the seed were below standard, collections from the best available crops were made in order to have something to sow in the nurseries. In the Prince George Forest District, the entire crop of both spruce and Douglas-fir seed was lost to insects, frost, and disease. These agencies also caused crop failures in portions of two other forest districts where there is a high demand for planting stock. As a result, there are still important gaps in the seed inventory which must be filled at the first opportunity.

Although extraction of the seed collected is not yet complete, it is expected that the yield will average about the same as that from the 1959 crop, although there will be more variation in yields between provenances. It is estimated that 12 tons of seed will be extracted from the Forest Service collections.

Modifications to the extraction plant, commenced in the fall of 1965 and completed in 1966, increased its capacity to a maximum of 300 bushels per day. Because kiln time is dependent on the dryness of the cones before they enter the kiln, the total capacity of the plant is presently limited only by the facilities (space and time) for outside cone storage. Tests are now under way to determine what effect the period of outside storage has on seed viability. In the fall of 1966 a number of storage areas around Duncan were utilized as cones arrived almost daily from different parts of the Province.

In anticipation of the work load associated with a good seed year, germination tests and records of seed on hand were brought up to date during the summer. Some 1,200 pounds of seed were removed from storage, tested, treated, and shipped to various nurseries for scheduled sowings. This left a balance of almost 8 tons of seed in storage, to which will be added the proceeds from the 1966 collections. The present storage building will then be filled to capacity.

Based on the information at hand regarding special collections, yields from seed production areas in the Vancouver Forest District varied from *nil* to over 80 bushels of cones per acre. Interior seed production areas continue to produce a wide variety of results, but spruce plots have not yet proven their worth. Experimentation is continuing in the inducement of flower buds on spruce, and some encouragement was gained during the year. The application of calcium nitrate fertilizer at the time of vegetative bud break appears to bear some promise in this respect.

Snow breakage continues to hamper progress at the Campbell River Seed Orchard, and the major effort during the years was in consolidating survivors, regrafting, and planting gaps with fresh rootstock. To avoid further snow damage, all first- and second-year grafts were staked. At the Koksilah Nursery the proposed seed-orchard area was cleaned up and levelled, and rootstock was established in the clone-bank area. A total of 851 grafts was made both here and at Campbell River. In co-operation with Research Division, cones were collected from a considerable number of plus trees toward the establishment of the seedling orchard at Koksilah. It is anticipated that the orchard at Campbell River will eventually be transformed to a seedling orchard as well.

RECONNAISSANCE AND SURVEY WORK

Owing to the abundant cone crop, the time ordinarily expended on regeneration surveys was devoted to locating areas in which filled seed existed in collectable quantities. Even so, considerable examination work on logged and (or) burned

areas was completed. Reforestation and Vancouver Forest District crews examined and assesed for planting purposes some 20,000 acres on the Mainland and a further 4,000 acres on Vancouver Island. These areas had been broadcast-burned in the late fall of 1965 and in 1966. Although these areas are not yet fully classified, it was noted that the 1966 burning was not as successful from the standpoint of plantability. An estimated 35,000 acres of slash-burned areas have yet to be examined in the Vancouver Forest District.

In the Interior, a Forest Inventory crew carried out regeneration surveys and planting assessments within two forest districts. Of the 19,098 acres examined in the Prince Rupert Forest District, 7,682 acres (40 per cent) were found to be not satisfactorily restocked and plantable. However, the majority of this area is presently inaccessible. Although this district appears to have vast areas in old burns and cut-over, a large-scale planting programme is not feasible until access and (or) site preparation work is increased. In the Prince George Forest District, 17,733 acres of the "Straw" (1958) and "Grove" (1961) burns were examined. Of this total, 6,392 acres (36 per cent) are unlikely to restock and will require planting. These sites are reasonably accessible, and brush cover has not become heavy enough to preclude planting. This survey provides the district with enough acreage for three years of planting. Although much of the "Grove" burn has restocked naturally, it is thought that there are still some areas requiring survey work.

The report of the 1964–65 surveys carried out in the East Kootenay by the Inventory Division was released in 1966. It indicates that natural restocking during the past 10 years has decreased the acreage of not satisfactorily restocked land in the yellow pine–Douglas-fir type by almost 30 per cent, with the decrease in some areas as high as 64 per cent. There has been an increase in the amount of bare ground in several isolated areas. The associated survey of 53,397 acres of burned-over spruce-balsam sites also found that only 9,660 acres (18 per cent) were not restocked. It is interesting to note that two of the 1960 burns ("Gold" and "Pud" fires) have been almost completely restocked by natural seeding.

PLANTING

In the spring, localized flooding throughout the Province reflected the rapid melting and run-off of the heavy winter snow pack. As a result, spring planting was able to start as scheduled, except for a few high-elevation and (or) remote project areas. The anticipated labour shortage which was expected to hamper project operations in some areas did not materialize, and planting was therefore completed with a minimum of delay. Cool, moist conditions continued during the summer, favouring the survival and initial growth of these plantings. The extension of favourable weather into late fall enabled Forest Service crews to complete a full autumn planting programme in all forest districts.

Planting by all agencies during the year totalled a new record of 19,070,700 trees on 46,935 acres. Of this total, the Forest Service planted 6,109,400 trees (32 per cent) on 12,887 acres, which is the largest programme on Crown land since 1954. In the Interior, planting by all agencies also set a new record of almost 3,000,000 trees, with the Forest Service continuing to carry the major portion of this programme (*see* attached Summary of Planting).

On Forest Service projects the number of trees planted per acre was considerably increased over that of 1965. Where this increase coincided with an increase in the number of trees planted per man-day, a noticeable reduction in planting cost per acre was achieved. However, the over-all result was that planting costs were slightly higher than in 1965. This increase in density together with a general im-

provement in planting quality and project operation resulted from discussions at the District Reforestation Officers' meeting held in March. In the early fall, a three-day planting school was held for crew foremen and supervisors from the Vancouver District. The increased interest and activity in slash disposal have contributed appreciably to the extent and success of the Interior planting programme, which might otherwise have been handicapped by the lack of readily plantable areas. The developement of nursery and cold-storage facilities at Rayleigh and the nursery at Red Rock has greatly improved the flexibility of planting operations and has partially eliminated the necessity of transporting seedlings over great distances at inconvenient times. Projects carried out by inmate crews substantially augmented the Forest Service programme especially in the Prince George Forest District.

On the Coast, an increasing number of smaller projects are being carried out in isolated areas. Considerable difficulty in the matters of transportation, accommodation, and supply were nevertheless overcome, and the Ranger staff was able to complete the largest programme yet undertaken by the Vancouver Forest District.

PERMANENT IMPROVEMENTS

Fortunately the improvements and alterations to the operational section of the seed plant at Duncan were completed in time for extraction to commence not long after the first shipment of cones arrived from the field. Subsequent remodelling of the old warehouse into a new seed laboratory and office enabled the staff of the seed centre to vacate the old offices, where further alterations to the plant facilities were begun. Improvement work in the older of the two existing cold-storage units, which was commenced in the fall of 1965, progressed slowly owing to the priority given the extraction plant, but was resumed actively late in the year. When completed the two adjoining units will be identical and inside handling of stock by fork-lift tractor will be possible. The water reservoir at Duncan was enlarged and a heavier pump installed as required by the need for full-scale irrigation to prevent frost damage. At the Koksilah fields, underground water mains were installed in the 10-acre field leased from the local Indian band. Five thousand feet of drain tile was placed in the fields at Snowdon Nursery, and the pondage area for the proposed dam was cleared.

Alterations to the water-storage system for purposes of frost-damage control were also carried out at Green Timbers Nursery. Recent retiling of all fields has substantially improved drainage, so that a new culvert had to be installed under the main entrance from the Fraser Valley Highway. Minor modifications were made in the cold-storage building to facilitate the handling of planting stock.

Cold-storage units at the Chilliwack and Rayleigh Nurseries were completed early in the year in preparation for increased production at these sites. At the Red Rock Nursery, where the main effort was in getting the land into production, the only improvement of note was the establishment of an 8-foot-high fence around the 53 acres of initial development. Of this, approximately 14 acres are now under cultivation and clearing and grubbing are under way on the next area to be placed under production.

CO-OPERATION

Extensive co-operation with other Government agencies and industry continued during 1966. A large amount of highway trucking in connection with the cone-collection programme and the transfer of nursery equipment and material was successfully carried out with the co-operation of both the Forest Inventory and

Engineering Services Divisions. In the East Kootenay, Grazing and Reforestation Division's crews, in conjunction with the Nelson Forest District, continued improvement thinning in the Rampart demonstration area. During the winter 148 acres were treated, bringing the area now thinned to 1,063 acres. Reforestation Division snag-fallers felled an estimated 85,600 snags on 1,735 acres for the Vancouver Forest District and cleared another 133 acres in co-operation with industry.

In the spring, tangible evidence of a cone crop stimulated a co-operative effort between the Reforestation Division and foresters of the major companies in locating and assessing collectable crops. A refresher course in crop assessment, collection, and handling of cones was held at Duncan for Government and company foresters and supervisors. Co-ordination of anticipated collections and frequent checking on seed development continued during the summer. The result of this integrated effort was that all agencies obtained a good supply of seed from most of the desired provenances at reasonable cost.

Routine co-operation with industry in the matter of planting-stock production and distribution continued both on the Coast and in the Interior. Division foresters met with company foresters on the ground to examine past performance and discuss planting problems, and active participation in a wide variety of co-operative projects through Tree-farm Forestry Committees continues to be of mutual benefit.

Close liaison with Research Division is a prerequisite to success in the plus-tree and seed-orchard programmes, and through the efforts of both Divisions considerable progress was made, especially with regard to the collection of seed from registered plus trees. Heavy demands were placed on the soils laboratory by the development of nursery lands. In this endeavour the co-operation of various Federal agencies in advice and research was most appreciated.

Interdepartmental Forestry and Corrections Camp Programme

This programme proceeded on a normal basis during 1966, with no major changes or expansion. In the Vancouver Forest District, heavy snows and smaller crews resulted in a number of scheduled projects being left uncompleted, but elsewhere work went on as planned. Owing to favourable weather during the fire season, there was little need for the trained suppression crews, and these men were utilized in the expansion of nursery facilities. This facet of the programme is steadily increasing and now represents a substantial part of the total effort.

Training of security officers was continued. A special three-day fire-suppression course was given at the Forest Service Training-school, and nine officers from all districts attended. During the summer, instruction on the development of tree seed and cone collecting methods was given to 22 officers. These courses were followed by written tests, the results of which indicated a high degree of interest among the officers.

Undoubtedly the highlight of the 1966 programme was the success of the cone harvest. Owing to the keen interest of the officers and the enthusiasm of the inmates, the quotas set for crews in the Vancouver Forest District were easily exceeded. Throughout the Province a total of 10,261 bushels of cones was collected under this co-operative programme. This represents approximately one-third of all collections made by Government agencies and is a significant contribution to the expanding reforestation programme.

Work crews in the Chilliwack Valley, in co-operation with the Chilliwack Centennial Committee, constructed 3½ miles of trail from Greendrop Lake to Lindeman Lake. Other trails were given routine maintenance. Work on the right-of-way slashing for the forest-development road to Chilliwack Lake was completed, and the

clearing along 3 miles of existing road was widened by 20 feet. Other slashing projects included two gravel-pit sites and routine maintenance along the development road. The Mount Thurston sawmill produced 160,000 f.b.m. of lumber from salvage material. Through an agreement with the Federal Department of Fisheries and the Provincial Fisheries Branch, a large log jam in the Chilliwack River is being broken up for salvage-log material and fuel-wood.

Chilliwack River nurseries shipped a total of 972,300 trees during the year and 508 seed-beds were sown. Nursery activities are carried out over an eight-month period and constitute some 30 per cent of the Chilliwack Valley programme. To facilitate shipping of trees, a cold-storage unit was constructed at the Forest Service headquarters at Tamihi. Clearing commenced on the new nursery-site at Larsen's Bench, and 8 acres are expected to be in production next year. Inmate crews also planted 103,000 trees on 187 acres during the year. The collection of 3,870 bushels of cones was almost double the expected production, and the success of this project can be attributed to the interest and morale of both officers and men, and to the excellent weather conditions which prevailed.

The clearing of brush from 78 acres in preparation for planting provided camp fuel, and established plantations were cleaned up as required. Inmate fire-suppression crews were controlled from the Pierce Creek Camp, which served as a fire headquarters. Owing to a relatively cool summer, no suppression activities were required.

In the Sayward Forest, the Lakeview Camp was occupied by older inmates, and crews were allocated full time for forestry projects. Both the Lakeview and Snowdon Camps were organized for fire-suppression duties, and action was taken on six fires during the year. Development of Snowdon Nursery is now complete and 11 acres are available for seedling production. Inmate crews are presently clearing a pondage area toward the construction of an adequate dam to serve the nursery. During the year 697,000 seedlings were transplanted and 500,900 trees were shipped to planting projects. Pruning of the 1939 plantation near John Hart Lake continued, and cone collections by crews from Sayward camps totalled 2,929 bushels. Road crews slashed brush along some 20 miles of roads in the area, and during the period of heavy fall rains patrolled some 80 miles of roads, cleaning culverts and ditches. Lakeview crews assisted materially in the development of the Sayward Ranger Station site.

At Haney Correctional Institution the basic programme for the young trainees is stand treatment and nursery work. A Forest Service officer has been appointed to oversee this programme, and construction of an office is being carried out by a crew from the Institute vocational training school. At the Haney Nursery, 584,000 seedlings were transplanted and a total of 302,800 trees was lifted and shipped for out-planting. Limited expansion of suitable area is under way. Cleaning and pruning of 85 acres in young stands were completed, and crews from the Pine Ridge and Gold Creek Camps collected 1,444 bushels of cones. As in other areas, morale and interest were high among officers and men. Fire-suppression crews in these camps were not called out, although training was continued. Progress of road projects was slow due to the lack of equipment. Salvage of driftwood from Alouette Lake provided the Haney sawmill with 135,000 f.b.m. of sawlogs, and several hundred cords of camp fuel-wood were cut from material unsuitable for the mill. A second-hand tugboat was obtained to replace the condemned pilchard boat which has been used to tow the booms of salvage wood to the loading-out area.

Inmates from the Alouette River Unit have completed development of the 6-acre Alouette Nursery. During the spring 770,000 seedlings were lined out, of

which 215,000 were lifted and shipped in the fall. Preparation of another 8 acres of nursery area is nearing completion.

In the Prince George Forest District a sawmill and a 24-man work camp were established at Hutda Lake with the co-operation of the Prince George Vocational School. Crews from this camp planted 29,900 trees and assisted in the preparation of a nearby area for slash-burning. Elsewhere, crews from the Prince George Gaol slashed and burned an area at the Red Rock Nursery for initial seed-beds and planted some 183,500 trees on two projects. These men were burning roadside slash on the Willow River Development Road at the time of report.

Owing to the distances involved, the programme in the Kamloops Forest District is limited to operation of the Rayleigh Nursery and a rehabilitation project at Heffiey Lake. During the year, 825 seed-beds were establised in the nursery and 200,000 seedlings were transplanted. Trees shipped from this nursery over the past two years have been of good quality, and Rayleigh is now considered a permanent part of the nursery programme. Inmates assisted in the conversion of a munitions bunker to a tree-storage building capable of holding 1 million trees. The Rayleigh fire-suppression crew took action on three fires during the year. With the co-operation of Clearwater Timber Products, men from the Clearwater Camp collected 579 bushels of spruce cones. Directional signs and fence-posts are also produced by the two camps in this district.

The performance of crews operating under this co-operative programme and the results being achieved reflect both the interest of all concerned and the effort put into the training of the supervising officers. It was expected that a work force of some 700 men would be available in 1967 for the wide variety of forest and park projects.

PUBLIC INFORMATION AND EDUCATION DIVISION

The year 1966 clearly established a discernible trend in media use. Up to fairly recent times, the success of an organization such as the Public Information and Education Division could be measured in terms of column-inches published by the press. This simple gauge no longer exists. While the press continues to be of permanent importance, today's more sophisticated public must be reached by a variety of other media as well. Of rising importance, particularly in the field of forest education, has been the use of exhibits. Special projects are also being used to maintain and inform.

A steadily increasing interest in Forest Service publications was recorded. Letters requesting information and assistance also increased.

Publications consume a considerable portion of the Division's funds. During the year a large number of the older Forest Service pamphlets and reports for general public distribution were revised.

Several new scientific and technical publications also were produced during the year. An interesting project was the production of a Forest Service training-school brochure. Being British Columbia's Centennial Year, 1966 provided the Division with unusual projects.

To help commemorate the centenary, the Forest Service, in co-operation with the Department of Education, arranged to plant one 2-year-old tree seedling in each public school in the Province. A total of 2,000 seedlings was distributed. In addition the Division had printed 500,000 copies of a special Centennial booklet, a copy of which was issued to each student at the planting ceremonies.

Divisional personnel participated in two special tours which were the direct result of Centennial celebrations in the Province.

The annual meeting of Deputy Ministers and Chief Foresters was held in British Columbia from September 12th to 16th. This distinguished group was conducted on a special five-day tour of Vancouver Island.

Representatives of the Division assisted in hosting the Commonwealth Parliamentary Association, when more than 275 delegates from around the world visited this Province on a nation-wide tour.

In co-operation with the Federal Department of Forestry and the Protection Division, this Division initiated a comprehensive information campaign to acquaint the general public with the threat of the balsam woolly aphid and the ban on the transport of all balsam-trees. Paid advertising was restricted to four appropriate display advertisements, which were prepared and placed in 13 daily newspapers and 45 weekly newspapers.

NEWS RELEASES AND SPECIAL ARTICLES

News releases during the year covered a broad range of Forest Service activity, including Management, Inventory, Research, Reforestation, Engineering, and Forest Protection.

News media and trade magazine interest in pulp and paper industrial expansion remained high during the year, and a considerable number of progress stories were written on the subject. Particularly broad coverage was given to developments in British Columbia in a special supplement of the Financial Post examining the economic state of the industry in Canada.

Special Centennial editions of trade magazines and other publications created a strong demand for general articles tracing the history of forestry in the Province up to the present.

The decline in the lumber market was followed by requests for articles on the general condition of the forest industry, while other requests were of a routine nature, such as those for reviews of the close-utilization policy.

A considerable amount of time was spent in research for and writing of speeches on Forest Service planning, policy, and administration.

RADIO AND TELEVISION

The current trend toward the public service approach by radio and television outlets has resulted in more than normal demands being made upon Government agencies providing information in the resource field. During the past year, Forest Service representatives were called upon to provide information and services to 31 radio stations and six television stations.

Our limited paid advertising campaign and the co-operation in the production of major feature programmes were handled by the Victoria office. District field personnel, however, were repeatedly called upon to assist most stations in providing coverage in local areas.

With the assistance of a former Technical Forest Officer from the Vancouver District, a " Keep B.C. Green " jingle was prepared and recorded on tape and distributed to each radio station in the Province. The tape contained four 1-minute announcements, each of which was broadcast on a regular schedule. More than 3,000 announcements were aired. In addition, numerous special 15-second hazard flashes were made available and broadcast when required.

Paid television advertising was restricted again to a series of 20-second flashes being televised over the C.B.C. Provincial network. A set of six slides carrying a forest-protection message was provided to each television outlet in the Province.

PHOTOGRAPHY

In 1966 another record number of prints were made, 14,299—2,000 more than 1965's all-time record.

The number of large-format negatives taken by the staff increased, as also did the ratio of colour to black-and-white. Added to the photograph library were 456 black-and-white and 194 colour negatives. There was increased use of proof prints supplied to divisions and districts.

A record number of duplicates was supplied and special slides taken, a total of 705 colour slides being made.

The Division continues to supply illustrative material to the Province's news media and receive similar requests from many other sources throughout the western hemisphere.

Special assignments included co-operation with the State of Alaska, when photo coverage was given while a large cedar was cut on Vancouver Island, transported to tidewater, and finally taken in tow to Sitka for carving into a Centennial war canoe.

A series of photographs was taken for Province-wide distribution illustrating the effects of the balsam woolly aphid.

Colour photo panels were made up for wall display in several offices; exhibit photographs, both black-and-white and colour, were made for several divisional displays and exhibits.

An increased number of stereo-positives from 70-mm. fixed-base air photos were made for the Inventory Division, and a decrease in the number of X-rays processed was noted for the Research Division. Engineering Services Division continues to take a large number of report photographs.

Motion-picture Production

Over 6,000 feet of 16-mm. colour film was used during the year, requiring 10,000 miles of road travel and over 40 hours of air time. The major amount of film was shot to complete the Division's film on forest road access, now mainly completed and to be sounded early in 1967. Work was started on a new film dealing with aircraft use by the Forest Service in fire prevention; this film is scheduled for completion in 1967.

In addition to " Man on the Mountain Top," an official Canadian entry in the Madrid Festival of Forestry Films, two other Forest Service films were specially requested by the Canadian delegates to the World Forestry Conference for their use while in Madrid.

Film Library

One hundred thousand six hundred and twenty-eight children viewed films from this library, a 20-per-cent increase over last year.

As a result of more service clubs, industrial associations, and higher educational institutions making use of the library, the adult audience has also increased.

Major demands on the film library were made by the elementary and secondary schools to supplement their expanded courses, which are detailing more aspects of forestry and conservation. Out-of-Province requests for Forest Service produced films increased, especially from other Provincial forestry agencies and schools.

The Forest Service productions on loan to the British Columbia Houses in London and San Francisco have maintained their popularity.

Difficulty was again experienced in trying to find suitable forestry subjects for the library. Of the 29 previewed during the past year, only four were found to be suitable.

See Table No. 31 in the Appendix.

SCHOOL LECTURE PROGRAMME

The school lecture programme for 1966 saw a marked increase in the number of schools visited and lectures given.

Altogether 118 schools were visited in the Vancouver, Kamloops, Nelson, and Prince Rupert Forest Districts.

In addition to the schools visited, more than 50 lectures were presented to other organizations.

See Table No. 32 in the Appendix.

SIGNS

The highway sign-painting programme, utilizing the " Keep B.C. Green—Use Your Ashtray " theme, was carried out for the 13th consecutive year. In a successful effort to further promote public interest in the programme, a number of colour and layout innovations were tried.

Thirty new signs were painted and 100 established signs repainted, for a total of 130.

The maintenance and supervision of the Forest Service sign programme was continued.

LIBRARY

The Forest Service library continues to grow, both in terms of material acquisitions and in use and service to the public. An interesting facet has been a noticeable increase in requests from outside library source and from industry through the interlibrary plan.

The librarian visited the district library at Prince George and found the material in good order.

A talk on the function and use that should be made of the library was delivered by the librarian to the 1966 advance class at the Forest Service training-school.

Interlibrary loans, researched and completed by the staff, rose to 218, which entailed borrowing from many libraries both in Canada and the United States.

See Table No. 33 in the Appendix.

EXHIBITS

Centennial celebrations created a heavy demand on this Division's facilities for participating in exhibitions and conventions. As a result, our entries were limited to 12 major events deemed most beneficial to the Service's over-all information programme.

The Division was active in the special Centennial Forestry Festival sponsored by the Pacific National Exhibition. A Forest Service exhibit consisting of a series of panels depicting various phases of forestry was entered. In addition, a temporary 50-foot lookout tower was erected. It was estimated that more than half a million individuals visited the Forestry Festival complex.

The Service's permanent display in the British Columbia Building, Vancouver, was maintained.

One new exhibit was constructed, and this, together with other portable displays, was entered in four teachers' conventions, six major exhibitions, and numerous miscellaneous gatherings.

In addition, a great deal of material in the way of photographs and publications was supplied to organizations sponsoring exhibitions in which the Forest Service was unable to take part.

FOREST MANAGEMENT DIVISION

The year opened on an optimistic note and market prices rose during the first few months. However, in anticipation of a strike that never materialized, production and stockpiling of logs increased. This was accompanied by a softening in the market for lumber due to tight money throughout North America and a resultant drop in new housing starts. While the industry experienced rough waters for a while, it managed to weather the storm, and the year finally closed on an optimistic note.

In spite of the setback in the market during the year, over-all production once again set a new record. While 1965 was considered to have been a good year with regard to market and weather, and production rose 1.2 per cent over the previous year, the 1966 cut rose 4.5 per cent over the 1965 figure. All forest districts, except Kamloops Forest District, recorded an increase, with a total scale for all products from all lands of 1,602,437,448 cubic feet.

On the Coast the increase in production was evenly spread over all species. In the Interior, however, the 18,000,000-cubic-foot increase was divided entirely between lodgepole pine and balsam. The former showed a 10-per-cent increase, while the later recorded a 33-per-cent jump. The increase in pine and balsam production is attributed to the rising demands of existing and new pulp-mills in the Interior.

MARKET PRICES AND STUMPAGE TRENDS

Lumber Prices

The selling prices for dressed lumber reported to the Forest Service by the mills in the Interior were generally higher than those reported in 1965. Prices started to rise early in the new year, peaked off in June, then declined slightly, reacting to the softening in the demand for lumber that resulted from a drop in housing starts on the North American market brought on by tight money.

Notwithstanding the poor market, however, selling prices were still relatively high and holding in the last quarter.

The outlook at year-end was for a strengthening in demand during 1967 that would maintain the present level of prices.

1966 Uncorrected Quarterly Average Dressed-lumber Prices (Interior)

Species	Jan.–Mar.		Apr.–June		July–Sept.		Oct.–Dec.	
	Basis M B.M.	Average Price	Basis M B.M.	Average Price	Basis M B.M.	Average Price	Basis M B.M.	Average Price
Fir-larch	137,525	$66.11	137,552	$71.94	143,489	$67.09	112,609	$61.78
Spruce	279,412	62.95	346,600	69.27	291,155	63.15	270,738	59.61
Cedar	19,176	61.42	18,410	64.87	15,652	66.70	15,887	57.87
White pine	1,698	100.02	5,809	106.48	5,520	105.44	4,092	98.23
Yellow pine	3,365	63.12	5,364	71.49	7,134	64.42	3,788	59.91

Log Prices

Although there had been indications toward the end of 1965 that the market demand for logs was falling off, the selling prices in that market did hold until mid-year. However, as already reported, the stockpiling of logs in anticipation of a

strike that did not occur, coupled with the softening in the demand for lumber, resulted in a significant drop in the prices paid for all species except fir.

The severe cut-back in production resulting from the depressed market should serve to bring the market back into balance. Although prices were relatively depressed at year-end, the outlook for 1967 was for much improved conditions.

1966 Quarterly Average Log Prices per M B.M. (Howe Sound Market)

No. 3 GRADE

Species	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.
Fir	$67.04	$67.51	$67.14	$63.61
Cedar	47.74	47.01	45.54	39.86
Hemlock	56.52	56.52	56.84	50.44
Balsam	48.70	44.06	41.30	44.66
Spruce	53.58	53.15	53.68	50.26
White pine	45.15	43.57	43.34	42.62

ALL GRADES

Fir	$82.79	$81.41	$82.12	$79.55
Cedar	52.22	52.88	50.33	46.65
Hemlock	58.31	58.46	58.50	51.98
Balsam	57.74	56.66	56.20	50.90
Spruce	62.33	65.09	63.86	59.78
White pine	50.15	49.35	48.91	48.35

Stumpage Prices

The average stumpage bid for Crown timber, including those sales which were sold at "salvage value only" rates, was $4.25 per 100 cubic feet. The comparative average figures for the years 1961, 1962, 1963, 1964, and 1965 were $2.53, $3.01, $3.36, $4.09, and $4.20 respectively.

For sales in the Interior the weighted average stumpage price per 100 cubic feet was $3.72, up slightly from $3.49 in 1965, with the increase largely the result of the high fir stumpage prices that developed in the first six months of the year.

The weighted average stumpage price per 100 cubic feet on the Coast fell to $6.76 from $8.24 in 1965. This reduction must be attributed largely to the drop in cedar stumpage rates that resulted from the decline in the value of cedar logs on the market. The average stumpage price for cedar in the Vancouver Forest District fell from $6.61 to $3.76 per 100 cubic feet, and for the Prince Rupert Forest District (Coast) from $7.41 to $2.42 per 100 cubic feet.

It is also significant that, effective January 1, 1966, the selling prices used for stumpage appraisal of species into Prince Rupert, Ocean Falls, Tahsis, and Port Alice were at the applicable Howe Sound log-market price less $9 per thousand board-feet, $9.60 per thousand board-feet, $9 per thousand board-feet, and $12 per thousand board-feet respectively. Previously it had been policy to apply the Howe Sound price directly into those centres. The introduction of these market differentials for appraisals during 1966 was one of the factors contributing to the drop in the average stumpage prices bid for the Coast.

The average stumpage price for all species, excluding salvage value only, was $6.76 for the Coast, down from $8.25 in 1965, and $4.21 for the Interior, up from $3.81 in 1965.

See Table No. 67 in the Appendix.

Stumpage Adjustments

The stumpage rates payable for each species on a timber sale or cutting permit have been subject to adjustment under a sliding-scale formula each time that the average price of logs or lumber changes by at least 15 per cent from the selling price on which the last effective rates were based.

There were 4,202 such adjustments during 1966, of which 1,942 were on the Coast and 2,260 in the Interior. As a result of the general decline in market prices and the introduction of market-price differentials, all but one of the adjustments on the Coast served to reduce the stumpage rate payable. However, primarily as a result of the selling-price surge in the spring, of the 2,260 adjustments made in the Interior, 2,165 served to increase the rates payable.

As a part of the stumpage pricing procedure for close-utilization sales where the upset stumpage rate is developed by prorating an appraised rate for the sawlog component with an arbitrary 55 cents per hundred cubic feet rate for the close-utilization component, there was provision for stumpage adjustment whenever the selling price changed by at least $5 from the selling price on which the last effective rates were based. Effective from October, this new method of adjustment, which is more sensitive to changes in the market than the sliding scale and provides for a reassessment of operating costs every two years, is offered on all sawlog timber sales as an alternative to the sliding scale. On November 1st the new system was offered to licensees of existing timber sales to give them the opportunity of taking advantage of the more sensitive adjustment system at a time when selling prices were falling and costs increasing.

There were 39 downward adjustments as a result of the operation of the new procedure.

The stockpiling of logs, followed by a softening of the lumber market, had a noticeable effect on the volume of logs exported from the Province. While the volume from exportable lands remained constant, the total scale jumped from 58,608,824 board-feet in 1965 to 142,006,411 board-feet in 1966.

PEACE RIVER FLOOD BASIN

As reported previously, all merchantable timber in the flood basin, with the exception of that in the most northerly and most inaccessible portion, has been sold under timber-sale contract. Logging operations progressed during the year, and the total volume scaled for 1966 was 14,890,000 cubic feet.

COLUMBIA FLOOD BASIN

Logging operations in the Mica Dam flood area experienced a very good year with a total scale of 22,399,000 cubic feet. This was 1½ times the entire cut from this area to the end of 1965. The total cut at the end of 1966 was 38,341,160 cubic feet.

The total scale from the Duncan Dam flood area was 2,393,180 cubic feet by December 31, 1966. Because construction of the dam is roughly a year ahead of schedule and access to the flood area is difficult, it is doubtful whether much more timber can be removed.

In the High Arrow flood basin the total scale to December 31, 1966, was 1,097,482 cubic feet. In this flood basin, complete clearing operations now are being carried out under contracts let by British Columbia Hydro and Power Authority, and in some areas this has necessitated the cancellation of timber-sale contracts.

Close utilization logging in the Prince George Forest District.

BARK BEETLES

The spruce and Douglas-fir bark beetle infestations that were posing threats to the sustained-yield programmes in the Prince George spruce types and the Dry Belt fir stands have abated, and populations are considered to be normal again.

CLOSE UTILIZATION

On January 1, 1966, the new close-utilization policy, which was designed to gradually achieve more complete utilization of the forest resource, came into effect.

Timber Sales

By the end of 1966 eight licensees in the Kamloops Forest District held a total of 56 close-utilization timber sales with nine additional areas under application. In the Prince George Forest District 13 licensees held a total of 27 close-utilization timber sales with 64 additional areas under application. In the Vancouver Forest District there was one close utilization timber sale at year's end with four additional areas under application. In the Nelson and Prince Rupert Forest Districts there were no close-utilization timber sales awarded, but a number of applications are on hand in both districts.

Tree-farm Licences

During the year the annual allowable cuts for six tree-farm licences were revised on a close-utilization basis. Of the six, two are in the Kamloops Forest District, one in the Prince George District, and the other three in the Vancouver Forest District. In addition, four other tree-farm licences located in the Prince Rupert and Vancouver Forest Districts took out close-utilization permits either for experimental studies or to gain experience in logging to close-utilization standards.

General

During the year, arrangements were made for co-operative close-utilization logging studies with three companies—two on the Coast and one in the Interior. The logging on two of these areas, one each for Coast and Interior, had been completed before the end of the year but not the analyses.

The stockpiling of logs followed by a softening of the market, as mentioned earlier on this report, undoubtedly affected the expansion of close-utilization operations. However, with improved market prospects for the new year it was expected that the conversion to a close-utilization basis would pick up. The slow-up in close-utilization operations is reflected in the increase in the number of barkers and chippers installed by sawmills. In 1965 there were 161 chippers and 144 barkers, an increase of 64 and 62 respectively from 1964. During 1966, only 22 chippers and nine barkers were added.

SUSTAINED-YIELD PROGRAMME

Public Sustained-yield Units

The only major boundary change during 1966 occurred in the Prince George District, where Block 1 of the Bowron unit was incorporated into the Purden, reducing the Bowron unit to the area formerly occupied by Block 2.

One additional area was brought into the sustained-yield programme. This was the Vancouver Public Sustained-yield Unit covering the previously unregulated area in the Lower Fraser Valley and extending west to Howe Sound, and including

the Chehalis, Stave, and Pitt Lakes area. The unit has an area of 516,980 acres with an annual commitment of 8,425,000 cubic feet. As a result of this addition, there are presently 76 public sustained-yield units in the Province.

Pulp Harvesting Forests

Fourteen additional public sustained-yield units were gazetted as pulp harvesting forests, bringing the total of 21 at the end of the year.

Tree-farm Licences

The contract for Tree-farm Licence No. 41 was signed on December 15, 1966, granting to Eurocan Pulp and Paper Company Limited the privilege of managing on a sustained-yield basis 473,077 acres of Crown productive acreage for a period of 21 years.

The amalgamation of Tree-farm Licences Nos. 30, 31, and 34 was completed on August 8, 1966. Negotiations are now under way to amalgamate Tree-farm Licences Nos. 28, 29, and 30.

The extension to Tree-farm Licence No. 19 was completed on February 14, 1966.

The amalgamation of Tree-farm Licences Nos. 4 and 36 was completed on December 30, 1966.

The advent of close utilization has necessitated changes in allowable cuts. Six tree-farm licences now are being managed to close-utilization standards.

SILVICULTURE

The silviculture programme again played an important role in natural regeneration of our forests.

Stand treatment was practised by all forest districts. Stands were generally treated to attain natural regeneration. The cutting methods most frequently employed were strips, groups, patches, or single seed trees.

All Interior forest districts were active in developing scarification programmes. In the Prince George Forest District 19,515 acres were scarified, bringing the total acreage scarified to 69,508 acres. Unfortunately, increased machine hire rates raised the average cost to $13.16 per acre.

Although scarification normally is carried out to facilitate natural regeneration, it also is being used now to prepare brushed-in high-site lands for planting.

The results of foliar applications of Polyamidostreptin to control white pine blister rust have failed to maintain their early promise, and the programme has been discontinued.

The Forest Management Note series was reprinted, and a further note published, " The Results of Stand Treatment Following Seed-tree Marking in Dry Belt Fir Types."

SCALING

Coast

Scaling of Coast timber continued under the direction of the Superintendent of Scaling at Vancouver.

Fifty-nine new scaling licences were issued.

During the year the scale computing and billing procedures were taken to the I.B.M. 1440 processing unit established in the Vancouver office.

Weight scaling for scale returns to the Department continued at one operation.

INTERIOR

Scaling of Interior timber continued for the most part in accordance with normal licensed-scaler procedures, but with a marked increase in the initiation of weight-scaling stations. At the end of the year the extent of weight-scaling operations in each forest district was as follows:—

Forest District	Number of Weight-scaling Stations	Per Cent of District Scale
Prince Rupert (Interior)	2	(1)
Prince George	17	26
Kamloops	14	18
Nelson	4	25

[1] Not compiled.

One hundred and two new scaling licences were issued.

GRAZING DIVISION

GENERAL CONDITIONS

The ranching industry enjoyed a reasonably successful year in 1966. Both range forage and hay production were generally good. Except in the Peace River area, the winter of 1965/66 was not severe and feed supplies were generally adequate. On the average, stock came through the winter in good condition and did well during the subsequent grazing season.

The price of cattle rose appreciably during the year. However, the industry continues to suffer economic difficulties. Wages, machinery, and material costs continue to rise. Many ranches are over-capitalized or are too small to form economic units. Ranching has also penetrated into many areas where physical conditions such as low-quality soil, adverse climate, and lack of range make financial success an impossibility.

Although the number of cattle on Crown range was again higher, the rate of increase was considerably less than during the previous five years. With ranges becoming full, this situation was inevitable. Range-sheep production again dropped drastically, and use of Crown range by sheep is now insignificant.

RANGE

A lack of moisture and low temperatures greatly delayed and reduced spring forage growth throughout the range area. In the most southerly portions, subsequent rains were not sufficient to permit full recovery on low-elevation grassland ranges and forage production was less than normal. As is to be expected, this was particularly the case on ranges in poor condition. Summer rainfall was progressively greater in a northerly direction, and spring ranges in these areas made satisfactory growth later in the season.

In the south, forested summer ranges at higher elevations were ready for use at about the normal time, but growth on this type of range was tardy in the north. However, throughout the range area summer range production was finally at or above normal with but few exceptions. One such exception was the newly developed pastures in the Peace River area. Here, weeks of cold, wind, and drought severely impeded establishment and production on the newly seeded areas. Drastic reductions had to be made in the planned utilization of these pastures. Later recovery was encouraging, but another season will be required to determine whether they suffered permanent damage.

Extremely mild conditions persisted until late in the fall and, on the whole, stock came off the range in excellent condition. Any exceptions appeared to be the result of poor management or depleted range. As a result of the open fall, stock were difficult to remove from the range, and in some remote areas strays were still missing at the end of November.

On the average, losses due to poisonous weeds and predatory animals on Crown range appeared to be less than normal. Railroad and highway accidents involving live stock continue to cause concern. The progressive fencing programme being carried out by grazing permittees with Department of Highways assistance is definitely improving the situation in many areas, but a great deal more fencing is required. Forest Service officers participated in discussions between the Department of Highways and range users regarding this problem. No disease problems necessitating radical changes in range-use patterns occurred. However, experience with

infectious pinkeye on a pasture development project in the Peace River area clearly indicated that particular diligence is required on improved pastures where grazing is more concentrated.

Hay

Hay quality suffered to some extent due to summer rains, particularly in the north. However, quantity appeared to be above average, which, together with the late onset of cold weather, resulted in adequate feed supplies for the winter of 1966/67.

Markets and Prices

Cattle prices gained appreciably during the year, reaching the highest level since 1962. The weighted average price received by cattlemen through the British Columbia Livestock Producers' Co-operative Association was $20.74 per hundredweight, compared to $17.30 in 1965, a rise of $3.44. This favourable situation appeared to be the result of strengthening Canadian demand rather than the export of beef to the United States, such as has been the case in the past. Prices for sheep and lambs were also up slightly over 1965 levels.

RANGE MANAGEMENT

The Crown ranges are difficult to manage due to relatively low per acre productivity, rough topography, density of timber, competing land uses, and other factors. Further, some ranges are in a depleted condition as a result of abuse in the past when the limitations of natural range were not fully appreciated. A great deal of skill and effort is required to obtain maximum live-stock production without damage to the resource and with due regard to associated land uses. Considerable progress has been made in eliminating destructive grazing practices, but much more remains to be done even in this purely protective aspect of management. What is needed in addition is the application of more refined techniques which will result in the most efficient use and development of the resource. It is encouraging to report that leaders in the industry are becoming aware of this, and discussions on the subject were held with a committee of the British Columbia Beef Cattle Growers' Association during the year. It is obvious, however, that an intensive educational programme is required to convince a large majority of range users of the need for improved management and to teach them the necessary techniques.

Range inspections were stepped up during the year, and permittees were encouraged to accompany the inspecting officers wherever possible. The resulting on-the-ground consultations were a major factor in developing range-management consciousness. However, the amount of this work required is beyond the capacity of existing staff, and a large percentage of permittees are either unwilling or unable to participate.

On the basis of range-readiness studies, turnout dates were adjusted on several ranges. Plans were made for and permittees warned of a two-week delay in turnout date in the southerly portion of the East Kootenay Valley to be enforced in 1967. This long overdue step is now considered feasible as a result of improved winter feed production. Restrictions in stock numbers could not fully compensate for the premature grazing and, in any event, constitute very inefficient range use.

The press of administrative and enforcement duties again prevented a detailed range survey programme. A new approach to building and maintaining a range inventory was studied and is to commence on a trial basis in 1967.

Range Improvements

During 1966, $80,953.10 was spent from the Range Improvement Fund. Material to the value of $10,351.34 was on hand at the beginning of the year, and material valued at $17,268.87 remained on hand and not assigned to projects at the end of the year. Net assistance to the range-improvement programme from the Fund was thus $74,035.57, slightly less than the previous year. The abnormally large inventory of materials at the end of the year was due to the stockpiling of a supply of steel rails for future cattle-guard construction and the non-completion of a number of projects for which materials had been purchased.

The following projects, chargeable wholly or in part to the Fund, were constructed or extensively rehabilitated: 22 cattle-guards, 43 drift fences, 1 holding-ground, 1 meadow improvement, 1 mud-hole fence, 3 pasture developments, 35 stock trails, 21 water developments, 1 weed control, 1 yellow pine thinning, and numerous range seedings.

Permittees also contributed extensively to most of the projects listed above, mainly in the form of labour. In addition, the following projects were authorized for construction entirely at permittee expense: 3 breeding-pastures, 6 cattle-guards, 2 corrals, 43 drift fences, 1 holding-ground, 3 horse pastures, 8 stock trails, and 2 water developments. This represents a slight increase over the previous year.

The range-seeding programme was slightly increased in 1966, a total of 52,080 pounds of grass and legume seed being used, compared to 49,655 pounds in 1965. As usual, the bulk of this seed was sown on ground denuded by logging and other industrial activity on Crown range. Most of the actual seeding was undertaken by co-operating permittees, with seed, equipment, and supervision being supplied by the Forest Service. The seeding of depleted grassland using the range-land drill was continued, with efforts being concentrated in the East Kootenay Valley. A total of 1,925 acres was drilled, an appreciable increase over the 1,166 acres treated in 1965. Establishment of dry range seedings is extremely slow, and it is still too early to assess the results of either the 1965 or 1966 work. However, numerous seedings show sufficient promise to warrant a continuation of this programme.

Observations were made during the year to determine the results of previous field trials of special practices such as brush spraying, thinning overstocked forest stands, and fertilization. Several additional fertilizer and spraying trials were set out. These practices are costly and techniques need to be considerably refined before they can be applied generally.

Trial fencing was installed in an area of heavy winter snowfall to test the effectiveness of various designs under these conditions. In a study directed toward reducing fencing costs, a so-called " suspension " fence was completed during the year. This fence is comprised of four strands of barbed wire attached to posts at intervals of up to 100 feet, with twisted wire stays installed at 10-foot intervals. Costs are definitely lower, and initial observations indicate that this type of construction should be effective in level terrain where icing conditions are not a problem. Although the present steel-rail cattle-guard deck design is proving very effective, used rails of suitable weight are becoming progressively more expensive and difficult to obtain. As a possible substitute, a commercially fabricated deck was imported from the United States and installed early in the grazing season. Initial observations are encouraging.

Peace River Pastures

Six developed pastures were in operation during 1966. Three of these contain a total of 4,800 acres of improved pasture resulting from past clearing, breaking, and seeding. Light use was made of a seventh area reserved for pasture purposes

but not yet developed. As mentioned earlier, severe drought seriously delayed the establishment and development of the improved pasture in the Cecil Lake and Beatton-Doig units, and stock had to be held off the newly seeded areas. This created a management problem and, owing to the limited natural forage available, greatly reduced the number of stock which could be accepted. The 600 acres of already established improved pasture in the Groundbirch unit did not suffer from drought, produced heavily, and were fully utilized.

Experience has shown that improved pasture requires considerably different management techniques than native range. For this reason, together with the critical condition of the newly seeded areas and large investment involved, a pasture manager was employed for the duration of the grazing season on each of Cecil Lake and Beatton-Doig units. These men carried out routine maintenance of pasture facilities and managed the stock while in the pastures. By a prior agreement, the permittees paid an assessment of 50 cents per head per month, in addition to grazing fees, for the herding services supplied by the Forest Service. This arrangement appeared to be satisfactory to both the permittees and the Forest Service and will be continued on the highly developed units.

Brush regeneration on the developed pastures is causing some concern. This problem requires further study to find effective and economic techniques for its control. Hunting within the intensively used pasture units has caused difficulties. To overcome this, " no hunting " regulations were applied within four pastures during the period when grazing and hunting would conflict. In general, the restriction of the hunting period to the post-grazing season met with the approval of the informed sportsmen, and co-operation between the stockmen and hunters was exceptionally good.

During the year, routine maintenance was carried out on 68 miles of fence, 38 miles of trail, and 3 corrals. New construction included 12 miles of fence, 22 miles of trail, 3 corrals, and 2 stock-watering dugouts. A total of $13,367.31 was spent on this work.

In 1966, 78 permittees grazed 2,091 cattle and 39 horses within pasture projects, compared to 59 permittees, 1,919 cattle, and 28 horses the previous year. The prospect of a much larger increase did not materialize due to a late winter and spring sell-off occasioned by depletion of winter feet supplies on many farms and the ensuing drought. However, this is a very temporary situation, and it is anticipated that a rapid increase in demand will occur in the immediate future. This will be accentuated by the fact that, as a result of land alienation, the pasture projects are rapidly becoming the only sizeable areas of Crown land remaining for grazing purposes.

CO-OPERATION

Range live-stock associations continue to be the most valuable medium in maintaining the necessary liaison between the Forest Service and range users. One new association was approved during the year under the *Grazing Act* and regulations. Preliminary discussions were held with several other groups, and it is anticipated requests for approval will follow. The boundaries of several existing association areas were also amended. In all, Forest Officers attended 176 association meetings during the year. Wherever practical, illustrated talks on range management were presented at these meetings.

Several matters of industry-wide importance were discussed with the British Columbia Beef Cattle Growers' Association. The Forest Service is again indebted to the British Columbia Livestock Producers' Co-operative Association for supplying the live-stock price figures necessary for the sliding scale of grazing fees. The

Canada Research Stations at Kamloops and Beaverlodge continued to provide information helpful in dealing with problems related to natural range and pasture projects. As usual, grazing officers participated in a variety of events and meetings associated with the ranching industry. A considerable number of co-operative field inspections were made and discussions held with several other Government agencies, notably the Fish and Wildlife Branch, in an effort to resolve conflicts arising from multiple land use.

ADMINISTRATION

The administration of Crown range continues to become more complex. Fully stocked ranges, which are now the rule, require intensive management and supervision to ensure that the resource is not damaged. Strong competition for range use necessitates refinement of allocation practices. The increasing pressure of associated land uses demands closer attention to ensure a minimum of conflict with such other uses. Unplanned land settlement, increased highway traffic, and other similar factors further complicate range administration.

To meet this situation, it has become necessary for the Ranger staff to handle progressively more of the field work. To enable this staff to operate most effectively, a field training programme was emphasized during the year. An expanded course in range management and administration was also given the current advanced class at the Forest Service training-school. Numerous discussions were held with Lands Branch personnel with a view to minimizing the impact of land alienation. Several particularly important range areas were delineated wherein special attention will be given to this problem.

Grazing Permits

During 1966, 2,244 grazing permits were issued authorizing the depasturing of 189,286 cattle, 6,572 horses, and 8,970 sheep on Crown ranges. The number of permits issued and cattle covered is up slightly over 1965. The number of horses represents a slight decrease, and the number of sheep a sharp reduction from the previous year.

See Table No. 81 in the Appendix.

Hay Permits

The harvesting of hay from natural meadows on Crown range continues to decline. This is to be expected as the larger and more productive meadows come under private control for development, more cultivated hay is produced, and the remaining meadows are needed for summer grazing. In 1966 a total of 137 hay-cutting permits was issued authorizing the harvesting of 1,427 tons of hay.

The year marked the end of an era on the Creston Flats where, for the first time since the commencement of range administration, no hay was cut on Crown range. Here, hay-cutting had dwindled from a high of approximately 2,500 tons annually for the above-noted reasons.

Grazing Fees

Except for developed pastures in the Peace River area, grazing fees per head per month were 17 cents for cattle, 21¼ cents for horses, and 3½ cents for sheep. These fees represent a rise of 1 cent for cattle, 1¼ cents for horses, and one-quarter cent for sheep over those charged in 1965. As fees are related to prices received by producers the previous year, the above changes reflect the slight improvement in market conditions in 1965.

For some years a higher scale of fees has been in effect for the fenced and reserved pastures in the Peace River area. With the coming into production of high-quality cultivated pasture in some of these units in 1966, a new fee for this type of forage was instituted. In 1966 the fee per head per month for natural forage was 50 cents for cattle, 62½ cents for horses, and 12½ cents for sheep. On cultivated pasture the fee per head per month was $1 for cattle, $1.25 for horses, and 25 cents for sheep. These special fees are not on a sliding scale.

Control and Enforcement

In the interest of the live-stock industry itself as well as the associated resources, it is essential that authorized seasons of use, numbers of stock, and other necessary conditions of use be rigidly enforced. The extensive nature of the Crown range together with an intermingled complex land-ownership pattern make this extremely difficult. More intensive regulation is required than is practical with existing staff. To meet this situation as far as possible, numerous stock counts and range inspections were carried out during the year. Considerably more than the average number of stock grazing in trespass were removed from the range.

ENGINEERING SERVICES DIVISION

ENGINEERING SECTION

Development engineering, route reconnaissance, road location, and field investigations connected with Part III of the *Forest Act,* timber-sale administration, and district projects continued to form an increasing work load. This increase, both in volume and complexity of work, necessitated assigning an additional senior field engineer to each forest district during the field season.

Construction of forest-development roads under the Federal-Provincial Agreement continued during the year. In addition, road maintenance, completion of the special access road from Upper Campbell Lake to the Gold River townsite, and continuing site preparation of navigation channels and approaches to the perimeter of the future lake in the area to be flooded by the Portage Mountain Dam formed a significant part of the field operations.

Development Engineering and Location

Development engineering studies were concentrated in the Prince Rupert, Kamloops, and Nelson Forest Districts. The drainages or areas covered and the corresponding regulation units are listed in Table No. 91 in the Appendix. Other specialized studies included assistance to district staffs on engineering aspects of timber-sale administration and on the problems of joint use of beach areas along Owikeno Lake required both as log dumps for forest harvest and as fish-spawning areas.

Road-location survey crews flagged 70.7 miles of line for construction of low-order protection roads and established 59.3 miles of centre line, complete with plans and profiles for future haul roads. Map location and design were completed for another 20.7 miles on the Chilcotin South Forest Road.

The use of air-photo interpretive techniques resulted in a saving in both engineering talents and field time and materially assisted in scheduling field personnel to obtain site data as required. Priority was given to engineering for projects where early construction appeared probable.

Road Construction and Maintenance

During the year, construction work was undertaken on nine projects, requiring the movement of 1,430,000 cubic yards of common excavation and 119,000 cubic yards of solid rock and the erection of 13 bridges. Although the weather during the summer months was generally unfavourable for construction, work on the Gold River, Kispiox River, and Parsnip River projects was completed, and good progress was made on the South Chilcotin project. Construction was completed on 39 miles of new road. An additional 12 miles of roadway were completed except for gravel surface and drainage structures.

The work on the Parsnip River Forest Road extended the loop so that industrial forest traffic could by-pass the townsite en route to the industrial area. This extension was necessitated by the increasing traffic resulting from industrial and urban development in the vicinity of Morfee Lake. In addition, construction commenced on 8.5 miles of the Bench Creek Road under a contract awarded in August.

The continuing resurfacing programme resulted in crushed rock being placed on several roads as part of the maintenance programme on 888 miles of road.

See Table No. 91 in the Appendix.

General Engineering

Designs, drawings, and specifications were prepared for seven bridges of the pressure-creosoted glue-laminated timber type. One of these bridges, designed for a crossing of the Bulkley River on the Suskwa Forest Road, incorporates the longest single span used by the Forest Service to date. Each of the I-beam girders for this bridge will be 151 feet long, have a depth of 7 feet 2 inches, and a weight of 25 tons. Specialized investigations included site and materials studies for two possible earth dams for forest nursery irrigation reservoirs and soil and foundation investigations on several forest roads and bridge-sites.

Site preparation work continued on a further 14,830 acres of navigation channels and shoreline access within the area to be flooded by the Portage Mountain Dam. This included treatment of 5,679 acres by the Le Tourneau tree-crushers, 3,773 acres by the Department's own crews, and 5,378 acres by contract. In addition, some 1,900 acres of the 5,820 acres treated during 1965 were broadcast-burned.

BUILDING AND MARINE SERVICES

During the year the Building and Marine Services Section of the Engineering Services Division was reorganized and provided with additional staff to meet the increasing work load associated with the design, acquisition, and maintenance of buildings, trailers, and marine craft.

As a result of the continuing high level of activity in the construction industry, some difficulties and delays were experienced in obtaining both labour and materials for work in outlying centres.

In addition to the investigation of new products and preparation of specifications for materials, fabrication inspections were carried out on structural members for 14 bridges and five buildings.

The Divisional technical library was augmented with the addition of 165 books and papers.

Building Construction

The major projects for the year included a new utility building and office renovations at the Forest Service training-school, a new laboratory and office building at the Duncan nursery, additions to existing buildings at the Forest Service Maintenance Depot, and a warehouse at Kamloops. The first two projects mentioned were nearing completion, and the last two were just under way.

A number of administration and storage buildings for Ranger stations were in various stages of completion, in addition to residential accommodation for Ranger personnel. One residence was bought at Gold River to facilitate an early opening of the new West Coast Ranger District.

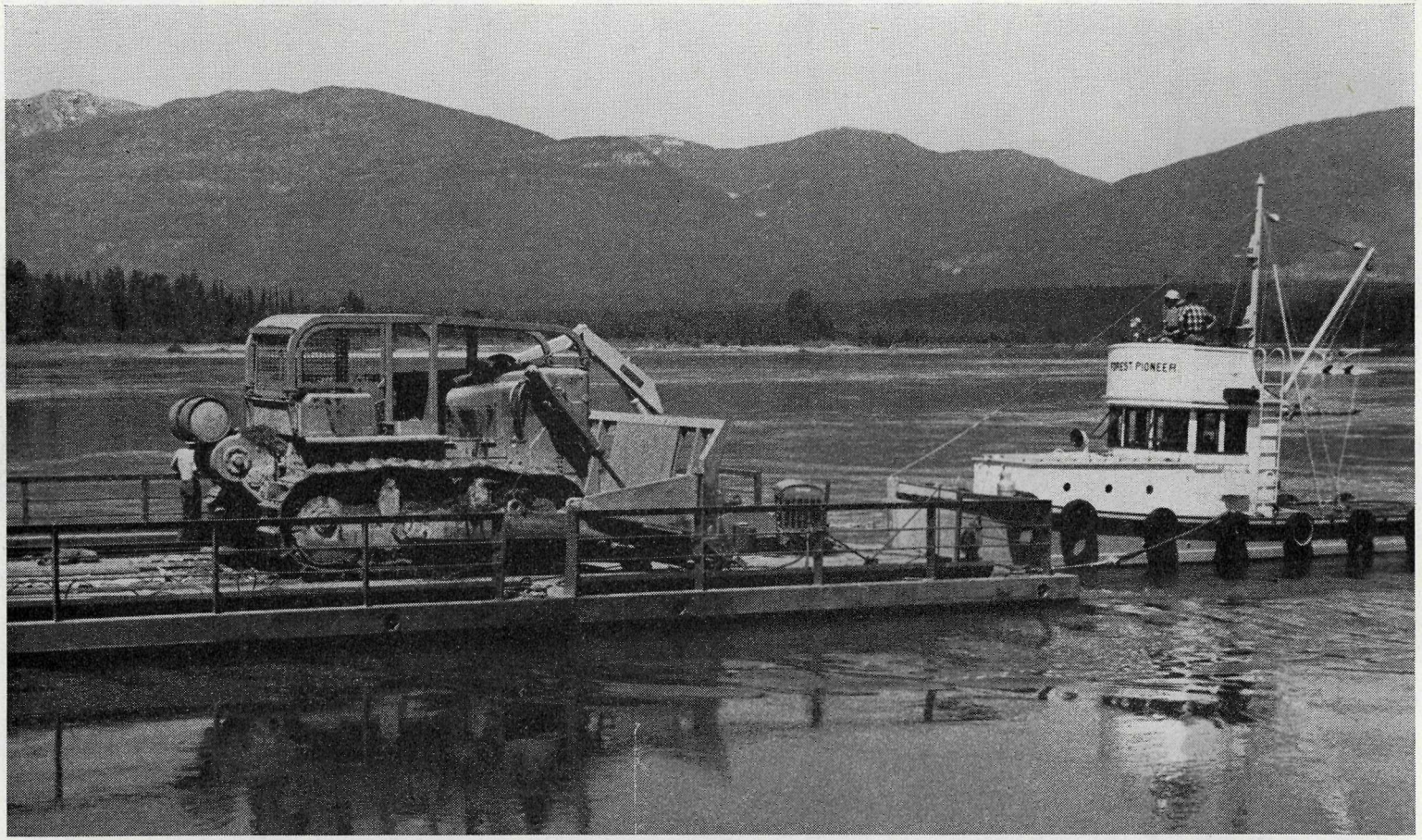
Eighty-three contracts for prime and sub-contract work were awarded and 48 other miscellaneous jobs were handled, as well as a continuing load of assessment and consultation services.

Mobile Accommodation

Three 20-man bunk-house complexes were purchased for Engineering Division camps, and 10 existing smaller portable buildings were mounted on wheels for greater mobility.

Four portable buildings and four large house trailers were designed and built by contract for Engineering Division camps and Ranger staff accommodation.

One truck-borne camper coach was purchased for northern fire patrol work.



The shallow-draught tug " Forest Pioneer " pushing a barge-load of machinery up the Finlay River.

Marine Activities

To provide accommodation for Engineering Division crews working along the Parsnip and Finlay Rivers, a complete 20-man floating camp was designed, built, and delivered to Finlay Forks prior to spring high water. This camp consisted of a 20-man sectional bunk-house and a cookhouse-diner-office complex mounted on two sectional barges, each 56 by 30 feet.

In consultation with the Maintenance Depot, engines were purchased for repowering two diesel launches and one gasoline launch.

Radar and echo sounders were purchased for three coastal vessels, and additional inflatable life-rafts were provided in the interests of personnel safety.

A number of small craft, including five wood river boats, three inflatable boats, two aluminum boats, and three deep-vee fibreglass boats were acquired for Ranger and Engineering Division work.

MECHANICAL SECTION

The 1966 season was notable for a number of increases in various mechanical categories. It is significant that the number of pick-up trucks, both two- and four-wheel drive, increased by 29 units, whereas the over-all number of passenger cars decreased by 10. Increased interest is shown in a two-wheel-drive pick-up truck with V-8 engine, automatic transmission, limited-slip differential, and fitted with an aluminum canopy top of cab height. In addition, an electric winch of 6,000 pounds capacity can be provided. This combination of features in a half-ton truck is helping to reduce the number of demands for four-wheel-drive.

A demand for trail motor-cycles continues, and the fleet total was increased by 17.

Another significant and relatively new trend is the apparent success of various types of snow toboggans. Fifteen more units were purchased this year and are reported to be a valuable aid in the performance of winter cruising and silviculture duties.

Power lawn-mowers were added to the list of Mechanical Section responsibilities, and another 29 units were purchased. They will eventually be numbered and added to the equipment total.

Chain saws continue to be in demand, particularly as present models become lighter, more powerful, and faster cutting. A total of 117 saws was purchased during the year.

In the heavy-equipment category, Vancouver Forest District acquired a tandem-drive grader, Prince Rupert Forest District acquired a four-wheel-drive four-wheel-steer grader, and Engineering Division replaced a 3-cubic-yard loader with a 4-cubic-yard unit. In addition, six large tractor units—two in the 385-horsepower range, two in the 235-horsepower range, and two in the 150–160-horsepower range—were purchased for work being undertaken by the Forest Service in the Portage Mountain Dam flood area. These units were supplied with a variety of equipment, including hydraulic angling blades, brush rakes, stump splitters, logging winches, etc. The two largest machines were used with a ball-and-chain arrangement for tree-felling, and all units had specially reinforced canopies and carried extreme service reinforcement additions to radiators, engine guards, blade ends, corners, and undersides.

Some changes in key mechanical personnel resulted in the loss of a superintendent in each of three districts for a period, but, because of the presence of an assistant in each case, work proceeded without the disruption experienced under similar circumstances in the past.

Three superintendents attended the three-day mechanical maintenance course at the University of Seattle in March.

FOREST SERVICE MAINTENANCE DEPOT

Reorganization within the Forest Service Maintenance Depot in 1965 resulted in consolidation of work forces, and improvements in efficiency and economy of production were evident in 1966. Work on renovating and extending carpentry, mechanical, and warehousing facilities to provide more flexible and efficient work space was commenced late in the year.

Marine Work

The marine ways were occupied 65 times, with 38 complete launch refits and 25 minor refits being carried out. The major projects included the complete rebuilding and re-engining of the "Forest Pioneer," re-engining of three other craft, and a start on rebuilding and re-engining the former Department of Highways Barnston Island tug. New construction was highlighted by the launching of the 50-foot Ranger vessel M.V. "Coast Ranger," which was scheduled to be in service in 1967. Small-boat construction saw completion of five river boats for distribution to various parts of the Province. Other work accomplished included repair of 37 river boats, barges, and small boats, and the preparation for shipment of 12 new small craft.

Prefabrication and Carpentry

Although the Porta-building and trailer overhaul programme was slowed as other work took priority, 18 Porta-buildings and trailers were rebuilt, modified, or reconditioned during the year. Four truck decks were built and installed on vehicles, and 13 backboards and inner boxes were manufactured for pick-up trucks. Other items produced in quantity included 125 scaling-boards, 20 signs, 10 outboard test tanks, and 93 pieces of office furniture. Twenty-four desk study units were manufactured and installed at the Forest Service training-school. Added to this work load were the normal requirements of maintenance of depot facilities, and the repair and reconditioning of equipment boxes and packing-cases.

Mechanical Work

The regular work load in the small-engine repair-shop increased to a new high with a total of 581 pumps, light plants, outboard engines, and chain saws being overhauled, crated, and shipped. In addition, 206 new units were tested and shipped to the forest districts. The machine-shop also produced and assembled items from castings which included 2,600 pump and valve fittings, 12 log-scale computors, 48 thermometer shields, 6 fire-finders, 4 sets of lightning-arrestors, 150 hose wrenches, and 924 miscellaneous items such as brackets, handrail fittings, and trailer hitches.

The heavy-equipment shop continued the maintenance and servicing of transport equipment and construction machinery. During the year, 42 vehicles, 2 graders, 2 crawler tractors, and 10 diesel-powered generating sets were overhauled. Other work included the fabrication of 2 light-plant trailers, a utility trailer, and a 1,000-gallon fuel tanker, and the assembly of components and accessories on new and reconditioned machinery.

Depot Maintenance

In conjunction with regular production, a programme of planned renovation and maintenance projects was completed throughout the depot. The majority of

these projects was completed by contract and included the renewing of the shingle roofs on three main buildings and repairing of the bonded roof on Building No. 1. The east dyke was repaired by addition of rock fill, the riprap was relocated on the shore of launch-storage basin, and a docking-ramp was cleared for the planned hard-surface slipway. Numerous other jobs were completed by depot personnel, including rebuilding of floats, marine ways, clearing drain tiles, renewing winch cables, and general overhaul of plant equipment and machinery. New equipment was purchased and installed, including a replacement lathe for the machine-shop and an industrial-type incinerator for the proper disposal of waste products.

RADIO SECTION

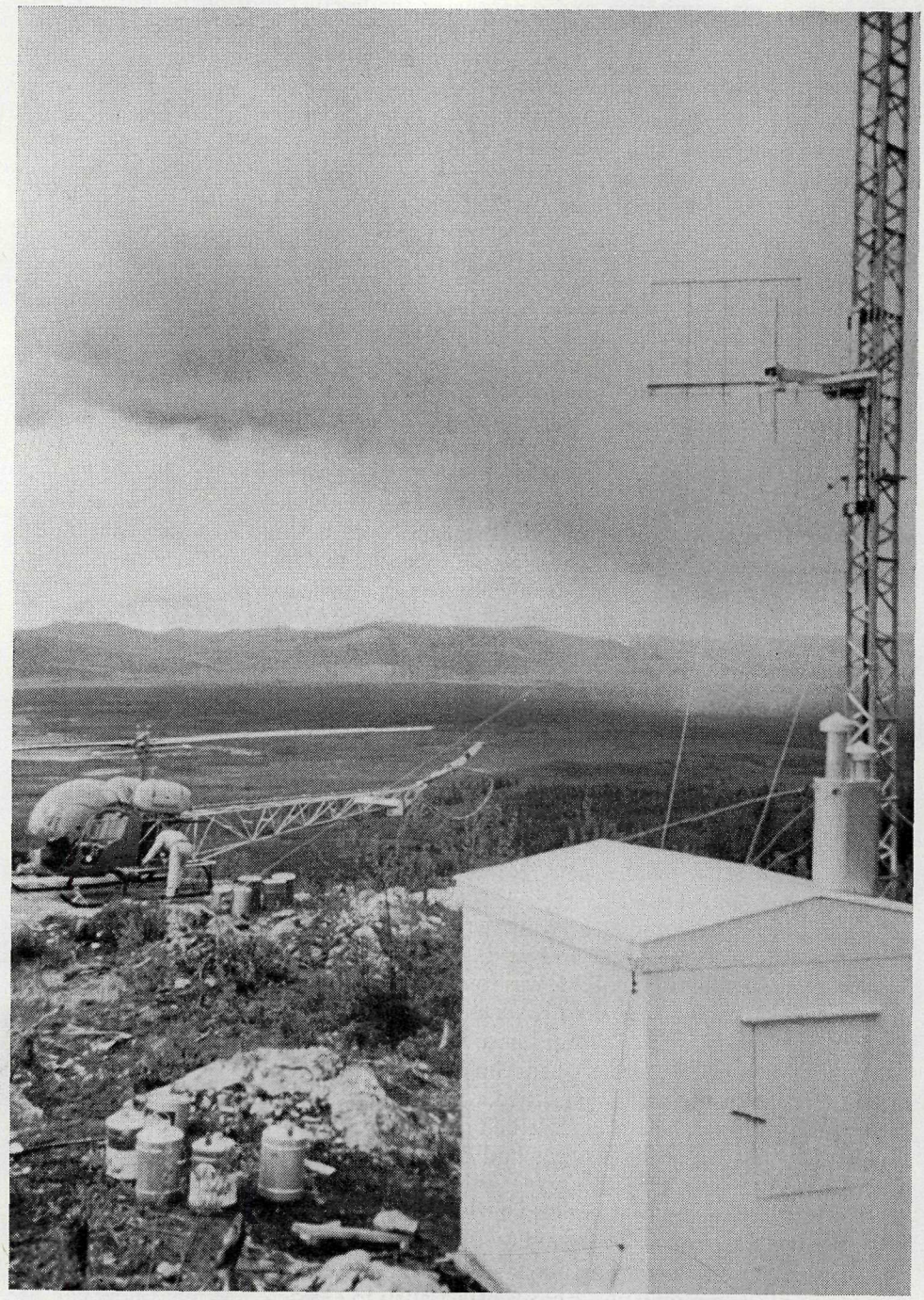
One hundred and fifty radio transmitting units of all types were purchased during the year, compared to 247 during 1965. Of these, 121 were very high frequency (F.M.), 22 were medium frequency (A.M.) sets, and seven were single sideband (S.S.B.). The high proportion of F.M. equipment in the total of new sets is consistent with Department of Transport policy and with the increasing use by the Forest Service of F.M. mobiles and portables. These two types made up approximately 70 per cent of the F.M. units purchased.

With an eye to regulations which will eliminate the use of A.M. transmission in a few years, six single sideband fixed stations were put into operation during the year in three forest districts and at Victoria. Results to date have been inconclusive, the improved reliability of S.S.B. being of a degree which scarcely warrants the much higher equipment cost. As the radio system had expanded faster than maintenance could be provided, the trend during the year was toward equipment rental on a seasonal basis, with maintenance included in rental costs. A.M. transmission was extremely poor at times, but on the whole was not as erratic as had been expected considering atmospheric conditions. A.M. contact between Victoria and the Engineering Services projects was maintained, and a reliable F.M. circuit was established between Victoria and Mile 73 on the Parsnip River Road by means of P.G.E. microwave and Forest Service repeaters.

In the Vancouver Forest District, communication between Hope and Boston Bar was consolidated, and a new remote installation at Powell River brought the Ranger station into the F.M. network for the first time. At Campbell River, the F.M. equipment was remote-controlled at Elk Falls Lookout, extending mobile and lookout coverage to the north and west. No single-repeater method of connecting Squamish and Pemberton by F.M. was found, a repeater at London Mountain having proved inadequate to cover the distances involved.

Prince Rupert Forest District improvements included a power-line to Kitwanga repeater, and two new repeaters near Smithers and Bella Coola designed to increase radio coverage in the areas concerned. Previous outages in the locally generated power at Kitwanga and the impossibility of providing adequate maintenance over such an extended repeater system had made F.M. point-to-point communication unreliable. With the Kitwanga power situation corrected and a technician stationed at Smithers, considerable improvement was experienced during the year, although some problems remain to be solved.

In the Nelson Forest District the entire F.M. repeater system was revised to provide trunk communication from Kettle Valley to Golden. Mobiles now can use the repeater chain to increase their range, one pair of frequencies being common to all mobiles in the Nelson area. Some conflict in the use of adjacent channels by the Forest Service and the Department of Highways occurred during the trunk change-over, and, although a temporary solution to this mutual interference was found, the



Skog Mountain V.H.F.-F.M. repeater, supplying radio coverage to the Peace River pondage area.

permanent solution has yet to be determined. At Grand Forks and Kettle Valley, remote-control projects to increase local mobile coverage were nearing completion.

The change to trunk operation in the Kamloops Forest District was completed during the year, and although mobile coverage has been greatly increased, the proximity of the various repeaters causes two or more to be turned on at the same time by mobiles in certain locations. The resulting interference to the received signal is a problem still to be overcome.

Plans for a repeater chain to connect Fort St. John with Fort Nelson were abandoned as it was considered impractical to attempt to provide maintenance over such an extended distance. Instead, with power available at Nel-X Lookout, a repeater was installed which provides 100 miles of road coverage to mobiles operating in the Fort Nelson area. In place of the repeater chain, Telex was leased to provide administrative communication to Fort Nelson. Single sideband units were placed at Fort Nelson and Fort St. James, but reliability proved to be only slightly greater than with the original A.M. transmission.

In Victoria priority was given to the design of an improved battery-operated repeater of low enough power consumption to operate continuously from a Thermo generator. This was completed, and the Thermo generator, a failure in 1965, may now be considered a practical means of supplying power to sites which are accessible only by helicopter. Other projects included the trunk repeater change-over at Nelson, remote-control system design, and proving new commercial equipment. " Sferics " tests were continued throughout the summer, but data collected had not been collated.

FOREST PROTECTION DIVISION

WEATHER

The 1966 fire season encountered relatively little in the way of significant fire danger. Apart from a few weeks early in July when the Prince Rupert Forest District suffered a severe danger, and from late July to early August when the Southern Interior of the Province had a build-up, there was no prolonged fire situation.

Lightning activity was not reduced to any extent but, for the most part, was accompanied by adequate rainfall, which prevented a serious fire problem.

Early in October, cool moist weather over most of the Province made it possible to terminate the close fire season officially on the 10th of the month.

In the Vancouver Forest District, potentially serious fire conditions were restricted to short periods in early May and mid-August. However, the short periods did not necessitate any forest closures to prohibit travel in the woods.

FIRES

Occurrence and Causes

As indicated by the weather situation, this past summer produced less than the average number of fires. The total of 1,967 fires recorded was below the 10-year average of 2,117. Lightning was again the principal cause, accounting for 19 per cent of the fires. This was in sharp contrast to the 1965 season, when lightning accounted for 37 per cent of the fires. The 10-year average is 36 per cent.

See Tables Nos. 103, 104, and 105 in the Appendix.

Cost of Fire-fighting

Average fire-suppression cost to the Forest Service was $886 per cost fire, compared with $2,041 the previous year. Total suppression cost for the year was $1,028,100, of which $700,400 was accounted for by the Forest Service and $327,700 by other agencies. This is $1,287,600 less than the 10-year average.

See Tables Nos. 102, 109, and 111 in the Appendix.

Damage

The 54,788 acres of forest-cover burned represented only 12 per cent of the 10-year average of 438,000 acres. The damage to forest-cover was $757,000, compared with the 10-year average of $3,252,637.

See Tables Nos. 107, 108, and 110 in the Appendix.

PROTECTION PLANNING AND RESEARCH

Fire Statistics

Coding of forest fire data on a three-card-per-fire basis was continued during 1966, in line with the objective of recording all fires back to 1950.

The 1,967 fires occurring in 1966 have been plotted in the Provincial Fire Atlas, and statistical fire summary data are continued to be recorded in ledger form.

Visibility Mapping

Visibility mapping and lookout photography requirements were down to the point that no work was undertaken in 1966.

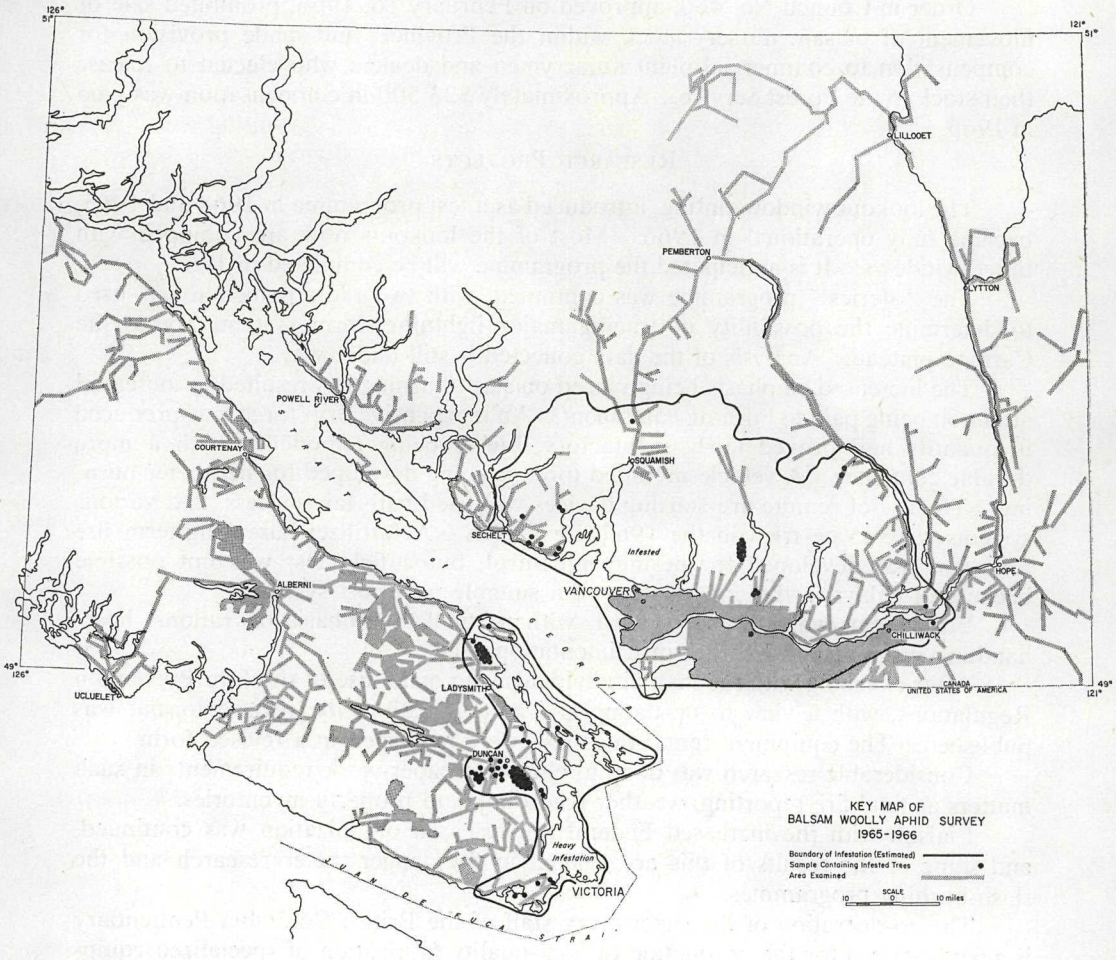
Fuel-moisture Indicator Sticks

Following spring testing for acceptable field tolerances, 964 sets of the 100-gram fuel-moisture sticks were distributed to the forest industry, the Canada Department of Forestry, and the forest districts. The requirements represented an 8½-per-cent increase over 1965.

Co-operation of the Federal Forestry Department's forest products laboratory at the University of British Columbia in making the kiln and facilities available for production of the moisture sticks is again acknowledged.

Insect Survey and Control

Survey of the hemlock needle miner (*Epinotia* sp.) outbreak in the Holberg-Buck Creek region of North-west Vancouver Island continued as a joint field project of industry and the Canada Department of Forestry, with British Columbia Forest Service participation on a cost-sharing basis. Ground and air surveys were carried out, and preparations made for possible chemical treatment of the infested stands. However, because of a natural marked decline of population levels, no chemical treatment was undertaken.



The continuing balsam woolly aphid (*Adelges piceæ*) survey was expanded and extended in 1966 (*see* map, page 57). The main survey group included 30 persons, with an additional eight delegated to an intensive survey research project under Federal Forestry Department direction. The purpose of the general survey was threefold: to establish the general perimeter of the infestation on the Lower Mainland and Eastern Vancouver Island, to conduct a more intensive survey within this perimeter to locate and map specific infested areas, and to do some spot sampling for possible spot infestations beyond the perimeter and in the Interior of the Province. Ground sampling was supplemented by helicopter air reconnaissance. Low-level stereoscopic photography was employed on an experimental basis, using Ektachrome infra-red and Ektachrome aero colour film, to assess this procedure as a means of detection of crown attack by the aphid.

This was basically a joint Federal-Provincial programme, with the Canada Department of Forestry concentrating on research aspects and technical guidance, and British Columbia conducting the operational survey functions. Co-operation of the Director of the Forest Research Laboratory at Victoria is acknowledged in allotting laboratory facilities and office space for headquarters and for staff assistance and co-operation.

Order in Council No. 460, approved on February 16, 1966, prohibited sale or movement of balsam nursery stock within the Province, and made provision for compensation to commercial-plant nurserymen and dealers who elected to release their stock to the Forest Service. Approximately $23,500 in compensation was paid in 1966.

Research Projects

The lookout window-tinting, introduced as a test programme in 1964 and 1965, became fully operational in 1966. Most of the lookouts now are equipped with tinted windows. It is anticipated the programme will be completed in 1967.

The " sferics " programme was continued, with two radio detection sets used to determine the possibility of tracing major lightning-storm systems across the Cariboo plateau. Analysis of the data collected is still under way.

The increased emphasis being placed on slash-burning has resulted in increased attention being paid to burning equipment. An inexpensive drip-torch was produced in quantity and proved fairly satisfactory, but is being remodelled with a more durable container. A vehicle-mounted torch is being developed for perimeter burning. The use of remote fire-starting devices was tried with fair success, and various systems were to be tried in the 1967 fire season. A fertilizer-base long-term fire retardant was developed for perimeter control, but a field test was not possible because of delays in the construction of a suitable transport system.

Equipment evaluation continued, with particular emphasis on rations, hose-handling systems, and weather instrumentation.

After checking with the many individuals who make use of the Fire Prevention Regulations, with a view to up-dating and modernization, the revised format was published. The equipment rental rates also were published in a revised form.

Considerable research was done to eliminate paper-work requirements in such matters as final fire reporting, weather recording, and property inventories.

Liaison with the increased Federal fire research organization was continued, and some of the results of this are evident in fire-danger meter research and the slash-burning programmes.

The co-operation of the supervisory staff of the British Columbia Penitentiary is acknowledged for the production of high-quality fabrication of specialized equipment, such as the back-pack hose-carrier.

FIRE-SUPPRESSION CREWS

Fifteen fire-suppression crews of 6 to 12 men each were employed in the three southern forest districts. In addition, 37 crews of two to four men each were employed as immediate fire-attack forces at various Ranger headquarters throughout the Province. Twenty-six of these crews were employed in the northern areas, and five were employed in areas involving the Columbia River clearing projects. One suppression crew in the Vancouver Forest District was disbanded and the crewmen were assigned to various Ranger districts. The savings in overhead make it possible to increase the number of man-days, and more efficient use of the young men was evident.

During low-hazard periods the crews were employed on numerous projects and many assisted in the collection of the heavy cone crop. Generally, the calibre of the crewmen was good, although it was more difficult to locate good crewmen in the northern areas where other employment was more attractive. The husband-and-wife foreman-cook combination continues to be the most satisfactory arrangement of the suppression crews and will be continued wherever possible.

For an analysis of suppression-crew fire-fighting activities *see* Table No. 115 in the Appendix.

AIRCRAFT

Extensive use of aircraft continued during 1966. A total of 40 contract machines was available for the peak hazard period.

The use of helicopters and air tankers continues to exercise a marked influence in the early control of fires, resulting in a lower acreage burn than could otherwise be expected.

Detection has been greatly extended through the use of light patrol aircraft, and a spirit of co-operation with the lookoutmen has developed to strengthen all detection facilities.

For statistical information on the use of contract and non-contract aircraft, *see* Tables Nos. 113 and 114 in the Appendix.

ROADS AND TRAILS

The programme of road and trail construction and maintenance continued in a normal manner. As roads and trails are essential to economic fire suppression, the programme will be continued as funds permit.

See Table No. 116 in the Appendix.

SNAG-FALLING

In the Vancouver Forest District, snags on 3,695 acres were felled. Contract crews completed 2,262 acres, and the regular Forest Service crew completed 1,433 acres.

SLASH DISPOSAL

Vancouver Forest District

Variable weather conditions in the Vancouver Forest District produced varied results on the 55,358 acres of logging slash burned by the logging operators. This acreage was 30 per cent down from the area burned in 1965 but was well above the 10-year average.

Aircraft play an important part in early suppression of forest-fire outreaks. Here a Canso flies low as it demonstrates its fire-extinguishing capabilities.

Some serious escapes occurred in the 1965 slash burns. In 1966 the Forest Service put more emphasis in the directions for burning, and this together with an educational programme, reduced the damage due to escaping burns to a negligible amount.

Because of the weather situation in the late summer and fall, a rather large carry-over of unburned slash has had to be left for the next burning period in certain areas.

INTERIOR FOREST DISTRICTS

Prescribed Burns on Slash, 1966[1]

Forest District	Industry	Forest Service	Total
	Acres	Acres	Acres
Prince Rupert	1,804	556	2,360
Prince George	756	3,574	4,330
Kamloops	2,218	2,041	4,259
Nelson	8,435	6,135	14,570
Totals	13,213	12,306	25,519

[1] This was the first year where a concerted effort was made toward eliminating slash created by the logging industry in the Interior.

Several burns were planted with nursery stock, and others will be planted in 1967. At this stage it is not always practical to have seedlings available in the correct species and provenance for the individual sites.

FIRE-LAW ENFORCEMENT

Although 1966 was a somewhat lighter fire season than the 10-year average, prosecutions under Part XI of the *Forest Act* increased by one. A total of 31 informations was laid, of which 13, or 42 per cent, were for burning without a permit. The 31 represented 75 per cent of the 10-year average.

FOREST CLOSURES

There were no forest closures imposed this season under section 122 of the *Forest Act*.

FOREST SERVICE TRAINING-SCHOOL

The 14th class of advanced trainees (Advanced Course No. 14), consisting of 20 men, graduated on December 16, 1966. Graduates from the advanced course now total 295. Graduates from the basic course now total 100.

Subjects covered during the year were as follows:—

Advanced Course No. 14, Spring 1966 (January 6th to April 1st)

Subject	Days Allotted
Forest Protection Policies and Procedures	8½
Botany	5
Ranger District Organization	6
Dendrology	2
Entomology	3½
Pathology	4
Mathematics	2½
Silviculture	9½
Public Speaking	4
Surveying	6
Business English	3
Wood Technology	2½
Inventory Division	1
Engineering Services Division	2½
Opening, closing, spares	2
Total days	62

Physical Training: Three-quarters of an hour per day.

Advanced Course No. 14, Fall Final, 1966 (September 19th to December 16th)

Subject	Days Allotted
Forest Management Policies and Procedures	9½
Pre-suppression	4
Scaling (Coast)	14
Scaling (Interior)	1½
Public Speaking	4
Fire Suppression	3
Vancouver Island Trip	4
Sales and Appraisals	5
Navigation	2
Measurements	5½
Grazing	3½
Photos	2
Public Information and Education	1
Personnel and Safety	2½
Opening, closing, spares	1½
Total days	63

Physical Training: Three-quarters of an hour per day.

EXTRA COURSES AND FUNCTIONS

The following extra courses and functions were held at the school:—

Meeting of Forest Service District Administrative Officers and Chief Clerks.—The school provided room, board, and facilities. A maximum of 16 people was involved. April 13 and 14, 1966.

Meeting of Forest Service Management Division.—The school provided room, board, and facilities. A maximum of 30 people was involved. April 19 to 21, inclusive.

Course for the Vancouver Forest District Lookoutmen.—The school provided room, board, facilities, and instruction for this course. Twelve men attended. April 26 to 29, 1966, inclusive.

Course for Fieldmen of the Forest Service Inventory and Working Plans Division.—The school provided board, facilities, and minor assistance with instruction for this course. Rooms were supplied to as many as possible. Two-day sessions for three different groups were held, involving a total of 30 men. May 4 to 13, 1966, inclusive.

Fire-suppression Course for the Corrections Branch, Department of the Attorney-General.—The school provided board, facilities, and instruction for this course. Ten men from the Corrections Branch and three men from the Forest Service took the course. March 28 to 31, 1966, inclusive.

The remainder of the time was taken up with preparation of courses, administration, selection of students, and maintenance.

The annual examination for Technical Forest Officer 2 was prepared and marked.

The reading course on the *Forest Act* was amended to date. Approximately 300 copies each of the *Forest Act* and mathematics reading courses have been distributed to date.

The staff assisted with instruction at various courses, institutions, and meetings.

ACKNOWLEDGMENTS

Appreciation is expressed to speakers and lecturers, and for equipment provided by the following agencies: Air Division of the Surveys and Mapping Branch, Department of Lands, Forest, and Water Resources; British Columbia Forest Products Limited; Mr. D. S. Watts, MacMillan Bloedel Limited; Staff Sergeant W. R. Morrison and members of the Royal Canadian Mounted Police detachment at Cloverdale; Surrey Municipality; and the Forest Entomology and Pathology Laboratory of the Canada Department of Forestry. Appreciation is also expressed to lecturers from the Forest Service.

CONSTRUCTION

Renovations to the administration building were completed, including the enlargement of several offices.

The main classroom was enlarged, and changes now provide space for duplicating and production of course material.

Study units were installed in each of 24 rooms.

A utility building was constructed to provide storage, workshop, and recreational facilities.

ACCOUNTING DIVISION

FISCAL

The decline in the demand for lumber products during the latter part of 1966 was reflected in the over-all financial return to the Forest Service. Although revenues were at a record high, over half the increase was due to the inclusion of some items formerly shown as "offsets" to expenditures. This change resulted from the adoption by the Department of Finance of a gross budget format, which is explained in more detail below. Actual revenue from forest operations declined sharply in September, compared to the same month in 1965, as the Coast lumber industry felt the full effects of unfavourable market conditions. This situation continued to the end of the year, and no improvement was anticipated before the spring of 1967.

The total of amounts charged to logging operations declined by 1.8 per cent to $49,022,110 (*see* Table No. 142 in the Appendix), despite the establishment of a new record in the volume of timber cut. The whole of the decrease resulted from operations in the Vancouver Forest District, which recorded a drop of 7.2 per cent from 1965. The other four districts all recorded increases, Prince Rupert leading with 6.9 per cent, followed by Prince George with 6.1 per cent, Nelson with 2.7 per cent, and Kamloops 1.6 per cent.

Forest revenue reached a new high of $50,348,464, an increase of 5.8 per cent (*see* Table No. 141 in the Appendix). However, this total included $212,275 in recovery of weight-scaling costs and $1,379,936 in payments received from Ottawa under the Federal-Provincial Forestry Agreement. As indicated above, these items, comprising over half the increase, were not previously accounted for as revenue.

Timber-sale stumpage, the major source of revenue, rose by 1.4 per cent to $42,643,936, while timber-sale rentals and fees increased by a substantial 23.8 per cent. The latter increase was mainly due to the repeal, effective April 1, 1966, of section 22 of the *Forest Act*. Timber-licence and timber-lease rentals and fees were not affected by the repeal, but both increased by 6.9 and 23.9 per cent respectively. These increases were probably due to payments of arrears as well as current charges on certain leases and licences. Timber-berth rentals and fees declined 4.4 per cent as rates remained unchanged and elimination of cut-over areas continued. Timber-sale cruising and advertising continued to decrease, this year by 31.5 per cent, as the number of timber sales awarded declined to 1,126 as against 1,146 in 1965. Timber royalties, the second-ranking revenue item, gained considerably at $3,079,058, a rise of 17.0 per cent from the previous year. This reflected a substantial increase in the cut from lands under timber licences and timber leases, possibly indicating some segments of the industry were concentrating their operations on these areas to reduce costs during the current period of difficult financing.

Forest-protection tax collections showed a slight increase of 2.0 per cent to $570,202, and miscellaneous revenue declined by 10.4 per cent to $245,350, the latter being primarily due to a reduction in the amount of bidding fees collected. Grazing fees remained relatively unchanged, increasing by 1.6 per cent to $153,507.

Financial tables on a fiscal-year basis for the period ended March 31, 1966, also appear in the Appendix (*see* Tables Nos. 143, 144, and 145), and details of expenditure can be found in the Public Accounts, published by the Department of Finance.

The Federal-Provincial Forestry Agreement, under which $1,804,461 is claimable by the Province from Canada, expires March 31, 1967, and official notification was received in October that the Federal Government did not intend to renew it. It is believed Provincial funds will be made available to carry on the projects affected.

ADMINISTRATION

As indicated in the financial tables in the Appendix, the accounting volume dealt with by the Division remained at a high level. In addition, it was necessary to develop new routines and adjust some current procedures to accommodate changes in policy introduced by the Department of Finance, the Superannuation Commission, and the Civil Service Commission, as well as other divisions of the Forest Service.

The latter mainly affected the timber-sale section of the Headquarters Accounts office, which began to feel the effects of a change made in 1965 in the regulation governing the sale of Crown timber. The elimination, approved under this change, of cut-over areas exceeding 160 acres from licences under timber sale required alterations in all pertinent records and recalculation of fixed charges, etc. In addition, a considerable volume of stumpage adjustments under the sliding-scale formula had to be dealt with by this section as a result of fluctuations in market prices of forest products. District offices were similarly affected by the necessity for such changes.

The integration of contributions under the Canada Pension Plan with those required by the Provincial *Civil Service Superannuation Act* put added pressure on all pay sections in the Service. The necessity of assimilating the requirements of the plan into already complicated data-processing pay procedures under a tight close-off schedule, and the many requests for interpretation of the changes by personnel affected, placed a heavy burden on pay clerks.

The survey of office methods begun by the Departmental Comptroller and Chief Accountant in 1964 was continued, and the Chief Forester approved their recommendation for the appointment of a committee to co-ordinate the use of forms in the Service as a whole.

On April 13th and 14th senior divisional officers met with district office Administrative Officers and Chief Clerks at the Forest Service training-school to discuss all phases of collection policy, accounting problems and procedures, and related matters of general administration. Visits were also received from the Chief Forester, the Forest Counsel, and the Personnel Officer, the latter conducting a half-day's session on personnel procedures. Future meetings will be held at intervals of not more than three years.

PERSONNEL DIVISION

There were no major changes involving senior personnel in the Forest Service during 1966, although there was some reorganization of divisions at Victoria headquarters in the interest of economy and improved administration. The Working Plans Division was incorporated into the Inventory Division early in the year and was later separated, with the greater portion transferred to Forest Management Division and named the Planning Section. As a result, the responsibility for the calculation of allowable cuts and for analyzing all unregulated areas for possible sustained-yield units was retained by the Inventory Division. All other functions associated with the administration and planning phases of public sustained-yield units and tree-farm licences are now under the Management Division. Tree-farms and farm woodlots are also the responsibility of this Division. The Engineering Services Division was transferred from the Operations Branch to the Services Branch. A general review was undertaken of the salaries of Technical Forest Officers and Forest Assistants, but at the close of the year the recommendations had not yet been approved. Curtailment in capital expenditure resulted in no further action to date on the building to house the headquarters of the new Cariboo Forest District.

In the matter of employee relations, there were two complaints from the B.C. Government Employees' Association, one of which was resolved at the Departmental level. The other was still under discussion at the year's end. A general salary increase involving all employees went into effect April 1st.

COMMUNICATIONS AND TRAINING

The biannual District Foresters' meeting was held in Victoria in January, providing for discussion of common problems throughout the Service, as well as any others peculiar to a specific headquarters division. Full-scale Ranger meetings were held at Prince Rupert, Prince George, and Kamloops, and Ranger Zone meetings were held in Nelson and Vancouver Forest Districts. The Forest Nursery Superintendents met to discuss common problems, as did the Regional Research Officers and the District Reforestation Officers. The Administrative Officers and Chief Clerks from all districts met at the Forest Service training-school with the Departmental Comptroller, Chief Accountant, and Personnel Officer. District Management Foresters and District Protection Officers both held meetings in Victoria with their counterparts at headquarters.

The Personnel Officer and Assistant Personnel Officer took part in several vocation-day programmes at high schools in the Victoria area, and other Forest Officers took part in similar programmes in other areas throughout the Province. The Department was represented again on the annual programme of instructive interviews for graduating secondary-school students sponsored by the Victoria Chamber of Commerce and the then National Employment Service. Forest Inventory and Engineering Services Divisions held their usual pre-field season instruction programmes for summer field staffs, as well as pre-season meetings of professional staff. Four employees were selected for Class 11 of the Public Administration Course under the Executive Development Training Plan, and three employees—one forester, one engineer, and the Assistant Radio Superintendent—graduated from Class 8 and received their Diplomas in Public Administration. Class 3 of the correspondence course in Basic Public Administration commenced in the fall, and the Forest Service was represented by two employees from Vancouver and one from Prince George. Three employees from the Forest Service graduated in the spring

from Class 2 of this course. Field staff continued to take industrial first-aid courses, and several employees in Victoria took advantage of the St. John Amulance courses in first aid sponsored by the Civil Defence Organization. Informal training continued for junior foresters and junior engineers.

ESTABLISHMENT, RECRUITMENT, AND STAFF TURNOVER

The permanent Civil Service establishment of the Forest Service was increased from 881 to 884, an increase of three positions of Technical Forest Officer 3, which resulted in the establishment of new Ranger Districts at Gold River in the Vancouver Forest District, Kitimat in the Prince Rupert Forest District, and Tatla Lake in the Kamloops Forest District.

During the year 160 persons obtained Civil Service appointments and 140 left the Service. Four Forest Service 25-year certificates and badges were earned. Eight employees were guests of the Provincial Government at a luncheon where they were awarded certificates for 25 years' continuous government service. There were 13 retirements and 81 transfers of permanent staff. Sixteen graduate foresters and one engineer left the Service, while eight graduate foresters and one engineer were hired.

Turnover of Civil Service appointed staff, including full-time casual staff, was 12.4 per cent, exactly the same as in 1965. The greatest disruption was suffered in the Prince Rupert Forest District at 19.0 per cent, closely followed by Prince George at 16.7 per cent. Kamloops was next at 13.0 per cent, followed by Victoria headquarters at 12.4 per cent, Vancouver District at 11.4 per cent, and the Vancouver Scaling Office at 10.7 per cent. Nelson Forest District was again the lowest at 4.5 per cent.

Professional-staff turnover rose from 6.7 per cent in 1965 to 9.1 per cent in 1966. Technical-staff turnover dropped from 6.8 to 6.4 per cent, but technical staff employed on a temporary continuous basis on authority delegated by the Civil Service Commission had a turnover of 41.3 per cent, with Vancouver and Prince George Forest Districts suffering the greatest disruption with 82.6 and 67.9 per cent respectively. The office staff once more suffered the largest turnover, with Prince Rupert and Prince George Forest Districts again being hardest hit with a turnover of 38.4 and 30.4 per cent respectively. Kamloops and Vancouver Forest Districts were close behind with 25.7 and 22.2 per cent respectively. More than half of those leaving were reported to have left for better salaries.

In the matter of discipline, one employee was released by Order in Council. One other employee was suspended with intent to dismiss, but the suspension was later lifted and the employee continued on staff. There were 13 disciplinary suspensions for minor infractions of rules and safety regulations. No annual statutory increases were withheld.

There were more than 800 written applications for employment processed by the Personnel Office, in addition to those handled by the district offices and divisional staffs. Promotional examinations were held by the Civil Service Commission for draughtsmen and mapping assistants, to the advantage of a number of employees. Oral examinations were held at panel interviews to fill 35 positions. The Personnel Officer and Assistant Personnel Officer participated in the filling of 135 other positions. Three hundred and seventy-eight candidates sat for the annual spring examination for Technical Forest Officer 1, and 150 qualified for 65 vacancies. After all vacancies were filled, a substantial list of eligible candidates remained to be referred to any subsequent vacancies.

CLASSIFICATION, SALARIES, AND WORKING CONDITIONS

Classification reviews were requested for 77 positions. At the end of the year 58 had been approved, 13 rejected, and 6 were still under review. The establishment of a 1440 data-processing system to handle log computing and billing for Coast scaling was established during the year, and a review of the new organization, including some proposed reclassifications, is still awaiting action from the Classification Section of the Civil Service Commission. A new organization, including some revision of plant at the Forest Service Maintenance Depot, is also the subject of a review expected to take place early in 1967. A review was expected of the salaries of Forest Agrologists and Mechanical Supervisors, but these had not yet taken place at the end of the year. A review of the radio staff resulted in the establishment of a new grade of Radio Technician 3 to cover the highly specialized research and development work carried out by some of the headquarters radio staff at Victoria.

Twelve employees were registered as professional foresters and two as professional engineers. Working conditions remain somewhat the same as in previous years with no major changes, but a constant effort is being made to improve these conditions where possible.

There was some improvement in the accident-prevention record, with a total of 326 accidents, of which 139 were time loss, as compared to 382 accidents in 1965, of which 169 were time loss. Of the 139 time-loss accidents, 12 were charged to fire suppression and 13 to temporary tree-planters and cone-collectors. This makes a total of 114 time-loss accidents for regular staff, a significant increase over the total of 87 for the same group in 1965. The one fatal accident involved a summer employee, who was drowned in the Peace River while swimming unaccompanied. A near miss occurred when a helicopter struck an unmarked cable and two employees were injured sufficiently seriously to cause their absence of 29 days in one case and 31 in the other.

There was some improvement in the time-loss accident frequency per million man-hours, which was 25.9, as compared to 31.1 in 1965. The time-loss accidents were 42.6 per cent of the total accidents, as compared to 44.3 per cent in 1965. On the brighter side, it should be noted that both Prince George and Nelson Districts each won a bronze award of merit for going the required amount of time for their staff without having an accident involving a time loss of more than three days.

PERSONNEL DIRECTORY, 1966

(As of December 31st)

VICTORIA HEADQUARTERS

F. S. McKinnon - - - - - - - - - Deputy Minister of Forests
L. F. Swannell - - - - - - - - - - - - Chief Forester
J. S. Stokes - - - - - - - - Assistant Chief Forester i/c Operations
I. T. Cameron - - - - - - - - Assistant Chief Forester i/c Services

Staff Division Heads:

Cooper, C. - - - - - - - - - - - - - Forest Counsel
Hicks, W. V. - - - - - - - - - - Departmental Comptroller
Park, S. E. - - - - - - - - - - Director, Public Information
McKeever, A. E. - - - - - - - - - - - Personnel Officer

Operations Branch Division Heads:

Phillips, W. C. - - - - - - - - Forester i/c Protection Division
Hughes, W. G. - - - - - - - - Forester i/c Management Division
Pendray, W. C. - - - - - - - - - Director, Grazing Division
Robinson, E. W. - - - - - - Forester i/c Forest Service Training-school

Services Branch Division Heads:

Young, W. E. L. - - - - - - Forester i/c Forest Inventory Division
Silburn, G. - - - - - - - - Forester i/c Reforestation Division
Spilsbury, R. H. - - - - - - - Forester i/c Research Division
Greggor, R. D. - - - - - Forester i/c Engineering Services Division

FOREST DISTRICTS

Vancouver Forest District

H. B. Forse - - - - - - - - - - - - District Forester
J. A. K. Reid - - - - - - - - - - - Assistant District Forester

Forest Rangers:

Lorentsen, L. H. (Chilliwack); McArthur, E. J. (Hope); Wilson, R. S. (Harrison Lake); Nelson, J. N. (Mission); Mudge, M. H. (Port Moody); Neighbor, M. N. (Squamish); Chamberlin, L. C. (Sechelt); Northrup, K. A. (Pender Harbour); Hollinshead, S. B. (Powell River); Hannah, M. (Lund); G. Stefanac (Thurston Bay East); Archer, W. C. (Sayward); vacant (Echo Bay); Moss, R. D. (Port McNeill); Teindl, A. J. (Port Hardy); Brooks, T. (Campbell River); Antonelli, M. W. (Courtenay); Norbirg, H. (Parksville Howard, W. G. (Nanaimo); Sykes, S. J. (Duncan); Bertram, G. D. (Ganges); Jones, R. W. (Langford); Thomas, R. W. (Lake Cowichan); Haley, K. (Alberni); Doerksen, H. G. (Tofino); Gill, D. E. (Pemberton); de Hart, D. E. (Gold River); Doerksen, V. J. (Chatham Channel).

Prince George Forest District

N. A. McRae - - - - - - - - - - - - District Forester
Young, W. - - - - - - - - - - - Assistant District Forester

Forest Rangers:

Ward, J. G. (McBride); vacant (Valemount); McRae, M. A. (Prince George East); Meents, T. G. (Prince George North); Brash, W. E. (Fort St. James); York, G. H. (Quesnel); Barbour, H. T. (Dawson Creek); Amonson, D. A. (Aleza Lake); Graham, G. W. (Vanderhoof); Espenant, L. G. (Fort St. John); Griffiths, P. F. (Fort Fraser); Gibbs, T. R. (Summit Lake); Doerksen, D. B. (Fort Nelson); Magee, G. E. (Prince George); Wallin, D. F. (Hixon); Hewitt, E. W. (Quesnel); Rohn, K. (Quesnel); McQueen, L. (Chetwynd); Magee, K. W. (Hudson Hope).

Kamloops Forest District

A. H. Dixon - - - - - - - - - - - District Forester
Boulton, L. B. B. - - - - - - - - - Assistant District Forester

Forest Rangers:

Hopkins, H. V. (Lumby); Ivens, J. H. (Birch Island); Wittner, D. J. (Barriere); Cameron, A. G. (Kamloops South); Craig, V. D. (Chase); vacant (Salmon Arm); Jones, G. G. (Sicamous); Berard, R. K. M. (Lillooet); Kuly, A. (Vernon); Scott, E. L. (Penticton); Baker, F. M. (Princeton); Petty, A. P. (Clinton); Paquette, O. (Williams Lake); Donnelly, R. W. (Alexis Creek); Hewlett, H. C. (Kelowna); Noble, J. O. (Ashcroft); Pearce, F. (Merritt); Lynn, J. F. (Blue River); vacant (Enderby); Schmidt, J. T. (100 Mile North); Weinard, J. P. (Kamloops North); Wanderer, J. (Horsefly); Monteith, M. E. (100 Mile South); Perry, W. R. (Tatla Lake).

Prince Rupert Forest District

H. M. Pogue - - - - - - - - - - - District Forester
Lehrle, L. W. - - - - - - - - - - Assistant District Forester

Forest Rangers:

Quast, H. W. (Ocean Falls); Anderson, W. R. (Queen Charlotte City); Hamilton, H. D. (Prince Rupert); Gorley, O. J. (Terrace); Reiter, D. (Kitwanga); Harvie, T. (Hazelton); Pement, A. R. (Smithers); Simmons, C. F. (Telkwa); Dodd, G. F. (Houston); Mould, J. (Pendleton Bay); Mastin, T. (Burns Lake); Weinard, R. H. (Bella Coola); Jones, W. H. (Southbank); Waldron, W. C. (Lower Post); Jaeger, J. F. (Topley); Hawkins, R. M. (Kitimat).

Nelson Forest District

J. R. Johnston - - - - - - - - - - - District Forester
Isenor, M. G. - - - - - - - - - - Assistant District Forester

Forest Rangers:

Taft, L. G. (Invermere); Humphrey, J. L. (Fernie); Anderson, S. E. (Golden); Gierl, J. B. (Cranbrook East); Ross, A. I. (Creston); Allin, G. B. (Kaslo); Benwell, G. L. (Lardeau); Robinson, R. E. (Nelson); Jupp, C. C. (New Denver); Raven, J. H. (Nakusp); Wood, H. R. (Castlegar); Reid, E. W. (Grand Forks); Uphill, W. T. (Kettle Valley); Cartwright,, G. M. (Canal Flats); Benwell, W. G. (Arrowhead); Loomer, I. M. (Edgewood); Russell, P. F. (Elko); Webster, G. R. (Spillimacheen); Hamann, L.O. (Cranbrook West); Thompson, H. B. (Beaverdell); Bellmond, C. N. (Salmo); Jackson, R. C. (Revelstoke).

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476	Pollination Techniques for Douglas-fir	Vancouver Island.
478	Phenotypic Selections in Open-grown Douglas-fir	Vancouver Island.
479	Plus-trees Selection for Douglas-fir Seed Orchards	Vancouver Island.
480	A Co-operative Seed Provenance Study of Douglas-fir	Vancouver Island.
482	Climate and the Altitudinal Distribution of Conifers	Vancouver Island.
485	Classification of Lodgepole Pine Sites	Prince Rupert.
502	Plantation Trials	Prince Rupert.
513	Intra- and Interspecific Crosses within the Genus *Pseudotsuga*	Vancouver Island.
528	Influence of Time on the Effectiveness of Scarified Seed-beds	Prince George.
541	Natural Nurseries	Prince Rupert.
549	Spacing Trials	Prince George.
554	Thinning Experiments in Douglas-fir	Vancouver Island.
570	Sitka Spruce Spacing Study	Prince Rupert.
571	Trials of Tree Species and Initial Spacing on the West Coast of Vancouver Island	Vancouver Island.
580	Site Preparation to Induce Restocking of Lodgepole Pine Sites in the West Kettle	Nelson.
581	Co-operative Planting Study of 2+0 Douglas-fir culls	Vancouver Island.
585	Plantation Studies	Vancouver Island.
589	A Study of Douglas-fir Planting Stock on High Site Lands Subject to Dense Plant Cover	Vancouver Island.
590	Compatibility of Grass and Tree Seeding	Kamloops.
591	Regeneration Study in Cut-over Lodgepole Pine Stands	Prince Rupert.
594	Brush Control, Coastal British Columbia	Vancouver Island.
599	Problem Analysis: Approach to Provenance Experimentation in Coastal Douglas-fir	Vancouver Island.
602	Lodgepole Pine Problem Analysis	Prince Rupert.
603	Study of Some Hand-planting Methods in White Spruce	Prince Rupert.
606	Direct Seeding of Douglas-fir and Engelmann Spruce	Kamloops.
607	Ponderosa Pine Spacing Trials	Nelson.
613	Western Hemlock Spacing Study	Prince Rupert.
614	The Use of the Herbicide Tordon to Control Bracken	Vancouver Island.
616	Study of Regeneration Problems in Decadent Hemlock-Cedar Stands	Kamloops.
618	Cone Crop Periodicity in Spruce, Nelson Forest District	Nelson.
619	Douglas-fir/Engelmann Spruce Planting Study, 1963	Kamloops.
623	The Growth Behaviour of Interior Spruce in the Nursery	Prince George.
625	The Survival and Initial Growth of Various Types of Douglas-fir Planting Stock	Vancouver Island.
629	Classification of Soil Capability for Forestry	Prince George.
630	Lodgepole Pine Cleaning Study	Prince Rupert.
632	Exploratory Direct Seeding Trials in the Wet Belt Type of the Southern Interior	Kamloops.
633	Western Hemlock Planting Trials	Prince Rupert.
635	Direct Seeding on a Scarified Area	Prince Rupert.
637	Seed Dispersal and Natural Regeneration in the Columbia Forest Zone	Nelson.
638	Seeding Trials	Prince George.
639	Regeneration and Reforestation Practice	Prince George.
640	Requirements of Douglas-fir Seedlings for P, K and Mg.	Vancouver Island.
641	Dry Matter Production and Growth Periodicity in Four Western Species	Vancouver Island.
642	Nursery Experiment with Different Nitrogen Sources	Vancouver Island.
643	Nutrient Analysis in Plantation Trees	Vancouver Island.
644	Bullet Planting with Douglas-fir, Preliminary Trial, 1965	Vancouver Island.
645	Variation in Nutrient Concentration within and between Trees, and Estimation of Nutrient Uptake	Vancouver Island.
646	Field Test of 40 Provenances of White and Engelmann Spruce	Vancouver Island.
647	Investigation of Factors Influencing Pollen Production in Douglas-fir: 1, Effect of Growth Regulators upon Reproductive Bud Initiation	Vancouver Island.
648	Grafting in Douglas-fir	Vancouver Island.
649	White Spruce Stock Comparison Study	Prince Rupert.
650	Direct Seeding on a Control Burn	Prince Rupert.
651	Seed Dispersal Study	Prince Rupert.
652	Measurement of 2+0 Douglas-fir Dormancy	Vancouver Island.
655	Determination of Fertilizer Amendments for White Spruce at Red Rock Nursery	Prince George.

(12) RESEARCH PUBLICATIONS, 1966

Armit, D. (1966): Silvics and Silviculture of Lodgepole Pine in the North-Central Interior of British Columbia. B.C. Forest Service Research Note 40.

Fraser, A. R., and Kovats, M. (1966): Stereoscopic Models of Multivariate Statistical Data. Biometrics 22:2:358–367.

Illingworth, K., and Clark, M. B. (1966): Planting Trials with Ponderosa Pine in British Columbia. B.C. Forest Service Research Note 41.

Orr-Ewing, A. L. (1966): Inter- and Intraspecific Crosses in Douglas-fir. Silvæ Genetica 15:4:112–126.

Roche, L. (1966): Variation in Lodgepole Pine with Reference to Provenances Planted in Great Britain and Ireland. Journal of Forestry 39:1:30–39.

Sprout, P. N.; Lacate, D. S.; and Arlidge, J. W. C. (1966): Forest Land Classification Survey and Interpretations for Management of a Portion of the Niskonlith Provincial Forest, Kamloops, B.C. B.C. Forest Service Technical Publication T60.

van den Driessche, R., and Wareing, P. F. (1966): Dry Matter Production and Photosynthesis in Pine Seedlings. Annals of Botany 30:120:673–682.

——— ——— (1966): Nutrient Supply, Dry Matter Production and Nutrient Uptake of Forest Tree Seedlings. Annals of Botany 30:120:657–672.

PAPERS

10th Meeting, Committee on Forest Tree Breeding in Canada, Vancouver, 1966

Heaman, J. C.: Selection, Propagation and Seed Orchard Establishment Phases of the Douglas-fir Breeding Programmes of the B.C. Forest Service.

Orr-Ewing, A. L.: Breeding *Pseudotsuga* in Coastal British Columbia.

Roche, L.: Spruce Provenance Research in British Columbia.

Western Society of Soil Science, 1966, Seattle, Wash.

Keser, N., and Rowles, C. A.: Soil-Tree Relationships.

(22) SUMMARY OF PLANTING, 1957–66

Year	Forest Service on Crown Land		Forest Service on Crown-granted Land (Forest Act, Sec. 152)		Company on Tree-farm Licences		Other Private		Totals	
	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres
Coast										
1966[1]	3,816.8	8,052	7.0	30	8,378.7	22,116	3,886.3	9,679	16,088.8	39,877
1965	3,221.7	9.398	628.0	1,453	7,038.5	20,742	4,432.5	13,023	15,320.7	44,616
1964	1,172.4	3,267	1,165.3	3,247	6,917.4	20,395	3,720.6	10,886	12,975.7	37,795
1963	2,080.0	5,413	1,592.2	3,538	6,487.3	18,463	3,130.6	9,226	13,290.1	36,640
1962	1,202.8	2,703	1,758.2	4,240	4,903.1	14,536	1,792.3	5,015	9,656.4	26,494
1961	330.0	770	563.3	1,508	4,549.6	14,399	1,120.4	3,145	6,563.3	19,822
1960	137.1	318	1,261.7	2,299	5,110.2	15,161	131.1	338	6,640.1	18,116
1959	856.5	1,482	1,575.2	2,932	4,614.1	11,540	398.5	914	7,444.3	16,868
1958	887.5	915	1,894.4	2,128	4,955.4	11,438	102.5	129	7,839.8	14,610
1957	305.7	448	----------	----------	2,971.4	7,399	65.9	84	3,343.0	7,931
Previously planted	87,257.2	104,236	4,649.6	5,605	17,753.6	28,712	2,152.5	2,723	111,812.9	141,276
Totals to date	101,267.7	137,002	15,094.9	26,980	73,679.3	184,901	20,933.2	55,162	210,975.1	404,045
Interior										
1966[1]	2,292.6	4,835	----------	----------	568.6	1,919	120.7	304	2,981.9	7,058
1965	1,755.9	5,427	----------	----------	615.4	2,735	130.4	382	2,501.7	8,544
1964	1,076.8	2,913	----------	----------	199.5	968	45.2	120	1,321.5	4,001
1963	596.5	1,286	----------	----------	324.4	923	5.9	15	926.8	2,224
1962	566.1	1,171	----------	----------	346.2	1,007	----------	----------	912.3	2,178
1961	409.6	1,010	----------	----------	248.0	625	0.5	1	658.1	1,636
1960	198.4	357	----------	----------	187.8	416	----------	----------	386.2	773
1959	777.5	1,320	----------	----------	81.9	114	10.2	14	869.6	1,448
1958	475.3	638	----------	----------	82.2	181	12.4	18	569.9	837
1957	168.6	216	----------	----------	47.6	93	80.9	113	297.1	422
Previously planted	1,605.3	2,382	----------	----------	307.1	454	84.4	111	1,996.8	2,947
Totals to date	9,922.6	21,555	----------	----------	3,008.7	9,435	490.6	1,078	13,421.9	32,068
All planted to date	111,190.3	158,557	15,094.9	26,980	76,688.0	194,336	21,423.8	56,240	224,397.0	436,113
All planted this year	6,109.4	12,887	7.0	30	8,947.3	24,035	4,007.0	9,983	19,070.7	46,935

[1] Subject to correction due to late returns.

MOTION-PICTURE LIBRARY, 1957–66

Stock Records

	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
Films in library at January 1st	78	80	83	92	95	140[1]	144	151	148	169
Films withdrawn during year	.....	1	10	2	2	1	3	9	12	4
New films added during year	2	4	19	5	3	5	10	6	33	9
Films in library at December 31st	80	83	92	95	96	144	151	148	169	174
Films used during year	79	84	83	96	96	145	150	142	164	173

[1] Previously listed as number of subjects only. Now includes multiple prints.

Circulation Records

Number of loans made during year	455	604	468	374	344	473	955	483	535	578
Number of film loans during year (one film loaned one time)	1,758	1,253	1,454	749	776	957	1,926	990	1,070	1,320
Number of showings during year	1,956	1,775	1,622	1,217	1,085	1,490	1,146	1,115	1,535	2,164
Number of audiences—										
Adults	18,983	10,330	17,329	12,277	13,096	10,576	7,691	10,511	16,069	16,522
Children	86,829[1]	69,316[1]	54,429[1]	90,658	57,366	76,699	64,946	64,057	80,333	100,628
Mixed	38,143	42,938	51,421	62,405	69,896	67,777	40,386	32,438	17,236	24,242
Totals	148,124[1]	126,216[1]	123,179[1]	165,340[1]	140,358	155,052	113,023	107,006	112,638	141,392

[1] Including attendances of school lecturers.

(32) SUMMARY OF SCHOOL LECTURE COVERAGE, 1957–66

Forest District	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	Total
Vancouver—											
Number of school visits	10	176	108	117	57	60	28	9	50	51	666
Number of lectures given	11	237	162	145	113	109	64	33	72	52	998
Attendance	871	29,606	35,082	30,380	9,644	19,493	7,325	3,450	8,644	4,911	149,406
Kamloops—											
Number of school visits	71	.....	47	48	3	.....	4	13	3	24	213
Number of lectures given	86	.....	49	54	9	.....	8	42	3	24	275
Attendance	10,046	.....	5,420	5,203	640	.....	1,285	6,150	500	3,262	32,506
Nelson—											
Number of school visits	42	.....	62	36	40	15	.....	.....	.....	41	236
Number of lectures given	60	.....	75	59	64	35	.....	.....	.....	48	341
Attendance	7,002	.....	9,972	5,094	5,834	2,910	.....	.....	.....	6,754	37,566
Prince George—											
Number of school visits	66	.....	76	5	27	21	29	.....	3	.....	227
Number of lectures given	75	.....	82	5	28	23	38	.....	5	.....	256
Attendance	5,671	.....	5,600	820	3,076	2,419	4,195	.....	715	.....	22,496
Prince Rupert—											
Number of school visits	.....	.....	21	.....	.....	.....	13	.....	.....	2	36
Number of lectures given	.....	.....	25	.....	.....	.....	41	.....	.....	8	74
Attendance	.....	.....	5,135	.....	.....	.....	2,435	.....	.....	790	8,360
All districts—											
Number of school visits	189	176	314	206	127	96	74	22	56	118	1,378
Number of lectures given	232	237	393	263	214	167	151	75	80	132	1,944
Total attendance	23,590	29,606	61,209	41,497	19,194	24,822	15,240	9,600	9,859	15,717	250,334

(33) FOREST SERVICE LIBRARY, 1957–66

Classification	Items Catalogued and Indexed										10-year Average, 1957–66
	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	
Bound volumes	45	48	43	39	31	29	23	30	41	31	36
Government reports and bulletins	266	177	142	123	92	113	191	146	158	207	162
Other bulletins and reports	109	159	165	200	135	140	110	92	73	60	124
Periodicals	155	133	130	115	134	151	151	151	151	151	142
Serials	214	230	302	274	375	378	370	380	419	422	336
References indexed	1,417	1,139	1,502	999	878	911	1,165	1,263	1,371	1,476	1,212

(47) SUMMARY OF BASIC DATA FOR TREE-FARM LICENCES (PRIVATE SUSTAINED-YIELD UNITS)

Forest District	Number of Tree-farm Licences	Productive Area (Acres)			Total Area (Acres)	Total Mature Volume (M Cu. Ft.)			Allowable Cut (M Cu. Ft.)
		Crown	Private	Total		Crown	Private	Total	
Vancouver	17[1]	2,429,722	1,183,913	3,613,635	6,567,306	12,315,336	6,378,533	18,693,869	330,344[2]
Prince Rupert	6[1]	3,384,394	178,660	3,563,054	10,745,249	13,209,283	1,080,513	14,289,796	90,257
Prince George	4	461,625	1,599	463,224	521,617	991,663	163	991,826	11,865
Kamloops	7	695,454	1,848	697,302	775,509	847,029	215	847,244	13,565
Nelson	6	1,249,480	46,884	1,296,364	3,337,308	1,394,133	355,726	1,749,859	38,100
Grand totals	38	8,220,675	1,412,904	9,633,579	21,946,989	28,757,444	7,815,150	36,572,594	484,131

[1] Two tree-farm licences located in both districts.
[2] Includes allowable cut of Tree-farm Licence No. 39 in Prince Rupert Forest District.

(48) SUMMARY OF BASIC DATA FOR CERTIFIED TREE-FARMS (PRIVATE SUSTAINED-YIELD UNITS)

Tree-farms within Tree-farm Licences

District	Number of Tree-farms within Tree-farm Licences	Productive Area (Acres)				Total Area (Acres)	Mature Volume (M Cu. Ft.)	Estimated Productive Capacity (M Cu. Ft.)
		Mature	Immature	N.S.R. and N.C.C.	Total			
Vancouver	11	89,027	177,921	30,208	297,156	335,218	398,473	21,392
Prince George	1	123	702	429	1,254	1,280	331	37
Nelson	2	815	3,977	330	5,122	5,951	5,881	150
Totals	14	89,965	182,600	30,967	303,532	342,449	404,685	21,579

Not Included within Tree-farm Licences

Vancouver	23	139,792	251,645	42,205	433,642	461,545	1,132,497	30,094
Nelson	9	91,408	182,158	4,944	278,510	472,297	194,545	4,052
							(1,685,724)	(1,158,200)
Totals	32	231,200	433,803	47,149	712,152	933,842	1,327,042	34,146
							(1,685,724)	(1,158,200)
Grand totals	46	321,165	616,403	78,116	1,015,684	1,276,291	1,731,727	55,725

Figures in parentheses are Christmas trees.

(49) SUMMARY OF BASIC DATA FOR FARM WOOD-LOT LICENCES (PRIVATE SUSTAINED-YIELD UNITS)

District	Number of Farm Wood-lot Licences	Productive Area (Acres)			Total Area (Acres)	Total Mature Volume (M Cu. Ft.)			Allowable Annual Cut (M Cu. Ft.)
		Crown	Private	Total		Crown	Private	Total	
Vancouver	15	2,105	277	2,382	3,293	4,242	145	4,387	89.6
Prince Rupert	6	1,923	475	2,398	4,188	2,508	133	2,641	41.2
Prince George	15	3,425	193	3,618	3,840	6,327	105	6,432	112.3
Kamloops	5	1,614	146	1,760	1,960	1,525	18	1,543	36.0
Nelson	6	1,697	777	2,474	2,599	1,331	280	1,611	34.7
Totals	47	10,764	1,868	12,632	15,880	15,933	681	16,614	313.8

(50) SUMMARY OF BASIC DATA FOR PUBLIC SUSTAINED-YIELD UNITS

Forest District	Number of Units	Productive Area (Acres)			Total Area (Including Non-forest) (Acres)	Mature Volume to Close-utilization Standards (M Cu. Ft.)	Annual Commitment (M Cu. Ft.)
		Mature	Immature	Total Productive (Including N.S.R. and N.C.C.)			
Vancouver	6	3,300,492	1,365,564	5,126,826	10,187,028	26,736,448[1]	151,476
Prince Rupert (Coast)	4	3,352,888	261,968	3,864,333	11,699,421	23,253,196[1]	42,268
Prince Rupert (Interior)	7	5,488,489	3,075,851	9,127,113	14,076,337	23,001,010[2]	51,467
Prince George	22	13,603,506	12,312,454	27,561,027	39,228,995	41,639,576[2]	214,543
Kamloops	23	7,290,896	10,465,762	21,364,769	28,529,898	20,910,251[2]	127,735
Nelson	14	2,593,981	4,792,863	8,492,169	14,071,376	10,323,831[2]	67,335
Totals	76	35,630,252	32,274,472	75,536,237	117,793,055	145,864,312	654,824

[1] Volume 9.1″+d.b.h. to close utilization.
[2] Volume 7.1″+d.b.h. to close utilization.

(51) BRITISH COLUMBIA FOREST INDUSTRIES, VALUE ADDED BY MANUFACTURE, 1957–66

(In thousands of dollars.)

Industry	Basis: Old Standard Industrial Classification			Basis: Revised Standard Industrial Classification and New Establishment Concept								
	1957	1958	1959	1958	1959	1960	1961	1962	1963	1964[1]	1965	1966
Logging industry	262,508	194,749	234,895	194,749	234,895	276,289	286,705	351,522	362,384	378,000	390,000*	400,000*
Wood industries—												
Sawmills and planing-mills[2]	138,873	153,726	162,382	147,203	156,247	154,165	148,387	183,883	209,323	235,950	.....	.....
Coast[2]	81,773	92,636	91,442	89,743	88,545	96,998	86,465	95,272	111,380	113,415	.....	.....
Interior[2]	57,100	61,090	70,940	57,460	67,702	57,167	61,922	88,611	97,943	122,535	.....	.....
Shingle-mills[2]	.....	.....	.....	.....	.....	7,476	7,791	8,615	13,116	10,426	.....	.....
Sash, door, and millwork[3]	20,305	22,885	26,688	23,063	26,971	21,582	24,132	27,305	27,307	16,031	.....	.....
Veneer and plywood mills	33,940	37,456	38,958	38,794	40,183	36,148	35,485	43,844	51,793	55,631	.....	.....
Other wood industries[4]	6,386	6,181	7,525	5,699	6,828	7,331	4,649	4,655	5,124	6,538	.....	.....
Totals, wood industries	199,504	220,248	235,553	214,759	230,229	226,702	220,444	268,302	306,663	324,576	335,000*	347,060*
Pulp, paper, and allied industries—												
Pulp and paper mills	87,890	102,420	139,734	106,557	144,545	153,573	167,296	177,220	191,136	217,137	.....	.....
Other paper and allied industries[5]	12,960	14,098	15,877	14,116	15,986	15,944	15,664	17,221	17,951	20,305	.....	.....
Totals, paper and allied industries	100,850	116,518	155,611	120,673	160,531	169,517	182,960	194,441	209,087	237,442	263,000*	290,000*
Totals, forest industries	562,862	531,515	626,059	530,181	625,655	672,508	690,109	814,265	878,134	940,018	988,000*	1,037,000*
Furniture industries[6]	10,090	10,543	12,255	10,593	12,109	11,194	11,004	11,431	12,104	12,200	12,400*	12,400*

* Estimated.

1 Preliminary.

2 Prior to 1960, shingle-mills included with sawmills. Commencing in 1964, planing-mills included with sawmills.

3 Prior to 1964, planing-mills were included. Category changed to sash, door, and millwork (including hardwood flooring) and excludes wood preservation.

4 Includes wood-preservation industry, wooden-box factories, coffin and casket industry, and the miscellaneous wood industries. Hardwood flooring excluded.

5 Includes asphalt-roofing manufacturers, paper-bag manufacturers, manufacturers of corrugated boxes, manufacturers of folding cartons and set-up boxes, and miscellaneous paper converters.

6 The furniture industries are no longer considered a forest industry, but are included here for reference.

Sources: Bureau of Economics and Statistics, Victoria, B.C., and Dominion Bureau of Statistics, Ottawa, Ont.

WATER-BORNE LUMBER TRADE (IN M B.M.), 1957–66

Destination	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	10-year Average, 1957–66
Eastern Canada	2,102	5,482	10,481	9,680	8,828	11,394	5,295	6,057	727	----	6,005
Africa	181,560	139,523	94,598	142,293	75,146	70,726	110,237	84,470	124,276	54,384	107,721
Australia	87,213	98,808	80,115	113,536	91,935	122,470	113,915	106,166	126,045	116,640	105,684
Belgium	5,095	10,790	4,080	21,937	31,300	22,810	34,009	37,596	30,272	34,128	23,202
Central America	5,330	5,349	----	----	----	----	----	----	----	----	1,068
China	----	----	----	----	----	----	----	147	----	----	15
Eire	483	1,070	----	3,684	4,773	6,465	6,013	7,223	6,179	3,953	3,984
France	4,110	3,265	3,184	9,883	11,061	21,922	26,371	38,744	61,397	47,101	22,704
Germany	169	22	----	1,062	6,040	10,558	15,611	14,155	13,482	11,229	7,233
Greece	----	----	70	----	----	10	1	1,059	129	416	169
Hawaiian Islands	7,668	3,166	2,133	7,755	12,887	6,813	5,433	3,483	3,946	1,778	5,506
Holland	3,552	6,091	4,569	6,272	13,866	21,802	19,068	20,789	21,920	20,080	13,801
Hong Kong	1,256	597	509	867	360	----	172	300	302	163	453
India	468	3,372	27,581	9,793	----	----	5	----	----	----	4,122
Israel	5,643	213	1,340	1,681	10,225	4,009	233	919	1,272	527	2,606
Italy	6,530	4,560	2,805	5,363	5,909	12,624	9,609	8,706	16,917	25,581	9,860
Japan	2,301	999	1,201	1,607	155,550	107,438	278,168	204,439	207,811	277,777	123,729
Korea	1,412	----	6,413	----	----	399	1,701	----	----	1,145	1,107
Middle East	123	----	----	----	----	----	----	----	3,128	387	364
New Zealand	11,030	8,397	5,212	6,689	8,392	6,603	5,008	6,336	6,957	7,998	7,252
Puerto Rico	44,555	46,493	62,826	67,022	73,249	77,033	59,448	87,994	61,213	85,872	66,571
Scandinavia	14	18	16	66	30	184	212	242	53	99	93
South America	25,503	8,816	10,178	7,743	1,187	119	83	100	147	----	5,388
South Sea Islands	8,147	11,841	8,068	13,414	9,970	10,477	10,042	10,794	14,697	8,804	10,625
Spain	----	----	----	----	----	5,373	10,156	2,517	14,095	7,283	3,942
United Kingdom	384,754	336,889	267,293	518,090	422,939	442,237	465,428	695,196	535,894	470,941	453,966
United States	275,452	602,427	395,170	714,050	838,080	876,420	963,783	932,313	1,179,632	1,157,462	813,479
West Indies	12,085	13,492	8,478	10,796	5,482	7,913	8,901	12,494	8,541	10,398	9,858
Foreign, unclassified	2,363	2,681	1,333	2,068	1,906	1,227	230	570	413	291	1,308
Totals	1,078,918	1,314,361	1,197,653	1,675,351	1,789,115	1,847,026	2,149,132	2,282,709	2,439,445	2,344,437	1,811,815

TOTAL AMOUNT OF TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING THE YEARS 1965 AND 1966 IN F.B.M.

(Conversion factors: Coast—6 f.b.m.=1 cu. ft.; Interior—5.75 f.b.m.=1 cu. ft.)
(53A) (All products converted to f.b.m.)

Forest District	10-year Average, 1957–66	1965	1966	Increase	Decrease	Net Increase
Vancouver	3,816,797,385	4,489,965,270	4,668,599,676	178,634,406	----------	----------
Prince Rupert (C.)	517,647,025	659,941,062	790,161,720	130,220,658	----------	----------
Totals, Coast	4,334,444,410	5,149,906,332	5,458,761,396	308,855,064	----------	308,855,064
Prince Rupert (I.)	309,234,857	402,968,493	427,750,251	24,781,758	----------	----------
Prince George	950,550,779	1,210,468,621	1,265,723,608	55,254,987	----------	----------
Kamloops	1,214,817,655	1,358,088,653	1,349,400,220	----------	8,688,433	----------
Nelson	703,133,606	908,545,897	939,828,243	31,282,346	----------	----------
Totals, Interior	3,177,736,897	3,880,071,664	3,982,702,322	111,319,091	8,688,433	102,630,658
Grand totals	7,512,181,307	9,029,977,996	9,441,463,718	----------	----------	411,485,722

TOTAL AMOUNT OF TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING THE YEARS 1965 AND 1966 IN CUBIC FEET

(Conversion factors: Coast—6 f.b.m.=1 cu. ft.; Interior—5.75 f.b.m.=1 cu. ft.)
(53B) (All products converted to cubic feet.)

Forest District	10-year Average, 1957–66	1965	1966	Increase	Decrease	Net Increase
Vancouver	636,132,897	748,327,545	778,099,946	29,772,401	----------	----------
Prince Rupert (C.)	86,274,504	109,990,177	131,693,620	21,703,443	----------	----------
Totals, Coast	722,407,401	858,317,722	909,793,566	51,475,844	----------	51,475,844
Prince Rupert (I.)	53,779,975	70,081,477	74,391,348	4,309,871	----------	----------
Prince George	165,313,179	210,516,282	220,125,845	9,609,563	----------	----------
Kamloops	211,272,636	236,189,331	234,678,299	----------	1,511,032	----------
Nelson	122,284,105	158,007,982	163,448,390	5,440,408	----------	----------
Totals, Interior	552,649,895	674,795,072	692,643,882	19,359,842	1,511,032	17,848,810
Grand totals	1,275,057,296	1,533,112,794	1,602,437,448	----------	----------	69,324,654

(54A) SPECIES CUT, ALL PRODUCTS, 1966, CONVERTED TO F.B.M.

Forest District	Fir	Cedar	Spruce	Lodgepole Pine	Hemlock	Balsam	White Pine
Vancouver	1,257,787,032	909,481,878	70,966,518	510,912	1,613,391,348	699,582,714	25,260,924
Prince Rupert (C.)	30,363,642	128,635,380	196,693,908	74,418	338,777,010	75,019,026	
Totals, Coast	1,288,150,674	1,038,117,258	267,660,426	585,330	1,952,168,358	774,601,740	25,260,924
Prince Rupert (I.)	6,883	35,195,566	121,239,032	90,480,448	105,602,085	68,945,467	44,125
Prince George	125,016,667	4,991,851	826,680,714	263,814,266	296,257	40,380,738	288,840
Kamloops	713,417,594	54,289,068	312,639,293	122,871,675	32,852,217	47,065,941	9,488,132
Nelson	143,043,290	110,181,937	349,243,972	39,835,621	107,975,110	77,016,828	22,128,214
Totals, Interior	981,484,434	204,658,422	1,609,803,011	517,002,010	246,725,669	233,408,974	31,949,311
Grand totals	2,269,635,108	1,242,775,680	1,877,463,437	517,587,340	2,198,894,027	1,008,010,714	57,210,235

Forest District	Yellow Pine	Cypress	Larch	Hardwood	Cottonwood	Unspecified	Total
Vancouver	58,632	56,657,112		6,579,432	5,069,148	23,254,026	4,668,599,676
Prince Rupert (C.)		4,445,538		77,952	16,074,846		790,161,720
Totals, Coast	58,632	61,102,650		6,657,384	21,143,994	23,254,026	5,458,761,396
Prince Rupert (I.)				40,359	6,196,286		427,750,251
Prince George				156,693	4,097,582		1,265,723,608
Kamloops	46,757,580		9,160,256	542,852	315,612		1,349,400,220
Nelson	8,457,042		81,394,729	50,175	501,325		939,828,243
Totals, Interior	55,214,622		90,554,985	790,079	11,110,805		3,982,702,322
Grand totals	55,273,254	61,102,650	90,554,985	7,447,463	32,254,799	23,254,026	9,441,463,718

SPECIES CUT, ALL PRODUCTS, 1966, IN CUBIC FEET

(54B) (Conversion factors: Coast—6 f.b.m.=1 cu. ft.; Interior—5.75 f.b.m.=1 cu. ft.)

Forest District	Fir	Cedar	Spruce	Lodgepole Pine	Hemlock	Balsam	White Pine
Vancouver	209,631,172	151,580,313	11,827,753	85,152	268,898,558	116,597,119	4,210,154
Prince Rupert (C.)	5,060,607	21,439,230	32,782,318	12,403	56,462,835	12,503,171	
Totals, Coast	214,691,779	173,019,543	44,610,071	97,555	325,361,393	129,100,290	4,210,154
Prince Rupert (I.)	1,197	6,120,968	21,085,049	15,735,730	18,365,580	11,990,516	7,674
Prince George	21,742,029	868,148	143,770,559	45,880,742	51,523	7,022,737	50,233
Kamloops	124,072,625	9,441,577	54,372,051	21,368,987	5,713,429	8,185,381	1,650,110
Nelson	24,877,094	19,162,076	60,738,082	6,927,934	18,778,280	13,394,231	3,848,385
Totals, Interior	170,692,945	35,592,769	279,965,741	89,913,393	42,908,812	40,592,865	5,556,402
Grand totals	385,384,724	208,612,312	324,575,812	90,010,948	368,270,205	169,693,155	9,766,556

Forest District	Yellow Pine	Cypress	Larch	Hardwood	Cottonwood	Unspecified	Total
Vancouver	9,772	9,442,852		1,096,572	844,858	3,875,671	778,099,946
Prince Rupert (C.)		740,923		12,992	2,679,141		131,693,620
Totals, Coast	9,772	10,183,775		1,109,564	3,523,999	3,875,671	909,793,566
Prince Rupert (I.)				7,019	1,077,615		74,391,348
Prince George				27,251	712,623		220,125,845
Kamloops	8,131,753		1,593,088	94,409	54,889		234,678,299
Nelson	1,470,790		14,155,605	8,726	87,187		163,448,390
Totals, Interior	9,602,543		15,748,693	137,405	1,932,314		692,643,882
Grand totals	9,612,315	10,183,775	15,748,693	1,246,969	5,456,313	3,875,671	1,602,437,448

TOTAL SCALE OF ALL PRODUCTS BILLED IN 1966 IN F.B.M.
(SEGREGATED BY LAND STATUS AND FOREST DISTRICTS)

(55A)

Land Status	Vancouver	Prince Rupert (Coast)	Prince Rupert (Interior)	Prince George	Kamloops	Nelson	Total
Timber licences	1,075,247,232	108,319,884		15,897,962	13,252,479	26,272,613	1,238,990,170
Timber berths	86,693,526				52,869,899	36,659,309	176,222,734
Timber leases	186,083,508						186,083,508
Pulp leases	79,572,684	35,354,838					114,927,522
Pulp licences	19,862,010	37,447,020					57,309,030
Farm wood-lots	29,844		1,709,567	457,861	125,051	113,252	2,435,575
Timber sales	1,126,352,418	320,543,982	287,957,481	1,028,230,956	910,073,355	506,006,658	4,179,164,850
Pulp timber sales				31,791,877			31,791,877
Tree-farm licences	587,897,376	242,148,528	112,141,595	80,852,860	87,099,977	248,894,155	1,359,034,491
Beachcomb, trespass	41,086,050						41,086,050
No mark visible	193,302,882						193,302,882
Miscellaneous	2,539,896	12,374,718	6,184,303	27,841,425	24,336,432	8,791,946	82,068,720
Sub-totals, Crown lands	3,398,667,426	756,188,970	407,992,946	1,185,072,941	1,087,757,193	826,737,933	7,662,417,409
Federal lands	18,922,776	13,859,664	2,193,907	2,367,057	34,924,672	1,525,774	73,793,850
Crown grants—							
To 1887	1,098,604,470	78		330,895	51,018,761	12,676,255	1,162,630,459
1887–1906	48,536,262	6,586,602	163,754	663,694	23,806,794	51,601,224	131,358,330
1906–1914	13,205,622	4,529,484	4,330,670	6,825,146	48,722,499	9,522,776	87,136,197
1914 to date	90,663,120	8,996,922	13,068,974	70,463,875	103,170,301	37,764,281	324,127,473
Totals	4,668,599,676	790,161,720	427,750,251	1,265,723,608	1,349,400,220	939,828,243	9,441,463,718

TOTAL SCALE OF ALL PRODUCTS BILLED IN 1966 IN CUBIC FEET
(SEGREGATED BY LAND STATUS AND FOREST DISTRICTS)

(55B) (Conversion factors: Coast—6 f.b.m.=1 cu. ft.; Interior—5.75 f.b.m.=1 cu. ft.)

Land Status	Vancouver	Prince Rupert (Coast)	Prince Rupert (Interior)	Prince George	Kamloops	Nelson	Total
Timber licences	179,207,872	18,053,314		2,764,863	2,304,779	4,569,150	206,899,978
Timber berths	14,448,921				9,194,765	6,375,532	30,019,218
Timber leases	31,013,918						31,013,918
Pulp leases	13,262,114	5,892,473					19,154,587
Pulp licences	3,310,335	6,241,170					9,551,505
Farm wood-lots	4,974		297,316	79,628	21,748	19,696	423,362
Timber sales	187,725,403	53,423,997	50,079,562	178,822,775	158,273,627	88,001,158	716,326,522
Pulp timber sales				5,529,022			5,529,022
Tree-farm licences	97,982,896	40,358,088	19,502,886	14,061,367	15,147,822	43,285,940	230,338,999
Beachcomb, trespass	6,847,675						6,847,675
No mark visible	32,217,147						32,217,147
Miscellaneous	423,316	2,062,453	1,075,531	4,841,987	4,232,423	1,529,034	14,164,744
Sub-totals, Crown lands	566,444,571	126,031,495	70,955,295	206,099,642	189,175,164	143,780,510	1,302,486,677
Federal lands	3,153,796	2,309,944	381,549	411,662	6,073,856	265,352	12,596,159
Crown grants—							
To 1887	183,100,745	13		57,547	8,872,828	2,204,566	194,235,699
1887–1906	8,089,377	1,097,767	28,479	115,425	4,140,312	8,974,126	22,445,486
1906–1914	2,200,937	754,914	753,160	1,186,982	8,473,478	1,656,135	15,025,606
1914 to date	15,110,520	1,499,487	2,272,865	12,254,587	17,942,661	6,567,701	55,647,821
Totals	778,099,946	131,693,620	74,391,348	220,125,845	234,678,299	163,448,390	1,602,437,448

TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING 1966, BY MONTHS AND FOREST DISTRICTS

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Vancouver[1]—													
F.b.m.	102,007,017	69,146,274	103,313,757	70,379,410	125,645,761	151,625,993	124,648,719	123,971,177	93,758,901	118,109,597	122,533,547	96,187,148	1,301,327,301
Cubic feet	24,518,089	47,407,217	42,284,262	35,485,948	50,047,677	57,680,251	48,559,247	49,663,161	51,636,554	49,047,216	50,974,009	43,343,663	550,647,294
Lineal feet	322,705	51,293	260,551	526,137	906,796	1,039,479	551,008	978,902	870,302	958,839	716,239	1,412,191	8,594,442
Cords	4,509	1,675	4,998	2,060	5,725	5,234	2,222	6,294	3,669	3,308	2,536	5,349	47,579
All products, cu. ft.	42,151,233	59,135,327	60,130,717	47,810,023	72,102,563	84,136,957	69,930,157	71,605,277	68,277,650	69,735,115	72,177,906	60,900,776	778,099,946
Prince Rupert (C.)—													
F.b.m.	9,065,319	7,706,808	18,502,671	13,329,374	14,314,061	16,462,931	16,726,232	16,047,306	20,894,077	22,943,748	18,905,808	16,065,869	190,964,204
Cubic feet	7,788,663	8,072,551	7,946,232	5,508,239	6,237,162	8,308,729	9,789,376	10,552,763	10,214,731	8,661,648	10,070,399	5,361,622	98,512,115
Lineal feet	302,920	2,746	77,425	137,075	43,160	245,900	95,355	12,675	22,161	328,635	514,230	11,615	1,793,897
Cords	----------	14	12	10	----------	35	----------	----------	----------	17	----------	----------	88
All products, cu. ft.	9,526,739	9,360,479	11,089,229	7,833,587	8,655,208	11,240,500	12,648,597	13,236,820	13,713,698	12,733,746	13,607,040	8,047,977	131,693,620
Prince Rupert (I.)—													
F.b.m.	2,298,093	1,578,205	1,131,027	1,196,436	1,027,209	640,407	678,300	919,696	938,287	579,242	564,203	659,817	12,210,922
Cubic feet	7,340,672	7,482,459	9,704,524	10,504,048	3,140,971	2,631,104	4,588,296	5,982,998	5,777,014	4,647,318	3,542,147	4,303,821	69,645,372
Lineal feet	171,355	18,960	103,985	172,155	243,410	295,335	97,910	297,595	419,200	476,745	376,380	134,860	2,807,890
Cords	117	----------	2,462	68	68	----------	78	321	----------	221	20	3,159	6,514
All products, cu. ft.	7,878,216	7,771,149	10,176,133	10,844,804	3,506,676	2,963,980	4,784,058	6,391,845	6,254,594	5,123,294	3,924,154	4,772,445	74,391,348
Prince George—													
F.b.m.	3,087,023	3,368,082	6,574,750	4,425,877	575,992	883,905	1,231,345	1,736,774	2,824,993	3,308,749	2,229,928	1,925,849	32,173,267
Cubic feet	29,527,895	28,789,883	38,854,967	28,806,793	5,378,701	6,142,189	10,603,695	14,770,792	15,923,121	14,957,343	10,359,716	9,815,416	213,930,511
Lineal feet	43,009	37,450	48,490	74,070	63,595	20,743	62,455	38,709	109,594	67,580	58,998	23,759	648,452
Cords	24	----------	107	108	89	80	171	57	70	376	90	----------	1,172
All products, cu. ft.	30,099,407	29,403,724	40,045,408	29,642,844	5,535,231	6,319,462	10,881,792	15,107,579	16,500,439	15,621,038	10,800,741	10,168,180	220,125,845
Kamloops—													
F.b.m.	7,736,181	5,446,227	7,130,302	7,178,315	4,204,114	7,621,512	7,004,265	5,891,433	5,882,516	6,735,266	5,594,550	5,161,118	75,585,799
Cubic feet	19,799,992	18,155,887	23,116,996	15,349,654	6,933,934	14,682,585	17,733,087	19,360,584	23,329,829	19,785,977	17,473,449	22,526,508	218,248,482
Lineal feet	284,805	340,107	290,510	24,476	309,872	334,971	201,306	514,955	206,970	465,860	352,839	663,910	3,990,581
Cords	297	198	81	27	474	266	409	483	374	149	325	312	3,395
All products, cu. ft.	21,388,368	19,377,144	24,569,212	16,615,375	7,943,505	16,280,783	19,141,103	20,817,357	24,543,015	21,317,167	18,740,792	23,944,478	234,678,299
Nelson—													
F.b.m.	2,213,631	2,881,947	4,571,000	4,687,286	5,955,645	2,908,738	2,219,011	2,610,649	1,967,305	2,212,042	4,608,035	3,653,257	40,488,546
Cubic feet	11,027,434	13,905,432	13,912,987	12,886,306	10,728,622	5,202,063	6,673,789	10,413,658	14,868,475	16,011,423	18,667,234	18,534,083	152,831,506
Lineal feet	184,785	137,338	536,140	208,235	376,285	290,162	302,033	500,732	480,828	183,663	1,382,324	421,009	5,003,534
Cords	326	190	230	379	583	483	1,138	202	871	132	1,004	772	6,310
All products, cu. ft.	11,571,252	14,524,615	15,133,022	13,895,307	12,101,066	5,928,488	7,378,093	11,217,780	15,585,988	16,499,326	20,058,776	19,554,677	163,448,390
Totals—													
F.b.m.	126,407,264	90,127,543	141,223,507	101,196,698	151,722,782	180,143,486	152,507,872	151,177,035	126,266,079	153,888,644	154,436,071	123,653,058	1,652,750,039
Cubic feet	100,002,745	123,813,429	135,819,968	108,540,988	82,467,067	94,646,921	97,947,490	110,743,956	121,749,724	113,110,925	111,086,954	103,885,113	1,303,815,280
Lineal feet	1,309,579	587,894	1,317,101	1,142,148	1,943,118	2,226,590	1,310,067	2,343,568	2,109,055	2,481,322	3,401,010	2,667,344	22,838,796
Cords	5,273	2,077	7,890	2,652	6,939	6,098	4,018	7,357	4,984	4,203	3,975	9,592	65,058
All products, cu. ft.	122,615,215	139,572,438	161,143,721	126,641,940	109,844,249	126,870,170	124,763,800	138,376,658	144,875,384	141,029,686	139,309,409	127,388,533	1,602,437,448

[1] Vancouver conversion: January to June—1 cubic foot=6 board-feet; July to December—1 board-foot=.16667 cubic foot.

VOLUME OF WOOD REMOVED UNDER RELOGGING AT REDUCED ROYALTY AND STUMPAGE, 1957–66, IN THOUSANDS OF CUBIC FEET

(57)

(1957–63—Vancouver Forest District only. 1964–66—Vancouver and Prince Rupert Forest Districts.)

Year	Salvage Wood (M Cu. Ft.)	Year	Salvage Wood (M Cu. Ft.)
1957	3,663	1962	2,580
1958	1,427	1963	3,217
1959	1,257	1964	5,224
1960	1,976	1965	6,987
1961	1,813	1966	6,135

Ten-year average, 1957–66: 3,428 M cu. ft.

NUMBER OF ACRES OPERATING UNDER APPROVED ANNUAL ALLOWABLE CUTS, 1957–66

Year	Tree-farm Licences		Tree-farms[1]		Christmas-tree Permits		Farm Wood-lots		Public Sustained-yield Units		Total Acres
	Number	Productive Acres	Number	Productive Acres	Number	Productive Acres[2]	Number	Productive Acres	Number	Productive Acres	
1957	23	4,871,237	15	305,193	283	80,651	44	10,488	58	28,820,776	34,007,694
1958	27	5,349,773	26	499,681	277	83,500	53	13,108	61	32,389,893	38,252,455
1959	36	5,851,979	26	503,200	279	83,210	50	12,059	64	34,606,543	40,973,781
1960	37	6,081,496	25	507,581	294	89,224	52	12,375	72	40,257,302	46,858,754
1961	39	7,017,594	22	545,164	282	96,478	50	11,993	78	46,203,742	53,778,493
1962	39	7,054,191	22	665,666	306	106,966	57	14,940	80	48,940,122	56,674,919
1963	39	7,070,774	25	672,712	346	123,538	53	14,124	82	52,530,686	60,288,296
1964	39	7,146,685	28	682,553	348	119,911	55	14,950	83	60,960,307	68,804,495
1965	40	8,796,577	31	709,452	352	120,065	51	13,978	75	69,781,944	79,301,951
1966	38	9,633,579	32	712,152	347	115,175	47	12,632	76	75,536,237	85,904,600
Ten-year average, 1957-66	36	6,888,389	25	580,335	311	101,872	51	13,065	73	49,002,755	56,484,544

[1] Exclusive of tree-farms incorporated into tree-farm licences.
[2] Also included in productive acres under public sustained-yield units.

(59)

TOTAL SCALE OF ALL PRODUCTS FROM AREAS OPERATED UNDER APPROVED ANNUAL ALLOWABLE CUTS, 1957–66

Year	Tree-farm Licences		Tree-farms[1]		Christmas Trees			Farm Wood-lots		Public Sustained-yield Units		Total[3] (Cubic Feet)
					Permits		Other Sources[2] (Number of Trees)					
	Number	Cubic Feet	Number	Cubic Feet	Number	Number of Trees		Number	Cubic Feet	Number	Cubic Feet	
1957	23	125,622,175	15	23,527,000	283	498,286	2,500	44	70,116	58	207,892,534	357,111,825
1958	27	144,260,543	26	27,593,000	277	408,874	2,700	53	139,396	61	254,876,246	426,869,185
1959	36	178,742,435	26	30,308,000	279	398,504	297,691	50	205,676	64	312,048,987	521,305,098
1960	37	241,410,459	25	32,683,000	294	495,697	349,513	52	92,168	72	385,200,000	659,385,627
1961	39	279,917,294	22	27,842,000	282	434,796	323,254	50	244,577	78	454,029,600	762,033,471
1962	39	337,057,599	22	35,678,000	306	552,512	153,618	57	277,701	80	527,054,000	900,067,300
1963	39	365,631,639	25	33,305,000	346	617,753	220,393	53	263,678	82	633,193,000	1,032,393,317
1964	39	350,806,403	28	34,543,000	348	511,726	395,168	55	253,552	83	607,641,611	993,244,566
1965	40	374,062,274	31	39,587,737	352	509,876	207,643	51	216,486	75	687,492,876	1,101,359,373
1966	38	405,623,421	32	45,058,717	347	494,798	239,378	47	166,963	76	640,946,702	1,091,795,803
Ten-year average, 1957–66	36	280,313,424	25	33,012,545	311	492,282	219,186	51	193,031	73	471,037,556	784,556,556

[1] Exclusive of tree-farms incorporated into tree-farm licences.
[2] Includes Christmas trees cut from tree-farm licences, tree-farms, and farm wood-lots.
[3] Total Christmas-tree cut is not shown.

(60)

LOGGING INSPECTIONS, 1966

Forest District	Type of Tenure Operated			Number of Inspections Made		
	Timber Sales	Leases, Licences, Crown Grants, and Other Tenures	Total	Timber Sales	Other Tenures	Total
Vancouver	1,057	1,559	2,616	3,414	3,378	6,792
Prince Rupert	728	460	1,188	2,710	518	3,228
Prince George	1,431	2,119	3,550	6,425	971	7,396
Kamloops	1,704	1,453	3,157	3,509	2,856	6,365
Nelson	646	583	1,229	2,535	1,853	4,388
Totals, 1966	5,566	6,174	11,740	18,593	9,576	28,169
Totals, 1965	6,231	6,514	12,745	17,869	6,365	24,234
Totals, 1964	6,557	6,560	13,117	17,789	13,311	31,100
Totals, 1963	6,926	7,168	14,094	18,021	7,189	25,210
Totals, 1962	7,079	6,645	13,724	18,602	6,353	24,955
Totals, 1961	7,088	6,463	13,551	18,330	6,242	24,572
Totals, 1960	7,249	5,120	12,369	(1)	(1)	26,151
Totals, 1959	6,273	4,898	11,171	(1)	(1)	26,912
Totals, 1958	5,936	4,341	10,277	(1)	(1)	23,802
Totals, 1957	7,503	5,940	13,443	(1)	(1)	25,253
Ten-year average, 1957–66	6,641	5,982	12,623	----------	----------	26,036

1 No breakdown made prior to 1961.

(61)

TRESPASSES, 1966

Forest District	Number of Cases	Area Cut Over (Acres)	Quantities Cut								Number of Resulting Seizures	Assessment in Dollars
			Cubic Feet	Lineal Feet	Cords	Ties	Christmas Trees	Cedar Shakes	Posts, Car Stakes	Reserved Trees		
Vancouver	120	403	1,090,026	5,015	37	.....	265	117,984	.....	.....	4	$127,513.91
Prince Rupert	64	569	1,256,538	16,435	.....	.....	.....	.....	.....	.....	.....	54,305.67
Prince George	96	311	617,352	.....	.....	.....	181	.....	.....	388	.....	15,146.49
Kamloops	102	756	537,762	7,545	.....	.....	8,132	.....	1,589	5	.....	58,572.65
Nelson	53	882	683,319	35,540	.....	.....	2,423	3,620	401	12	1	16,900.84
Totals, 1966	435	2,921	4,184,997	64,535	37	.....	11,001	121,604	1,990	405	5	$272,439.56
Totals, 1965	436	4,517	4,093,758	93,546	118	.....	13,204	25,290	75	580	5	$239,156.97
Totals, 1964	464	2,488	3,023,375	56,250	305	.....	6,724	453,238	900	2,988	11	$284,797.47
Totals, 1963	546	3,761	4,085,328	36,401	3,494	.....	10,995	17,938	2,233	2,145	13	$257,136.75
Totals, 1962	524	4,210	4,174,109	78,879	790	2,125	8,141	57,600	3,412	1,048	7	$217,146.45
Totals, 1961	517	4,953	3,531,505	141,904	2,319	.....	9,239	164,415	179	1,038	10	$190,547.22
Totals, 1960	533	4,588	3,438,931	129,420	1,339	73	11,698	67,865	900	2,702	11	$240,494.65
Totals, 1959	627	6,668	2,841,015	117,043	5,814	3,473	26,398	133,363	7,149	2,922	13	$221,192.64
Totals, 1958	513	6,435	4,100,971	126,127	608	2,661	14,897	21,924	765	.....	13	$221,931.11
Totals, 1957	668	8,032	4,949,784	386,520	6,545	2,071	7,666	664,569	22,814	.....	15	$380,057.83
Ten-year average, 1957–66	526	4,857	3,842,377	123,063	2,137	1,040	11,996	172,781	4,042	1,383	10	$252,490.06

(62) AREAS EXAMINED BY THE FOREST SERVICE FOR MISCELLANEOUS PURPOSES OF THE LAND ACT, 1966

Forest District	Applications for Foreshore Leases		Applications to Purchase		Miscellaneous		Totals	
	Number	Acres	Number	Acres	Number	Acres	Number	Acres
Vancouver	11	156	-----	-----	5	46	16	202
Prince Rupert	10	69	3	92	1	5	14	166
Totals	21	225	3	92	6	51	30	368

(63) AREAS CRUISED FOR TIMBER SALES, 1966

Forest District	Number Cruised	Acreage	Saw-timber (M C.F.)	Pit-props, Poles, and Piles (Lin. Ft.)	Shingle-bolts and Cord-wood (Cords)	Car Stakes, Ties, Posts, Shakes, Etc. (No.)
Vancouver	366	46,816	142,155	59,000	4,297	235,044
Prince Rupert	173	54,326	88,302	73,000	16,992	461,700
Prince George	209	89,593	197,074	162,100	.....	15,000
Kamloops	187	73,958	83,582	1,545,000	3,046	125,500
Nelson	63	96,328	168,373	1,835,000	1,340	.....
Totals, 1966	998	361,021	679,486	3,674,100	25,675	837,244
Totals, 1965	1,357	496,254	951,995	2,650,400	7,616	987,100
Totals, 1964	1,709	661,821	1,107,428	2,944,004	25,154	478,520
Totals, 1963	1,862	716,699	1,165,976	3,887,525	32,519	656,680
Totals, 1962	1,871	615,500	921,710	18,508,084	19,340	564,865
Totals, 1961	1,892	720,144	1,027,243	7,687,920	14,798	1,419,285
Totals, 1960	2,122	767,351	1,142,479	8,807,614	29,050	1,419,179
Totals, 1959	2,317	681,550	877,370	7,387,960	27,753	1,151,275
Totals, 1958	1,922	609,563	890,285	8,772,888	24,316	1,181,149
Totals, 1957	2,582	781,748	1,171,283	16,099,489	39,254	1,244,342
Ten-year average, 1957–66	1,863	641,165	993,525	8,041,998	24,547	993,964

(64) TIMBER-SALE RECORD, 1966

Forest District	Sales Made	Sales Closed	Total Sales Existing	Total Area (Acres)	Area Paying Forest-protection Tax (Acres)	Total 10-per-cent Deposit
Vancouver	293	560	1,336	526,460	503,716	$5,883,482.15
Prince Rupert	135	232	859	361,500	333,461	1,617,136.18
Prince George	158	299	1,037	603,741	531,233	2,648,611.85
Kamloops	175	350	1,442	897,771	859,423	3,559,848.09
Nelson	65	186	573	563,204	529,403	2,044,907.23
Totals	826	1,627	5,247	2,952,676	2,757,236	$15,753,985.50
Cash sales	300	.....	.....	.....	.....	.....
Total sales	1,126	.....	.....	.....	.....	.....

(65)

COMPETITION FOR TIMBER SALES AWARDED, 1966

	By Number of Sales									By Volume, Sawlogs Only (M Cu. Ft.)						Total Volume
	Bid at Upset Stumpage		Bid Less than Two Times the Upset Price		Bid More than Two Times the Upset Price		Total Number (Cash Sales Excluded)	Cash Sales	District Totals (Cash Sales Included)	Bid at Upset Stumpage		Bid Less than Two Times the Upset Stumpage		Bid More than Two Times the Upset Stumpage		
	Number	Per Cent	Number	Per Cent	Number	Per Cent				Volume	Per Cent	Volume	Per Cent	Volume	Per Cent	
Vancouver	275	93.9	17	5.8	1	0.3	293	.....	293	39,465	93.7	2,458	5.8	221	0.5	42,144
Prince Rupert	132	97.8	3	2.2	.....	.....	135	20	155	35,517	99.4	211	0.6	.....	.....	35,728
Prince George	154	97.5	3	1.9	1	0.6	158	19	177	116,557	56.8	1,125	0.9	2,735	2.3	120,417
Kamloops	172	92.3	.....	.....	3	1.7	175	190	365	88,114	99.9	.....	.....	80	0.1	88,194
Nelson	63	97.0	1	1.5	1	1.5	65	71	136	40,331	96.7	1,634	2.5	325	0.8	41,690
Totals, 1966	796	96.4	24	2.9	6	0.7	826	300	1,126	319,984	97.5	4,828	1.5	3,361	1.0	328,173
Totals, 1965	1,194	95.1	38	3.0	24	1.9	1,256	358	1,614	542,270	96.9	10,386	1.8	6,803	1.3	559,459
Totals, 1964	1,723	90.9	142	7.5	31	1.6	1,896	385	2,281	798,105	88.9	69,136	7.7	30,685	3.4	897,926
Totals, 1963	1,518	88.7	156	9.1	38	2.2	1,712	471	2,183	669,382	87.1	51,781	6.7	47,615	6.2	768,778
Totals, 1962	1,523	90.7	118	7.0	38	2.3	1,679	312	1,991	544,893	88.3	56,863	9.2	15,200	2.5	616,956
Totals, 1961	1,715	92.3	85	4.6	57	3.1	1,857	282	2,139	795,853	91.1	39,578	4.5	38,102	4.4	873,533
Totals, 1960	1,659	90.0	117	6.4	67	3.6	1,843	295	2,138	539,999	78.6	74,569	10.8	72,753	10.6	687,321
Totals, 1959	1,683	87.4	139	7.2	104	5.4	1,926	234	2,160	530,298	71.7	108,941	14.7	100,104	13.6	739,343
Totals, 1958	1,720	90.5	110	5.8	70	3.7	1,900	245	2,145	552,647	81.0	93,346	13.7	36,134	5.3	682,127
Totals, 1957	2,074	92.6	120	5.4	45	2.0	2,239	305	2,544	567,378	91.6	42,735	6.9	9,247	1.5	619,360
Ten-year average, 1957–66	1,560	91.2	105	6.1	48	2.7	1,713	319	2,032	586,081	86.5	55,216	8.2	36,000	5.3	677,297

TIMBER SALES AWARDED BY FOREST DISTRICTS, 1966

Forest District	No. of Sales	Acreage	Sawtimber (Cu. Ft.)	Poles and Piling (Lin. Ft.)	No. of Posts	No. of Cords	No. of Ties	No. of Christmas Trees	No. of Car Stakes	No. of Blasting-sticks	No. of Cedar Shakes	No. of Fence Rails and Palings	Estimated Revenue
Vancouver	293	25,306	42,144,000	48,000	2,900	3,482			1,500				$3,345,188.50
Prince Rupert	155	18,639	35,728,000	66,000		1,158			600				1,145,219.80
Prince George	177	58,547	120,417,000	232,500	26,800	87						1,000	4,292,981.40
Kamloops	365	71,966	88,195,100	701,020	89,750	5,396		1,760	1,550			2,298	3,504,939.16
Nelson	136	34,487	41,690,000	2,905,250	74,903	1,415					70,380		1,878,543.83
Totals, 1966	1,126	208,945	328,174,100	3,952,770	194,353	11,538		1,760	3,650		70,380	3,298	$14,166,872.69
Totals, 1965	1,614	384,850	559,461,701	1,900,163	428,920	16,766		150	13,200		540,860	14,658	$23,677,018.31
Totals, 1964	2,281	606,588	897,925,974	6,985,755	249,998	34,438		387	11,500		504,600	500	$37,209,392.28
Totals, 1963	2,183	534,569	768,778,307	4,123,192	501,980	16,300		1,155	9,800		172,950	3,180	$26,194,611.24
Totals, 1962	1,991	437,864	616,956,200	15,700,256	439,058	12,696			10,442		272,000	220,930	$18,959,259.42
Totals, 1961	2,139	746,644	873,533,841	9,898,830	1,046,724	22,988		725	7,750		332,758	2,000	$22,599,089.53
Totals, 1960	2,138	612,482	687,324,482	7,190,459	397,328	20,934	32,849	425	17,850		850,000	1,870	$24,872,154.78
Totals, 1959	2,160	642,682	739,347,750	5,795,626	1,295,896	13,088	45,580		7,000		162,000	400	$29,823,289.07
Totals, 1958	2,145	617,467	682,221,469	8,696,222	958,690	11,822	35,334	100	13,300		20,900	900	$20,517,298.67
Totals, 1957	2,544	655,310	617,155,900	12,743,369	1,116,375	16,659	165,210		10,500	3,000	80,330		$24,680,864.98
Ten-year average, 1957–66	2,032	544,740	677,087,972	7,698,664	662,932	17,723			10,499		300,678		$24,269,985.10

(67)

AVERAGE STUMPAGE PRICES, AS BID, BY SPECIES AND FOREST DISTRICTS, ON TIMBER SALES DURING 1966, PER HUNDRED CUBIC FEET LOG SCALE

Forest District	Douglas-fir			Cedar			Spruce			Hemlock			Balsam		
	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.
Vancouver (C.)	15,857	$12.48	$0.90–30.00	12,371	$3.76	$0.80– 8.30	392	$6.28	$3.90–10.40	9,016	$6.81	$0.80–12.00	3,510	$5.14	$2.40–13.90
Vancouver (I.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prince Rupert (C.)	1,160	10.81	3.40–15.00	2,961	2.42	2.10– 4.60	2,892	4.08	2.60– 7.60	6,387	3.26	2.30– 6.70	1,514	2.30	2.30– 3.00
Prince Rupert (I.)	.....	.....	.....	1,473	2.33	2.10– 3.30	4,790	2.91	0.90– 6.30	6,539	3.31	1.60– 6.60	2,785	2.25	0.90– 5.60
Prince George	7,232	6.76	2.60–13.00	.....	.....	.....	80,916	3.55	0.60– 6.60	.....	.....	.....	4,939	2.02	0.60– 4.00
Kamloops	48,268	4.78	0.25–12.70	3,425	2.25	0.20– 5.90	21,925	2.93	0.25– 8.30	1,786	2.64	0.20– 5.10	5,104	2.20	0.20– 3.60
Nelson	7,418	6.06	0.20–10.80	5,228	3.08	0.20– 6.40	14,886	3.85	0.30– 9.40	2,624	3.51	0.20– 7.50	4,586	2.30	0.25– 5.60
Totals for Province	79,935	$6.70	$0.20–30.00	25,458	$3.18	$0.20– 8.30	125,801	$3.47	$0.25–10.40	26,352	$4.47	$0.20–12.00	22,438	$2.65	$0.25–13.90

Forest District	White Pine			Lodgepole Pine			Larch			Other Species			All Species		
	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.
Vancouver (C.)	34	$3.25	$2.40– 5.60	.....	.....	.....	.....	.....	.....	743	$3.29	$0.80– 9.00	41,923	$7.85	$0.80–30.00
Vancouver (I.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prince Rupert (C.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	155	2.88	2.10– 6.70	15,069	3.74	2.10–15.00
Prince Rupert (I.)	.....	.....	.....	4,956	$2.38	$0.90– 5.80	.....	.....	.....	116	3.00	0.90– 5.70	20,659	2.78	0.90– 6.60
Prince George	.....	.....	.....	26,956	3.03	0.60– 6.00	.....	.....	.....	374	2.74	0.60– 5.70	120,417	3.56	0.60–13.00
Kamloops	231	13.37	1.70–15.40	5,778	1.73	0.20– 6.40	521	$7.69	$0.90–12.60	1,157	3.71	0.20– 7.80	88,195	3.86	0.20–15.40
Nelson	907	13.11	0.25–18.00	861	3.60	0.25– 5.80	3,523	6.39	0.20– 9.40	146	3.12	0.20– 7.00	40,179	4.38	0.20–18.00
Totals for Province	1,172	$12.88	$0.25–18.00	38,551	$2.77	$0.20– 6.40	4,044	$6.55	$0.20–12.60	2,691	$3.35	$0.20– 9.00	326,442	$4.25	$0.20–30.00

AVERAGE STUMPAGE PRICES RECEIVED, BY SPECIES AND FOREST DISTRICTS, ON TIMBER SCALED ON TREE-FARM LICENCE CUTTING PERMITS DURING 1966

Forest District	Douglas-fir			Cedar			Spruce			Hemlock			Balsam		
	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.
Vancouver	12,139	$12.39	$2.90–20.30	25,412	$5.69	$0.25–10.20	2,932	$7.20	$0.70–11.60	47,248	$6.52	$0.25–10.90	22,433	$5.66	$0.25– 9.70
Prince Rupert (C.)	.....	.....	.....	2,271	2.62	2.10– 3.90	5,946	4.61	2.70– 7.80	10,752	2.72	2.30– 4.10	475	2.30	2.30
Prince Rupert (I.)	.....	.....	.....	2,740	2.20	1.40– 2.30	2,548	2.51	1.50– 2.70	8,989	2.40	1.50– 2.80	3,092	2.20	1.40– 2.30
Prince George	790	4.51	0.90–10.30	.....	.....	.....	10,008	2.86	1.30– 5.00	.....	.....	.....	1,395	2.31	0.90– 3.10
Kamloops	4,905	4.99	1.60– 8.40	142	2.05	1.90– 3.60	5,592	3.26	0.55– 7.70	94	2.29	2.10– 3.80	798	1.59	0.60– 5.20
Nelson	2,728	4.21	0.25–10.30	2,832	1.05	0.25– 3.50	8,993	2.53	0.25– 8.20	2,286	1.31	0.25– 4.40	1,568	1.55	0.25– 4.90
Totals for Province	20,562	$9.24	$0.25–20.30	33,397	$4.78	$0.25–10.20	36,019	$3.45	$0.25–11.60	69,369	$5.22	$0.25–10 90	29,761	$4.76	$0.25– 9.70

Forest District	Lodgepole Pine			White Pine			Larch			Other Species			All Species		
	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.
Vancouver	13	$4.10	$3.00– 5.00	343	$3.56	$0.25– 5.70	.....	.....	.....	1,478	$3.72	$0.70– 7.30	111,998	$6.76	$0.25–20.30
Prince Rupert (C.)	1	2.70	2.70	.....	.....	.....	.....	.....	.....	365	2.80	2.50– 3.00	19,810	3.27	2.10– 7.80
Prince Rupert (I.)	258	2.20	2.20	.....	.....	.....	.....	.....	.....	879	3.00	1.70– 3.00	18,506	2.38	1.40– 3.00
Prince George	309	1.98	0.90– 4.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	12,502	2.88	0.90–10.30
Kamloops	3,177	1.76	0.60– 6.00	21	12.83	2.00–13.70	158	$4.41	$2.20– 6.20	161	3.17	0.55– 3.90	15,048	3.43	0.55–13.70
Nelson	1,197	1.73	0.50– 4.80	845	10.60	0.25–18.20	1,602	4.17	0.25– 8.00	24	2.71	0.25– 5.40	22,075	2.74	0.25–18.20
Totals for Province	4,955	$1.80	$0.50– 6.00	1,209	$8.64	$0.25–18.20	1,760	$4.19	$0.25– 8.00	2,907	$3.35	$0.25– 7.30	199,939	$5.07	$0.25–20.30

(69)

TIMBER CUT AND BILLED FROM TIMBER SALES, 1966

Forest District	Cubic Feet	Board-feet	Lineal Feet	Cords	Ties	Posts	Christ-mas Trees	Hop Poles	Stakes and Sticks	Car Stakes	Fence Rails, Palings	An-chor Blocks	Shingle Shakes	Shake Blanks
Vancouver	184,708,991	7,705,804	370,475	5,591	.....	7,802	.....	.....	.....	1,526	.....	.....	4,296,938	306,625
Prince Rupert (C.)	52,975,268	.....	597,437	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prince Rupert (I.)	48,777,184	.....	1,396,825	3,170	.....	.....	.....	.....	.....	600	.....	.....	.....	.....
Prince George	183,954,114	.....	489,490	13	.....	29,267	.....	.....	.....	.....	.....	.....	.....	.....
Kamloops	156,006,055	.....	2,802,343	1,587	.....	17,295	.....	.....	.....	.....	.....	.....	.....	.....
Nelson	86,351,702	.....	2,598,376	2,190	.....	80,154	445,423	.....	.....	177	.....	.....	.....	73,268
Totals, 1966	712,773,314	7,705,804	8,254,946	12,558	.....	134,518	445,423	.....	.....	2,303	.....	.....	4,296,938	379,893
Totals, 1965	728,521,327	13,198,159	5,732,671	14,576	.....	200,017	448,385	.....	.....	9,454	.....	.....	4,795,873	395,119
Totals, 1964	729,684,953	42,643,124	5,840,321	19,047	.....	403,435	483,002	.....	.....	3,302	9,260	.....	6,379,921	728,183
Totals, 1963	713,287,016	51,131,178	7,811,867	15,217	1,913	500,287	485,637	.....	.....	5,643	88,721	.....	4,679,585	655,827
Totals, 1962	645,464,932	71,557,831	7,803,821	11,621	625	530,504	354,763	11,818	.....	6,210	29,840	.....	4,678,254	503,049
Totals, 1961	575,338,601	117,488,982	10,403,972	8,362	25,761	564,443	500,764	9,496	.....	6,873	.....	.....	4,622,529	776,010
Totals, 1960	574,578,669	95,002,548	9,065,920	9,071	97,639	504,996	397,353	35,800	.....	4,056	.....	.....	7,323,265	644,490
Totals, 1959	539,033,503	99,187,243	6,756,635	9,551	114,056	709,633	339,598	10,738	.....	2,448	.....	22	6,214,428	986,461
Totals, 1958	441,192,089	160,011,288	7,935,015	8,641	48,419	667,907	479,657	.....	.....	2,298	.....	18	3,546,527	922,900
Totals, 1957	392,306,642	281,403,429	25,475,664	44,489	304,329	844,246	562,658	3,360	9,335	11,640	.....	.....	11,618,566	3,890,503
Ten-year average, 1957–66	605,218,105	93,932,959	9,508,083	15,313	59,274	505,999	449,724	7,121	934	5,423	12,782	4	5,815,589	988,243

SAW AND SHINGLE MILLS OF THE PROVINCE, 1966

Forest District	Operating						Shut Down			
	Sawmills				Shingle-mills		Sawmills		Shingle-mills	
	Number	Estimated Eight-hour Daily Capacity, M B.F.	Number of Attached Chippers[1]	Number of Attached Barkers[1]	Number	Estimated Eight-hour Daily Capacity, M B.F.	Number	Estimated Eight-hour Daily Capacity, M B.F.	Number	Estimated Eight-hour Daily Capacity, M B.F.
Vancouver	162	9,205	99	68	38	766	48	148	2	2
Prince Rupert	131	1,847	8	8	2	11	62	333	1	2
Prince George	299	6,332	23	23	---	-------	189	1,946	---	------
Kamloops	375	6,336	40	41	10	29	62	402	4	11
Nelson	149	3,009	13	13	7	20	68	515	6	12
Totals, 1966	1,116	26,729	183	153	57	826	429	3,344	13	27
Totals, 1965	1,191	27,641	161	144	63	820	478	2,903	9	26
Totals, 1964	1,417	28,865	97	82	61	680	513	3,035	6	18
Totals, 1963	1,541	29,339	-----	-----	69	1,003	502	3,490	9	65
Totals, 1962	1,627	28,234	-----	-----	33	591	512	3,217	14	92
Totals, 1961	1,778	29,025	-----	-----	60	917	559	3,613	9	49
Totals, 1960	1,938	29,432	-----	-----	44	950	558	3,381	17	93
Totals, 1959	2,005	28,280	-----	-----	65	1,138	587	3,975	6	23
Totals, 1958	2,010	27,694	-----	-----	56	1,141	586	4,007	9	37
Totals, 1957	2,255	26,752	-----	-----	58	1,390	514	3,124	10	121
Ten-year average, 1957–66	1,688	28,199	-----	-----	57	946	524	3,409	10	55

[1] Figures not available prior to 1964.

(71) EXPORT OF LOGS (IN F.B.M.), 1966

Species	Grade No. 1	Grade No. 2	Grade No. 3	Ungraded	Fuel-logs	Total
Fir	83,712	743,471	1,073,901	----------	17,282	1,918,366
Cedar	4,457,903	6,371,381	14,318,198	----------	6,869	25,154,351
Spruce	3,359,209	12,493,088	20,551,255	----------	199,078	36,602,630
Hemlock	1,104,499	5,904,760	39,016,302	----------	814,956	46,840,517
Balsam	----------	----------	----------	15,445,570	435,745	15,881,315
White pine	----------	----------	----------	----------	----------	----------
Lodgepole pine	2,480	44,256	127,120	----------	548	174,404
Cypress	729,932	1,168,236	9,591,307	----------	3,963	11,493,438
Hardwood	----------	----------	----------	7,236	----------	7,236
Cotonwood	13,296	597,547	3,323,311	----------	----------	3,934,154
Totals, 1966	9,751,031	27,322,739	88,001,394	15,452,806	1,478,441	142,006,411[1]
Totals, 1965	3,355,224	10,766,201	35,846,770	8,625,979	14,650	58,608,824
Totals, 1964	3,748,377	14,590,533	30,789,610	3,740,863	84,834	52,954,217
Totals, 1963	3,468,986	16,149,811	62,790,210	10,274,991	107,529	92,791,527
Totals, 1962	3,773,734	11,215,447	46,151,663	13,143,092	696,436	74,980,372
Totals, 1961	9,216,534	28,611,982	48,009,763	12,202,800	3,311,119	10,352,198
Totals, 1960	1,391,803	5,351,398	20,872,330	11,805,419	890,260	40,311,210
Totals, 1959	486,685	2,601,653	19,608,208	3,999,901	1,839,030	28,535,477
Totals, 1958	734,991	3,727,452	16,164,689	3,715,124	3,762,411	28,104,667
Totals, 1957	524,180	3,987,443	22,016,291	5,625,910	3,421,354	35,575,178
Ten-year average, 1957–66	3,645,155	12,432,466	39,025,093	8,858,688	1,560,606	65,522,008

[1] Of this total, 44,092,921 f.b.m. were exported from Crown-granted lands carrying the export privilege; 97,913,490 f.b.m. were exported under permit from other areas.

(72) SHIPMENTS OF POLES AND OTHER MINOR PRODUCTS, 1966

Forest District and Product	Quantity Exported	Approximate Value, F.O.B.	Where Marketed		
			Canada	United States	Other Countries
Vancouver—					
Poles lin. ft.	5,500,442	$3,187,030.50	404,482	4,090,895	1,005,065
Piling ,,	1,701,771	921,635.90	108,247	1,255,545	337,979
Cedar shakes pieces	22,986,180	1,915,515.00	5,400	22,980,780	----------
Christmas trees ,,	18,464	46,160.00	----------	18,464	----------
Fence-posts ,,	2,722	816.60	----------	2,722	----------
Prince Rupert—					
Cedar poles lin. ft.	4,593,537	1,745,544.06	1,837,415	2,756,122	----------
Prince George—					
Cedar poles lin. ft.	3,265	3,036.45	----------	3,265	----------
Piling ,,	1,755	1,105.65	1,755	----------	----------
Kamloops—					
Cedar poles lin. ft.	375,385	120,123.20	149,905	225,480	----------
Poles and piling ,,	58,455	14,613.75	46,935	11,520	----------
Posts cords	17	680.00	14	3	----------
Christmas trees pieces	285,466	171,279.60	11,511	273,955	----------
Nelson—					
Poles and piling lin. ft.	2,510,516	1,256,322.00	1,265,915	1,244,601	----------
Corral rails ,,	69,232	2,077.00	69,232	----------	----------
Orchard props ,,	50,000	1,500.00	----------	50,000	----------
Fence-posts cords	992	34,720.00	635	357	----------
Christmas trees pieces	1,215,538	850,877.00	182,331	1,033,207	----------
Shake blanks ,,	324,720	32,472.00	----------	324,720	----------
Total value, 1966	----------	$10,305,508.71	----------	----------	----------
Total value, 1965	----------	$8,862,926.97	----------	----------	----------

SUMMARY OF EXPORT OF MINOR PRODUCTS FOR PROVINCE, 1966

(73)

Product		Quantity	Value	Per Cent of Total Value
Poles	lin. ft.	10,472,629	$5,055,734.21	49.0586
Piling	"	1,703,526	922,741.55	8.9539
Other poles and piling	"	2,568,971	1,270,935.75	12.3325
Corral rails	"	69,232	2,077.00	0.0201
Orchard props	"	50,000	1,500.00	0.0146
Cedar shakes	pieces	22,986,180	1,915,515.00	18.5873
Shake blanks	"	324,720	32,472.00	0.3151
Christmas trees	"	1,519,468	1,068,316.60	10.3665
Fence-posts	"	2,722	816.60	0.0079
Fence-posts	cords	1,009	35,400.00	0.3435
Total value		------	$10,305,508.71	100.0000

TIMBER MARKS ISSUED, 1957–66

(74)

	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	10-year Average, 1957–66
Old Crown grants	320	215	299	315	268	300	313	356	328	341	306
Crown grants, 1887–1906	108	93	103	115	121	150	125	148	150	130	124
Crown grants, 1906–1914	97	93	125	123	121	164	161	164	172	144	136
Section 58, *Forest Act*	460	362	524	517	470	589	608	672	649	679	553
Stumpage reservations	59	89	108	116	117	109	141	149	133	63	108
Pre-emptions	1	------	------	1	3	9	13	7	8	3	5
Timber berths	7	7	9	4	4	12	12	9	14	10	9
Indian reserves	23	9	21	15	8	20	18	27	24	27	19
Section 24, *Forest Act*	------	------	------	------	------	------	------	------	------	20	2
Timber sales	2,239	1,900	1,926	2,136	2,141	1,991	2,183	2,281	1,614	1,126	1,954
Special marks and rights-of-way	74	80	85	113	91	90	97	121	153	117	102
Pulp leases	1	7	1	1	5	5	------	------	3	12	3
Pulp licences	------	------	------	------	------	2	------	------	------	4	1
Totals	3,389	2,855	3,201	3,456	3,349	3,441	3,671	3,934	3,248	2,676	3,322
Transfers and changes of marks	615	598	669	794	691	809	725	802	740	908	735

GRAZING PERMITS ISSUED, 1966

(81)

Forest District	Number of Permits Issued	Number of Stock under Permit		
		Cattle	Horses	Sheep
Kamloops	1,280	147,048	3,788	7,754
Nelson	484	22,540	1,139	1,051
Prince George	434	19,468	1,615	165
Vancouver	6	230	30	------
Totals, 1966	2,244	189,286	6,572	8,970
Totals, 1965	2,218	188,339	6,677	12,509
Totals, 1964	2,104	173,677	6,231	22,478
Totals, 1963	1,951	158,840	5,860	25,366
Totals, 1962	1,924	146,830	5,007	23,370
Totals, 1961	1,825	132,749	4,985	21,309
Totals, 1960	1,726	127,148	4,504	19,460
Totals, 1959	1,683	124,425	4,377	20,604
Totals, 1958	1,571	122,489	4,169	20,927
Totals, 1957	1,640	128,978	3,886	20,693

(91) FOREST ROAD PROGRAMME, 1966

Project	Regulation Unit	Reconnaissance	Location	Construction
		Miles	Miles	Miles
Vancouver Forest District				
Clowhom Lake	Quadra P.S.Y.U.	------	9.6	------
Colonial River	Kingcome P.S.Y.U.	15	------	------
Gold River	Nootka P.S.Y.U.	------	0.6	17.4
Harrison-Lillooet River	Soo P.S.Y.U.	------	2.3	------
Prince Rupert Forest District				
Cedar River	Skeena P.S.Y.U.	4	------	------
Dak-Illiance	Hecate P.S.Y.U.	15	------	------
Ecstall	Hecate P.S.Y.U.	60	------	------
Kispiox F.R.	Skeena P.S.Y.U.	------	------	4.9
Ootsa	Ootsa P.S.Y.U.	54	------	------
Stikine	Unregulated	7	------	------
Suskwa F.R.	Skeena P.S.Y.U.	------	13.2	------
Prince George Forest District				
Anzac-Sukunka	Moberly P.S.Y.U.	10	------	------
	Parsnip P.S.Y.U.	20	------	------
Bowron F.R.	Longworth P.S.Y.U.	------	9.1	------
	Purden P.S.Y.U.	------	17.2	------
Parsnip West F.R.	Finlay P.S.Y.U.	------	7.5	7.5
Kamloops Forest District				
Alocin-Upper Nicola F.R.	Barton Hills P.S.Y.U.	------	11.9	------
Chapperon-Whiteman F.R.	Barton Hills P.S.Y.U.	------	8.5	------
Chilcotin South F.R.	Stum P.S.Y.U.	------	20.7	9.2
Copper Creek	Similkameen P.S.Y.U.	------	11.8	------
Corporation Creek F.R.	Okanagan P.S.Y.U.	------	3.0	------
Fraser River West Side	Big Bar P.S.Y.U.	33	------	------
	Yalakom P.S.Y.U.	21	------	------
	Botanie P.S.Y.U.	12	------	------
Galena F.R.	Okanagan P.S.Y.U.	------	3.5	------
Litle White-Big Meadow F.R.	Okanagan P.S.Y.U.	------	7.0	------
North Thompson	North Thompson P.S.Y.U.	38	3.8	------
Okanagan East Area	Okanagan P.S.Y.U.	------	10.7	------
Pennask F.R.	Barton Hills P.S.Y.U.	------	3.8	------
Sugar Lake F.R.	Spallumcheen P.S.Y.U.	------	0.5	------
Nelson Forest District				
Elk River	Fernie P.S.Y.U.	27	------	------
Findlay-Dutch	Upper Kootenay P.S.Y.U.	67	------	------
Purcell Mountains	Cranbrook P.S.Y.U.	80	4.0	------
	Creston P.S.Y.U.	53	2.0	------
	Lardeau	3	------	------
Tangier River	Edgewood	11	------	------
Tegart Pass	Upper Kootenay P.S.Y.U.	30	------	------
White River	Upper Kootenay P.S.Y.U.	22	------	------
Totals, 1966 programme		582	150.7	39.0
Previous works		4,861	2,333.1	918.5
Totals, forest road programme, 1950–66		5,443	2,483.8	957.5

F.R.=Forest road. P.S.Y.U.=Public sustained-yield unit.

(92) FOREST SERVICE MECHANICAL EQUIPMENT, 1966

Type	Total Units, Jan. 1, 1966	Removed from Service	New Purchases	Total Units, Jan. 1, 1967
Sedans	51	2	5	54
Station wagons and sedan deliveries	106	23	10	93
Panel deliveries	75	16	15	74
Four-wheel-drive passenger types	131	25	26	132
Four-wheel-drive pick-ups and panel deliveries	284	45	64	303
5,000–10,000 G.V.W. pick-ups, ½ and 1 ton	196	28	48	216
14,000–24,000 G.V.W. trucks; 2, 3, and 4 tons	55	7	5	53
24,000–40,000 G.V.W. heavy-duty trucks	5	3	6	8
Fire-fighting tank trucks	2	-----	-----	2
Total vehicles	905	149	179	935
Trail motor-cycles	93	2	19	110
Tractors	39	5	12	46
Snow and muskeg tractors (peronnel-carriers)	9	-----	-----	9
Snow toboggans—various types	5	-----	15	20
Graders	20	2	2	20
Scrapers—self-propelled	4	-----	-----	4
Scrapers—not self-propelled	2	-----	-----	2
Shovels—power	3	-----	-----	3
Loaders—self-propelled	5	1	1	5
Outboard motors	416	30	48	434
Fire-pumps—various	760	43	47	764
Fire-pumps—portable tanker	125	1	13	137
Bean fire-fighting units—high pressure	34	-----	-----	34
Borate mixer pumps	13	-----	-----	13
Pumps—Water supply	77	-----	9	86
Chain saws	434	29	118	523
Lighting-plants	109	5	5	109
Lawn-mowers—power	12	6	29	35
Speeders—railway	13	3	-----	10
Trailers—low and high bed	8	-----	1	9
Trailers—dwelling and bunk-house	168	-----	9	177
Trailers—miscellaneous	289	6	39	322
Air compressors	15	-----	-----	15
Range-land drill	1	-----	-----	1
Rock drills—gas-powered	8	1	1	8
Crushing plant	1	-----	-----	1
Mechanical wheelbarrows	20	12	-----	8
Welders	12	-----	3	15
Cement mixers	7	-----	-----	7
Augers—power, planting	3	-----	-----	3
Snowploughs—walking	1	-----	-----	1
Rollers—compaction	4	-----	2	6
Fork-lift trucks	2	-----	-----	2

REPORTED APPROXIMATE EXPENDITURE IN FOREST PROTECTION BY OTHER AGENCIES,[1] 1966

(102)

Forest District	Expenditures				
	Patrols and Fire Prevention	Tools and Equipment	Fires	Improvements	Total
Vancouver	$109,661	$455,018	$114,200	$144,803	$823,682
Prince Rupert	210,622	104,345	120,887	28,692	464,546
Prince George	2,565	59,830	22,452	17,760	102,607
Kamloops	2,600	22,600	35,865	16,800	77,865
Nelson	44,515	105,141	34,318	24,047	208,021
Totals	$369,963	$746,934	$327,722	$232,102	$1,676,721
Ten-year-average, 1957–66	$334,438	$534,276	$436,676	$322,615	$1,628,005

[1] Principally forest industry.

(103) FIRE OCCURRENCES BY MONTHS, 1966

Forest District	March	April	May	June	July	August	September	October	Total	Per Cent
Vancouver	1	13	84	58	74	128	43	1	402	20.4
Prince Rupert	.....	23	42	25	89	27	4	.....	210	10.7
Prince George	3	14	91	51	62	22	11	4	258	13.1
Kamloops	19	18	160	123	109	121	83	6	639	32.5
Nelson	1	19	58	22	108	167	69	14	458	23.3
Totals	24	87	435	279	442	465	210	25	1,967	100.0
Per cent	1.2	4.4	22.1	14.2	22.5	23.6	10.7	1.3	100.0	.....
Ten-year average, 1957–66	33	91	315	311	666	516	155	30	2,117	.....
Per cent	1.6	4.3	14.8	14.7	31.5	24.4	7.3	1.4	100.0	.....

(104) NUMBER AND CAUSES OF FOREST FIRES, 1966

Forest District	Lightning	Recreational (Campers, Etc.)	Railroads Operating	Smokers	Brush-burning (Not Railway or Right-of-way Clearing)	Range-burning	Road, Power-, Telephone-, and Pipe-line Construction	Industrial Operations (Logging, Etc.)	Incendiary	Miscellaneous Known Causes	Unknown Causes	Total	Per Cent of Total Fires in Province
Vancouver	21	57	9	97	36	.....	19	44	5	103	11	402	20.4
Prince Rupert	41	37	11	12	21	9	20	26	.....	31	2	210	10.8
Prince George	61	30	10	18	37	28	21	18	5	23	7	258	13.1
Kamloops	124	66	23	98	42	112	21	67	2	80	4	639	32.5
Nelson	127	40	117	56	20	.....	20	9	2	55	12	458	23.2
Totals	374	230	170	281	156	149	101	164	14	292	36	1,967	100.0
Per cent	19.1	11.7	8.7	14.3	7.9	7.6	5.1	8.3	0.7	14.8	1.8	100.0	.....
Ten-year average, 1957–66	764	224	115	257	88	121	43	161	38	251	55	2,117	.....
Per cent	36.1	10.6	5.4	12.1	4.2	5.7	2.0	7.6	1.8	11.9	2.6	100.0	.....

(105) NUMBER AND CAUSES OF FOREST FIRES FOR THE LAST 10 YEARS

Causes	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	Total
Lightning	307	1,150	184	1,166	1,426	615	1,144	277	1,000	374	7,643
Recreational (campers, etc.)	170	296	172	241	269	182	221	144	315	230	2,240
Railroads operating	85	162	88	245	154	41	65	51	89	170	1,150
Smokers	182	478	211	257	336	162	220	129	310	281	2,566
Brush-burning (not railway or right-of-way clearing)	65	120	75	82	86	60	82	66	89	156	881
Range-burning	48	131	190	87	179	62	95	79	193	149	1,213
Road, power-, telephone-, and pipe-line construction	46	18	30	36	36	35	24	11	89	101	426
Industrial operations (logging, etc.)	107	246	204	137	194	109	141	81	223	164	1,606
Incendiary	22	53	34	54	49	25	62	45	24	14	382
Miscellaneous known causes	172	310	253	271	290	183	250	178	309	292	2,508
Unknown causes	45	94	33	59	83	62	41	59	44	36	556
Totals	1,249	3,058	1,474	2,635	3,102	1,536	2,345	1,120	2,685	1,967	21,171

FIRES CLASSIFIED BY SIZE AND DAMAGE, 1966

Forest District	Total Fires		Under ¼ Acre			¼ to 10 Acres			Over 10 to 500 Acres			Over 500 Acres in Extent			Damage		
	Number	Per Cent of Total Fires in Province	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Under $100	Between $100 and $1,000	Over $1,000
Vancouver	402	20.4	285	70.9	23.2	102	25.4	18.0	15	3.7	9.1	.....	.....	.....	380	13	9
Prince Rupert	210	10.7	130	62.0	10.6	57	27.3	10.0	22	10.6	13.4	1	0.1	9.1	194	10	6
Prince George	258	13.1	121	47.0	9.9	66	25.5	11.7	63	24.0	38.4	8	3.5	72.7	209	34	15
Kamloops	639	32.5	346	54.2	28.2	244	38.2	43.1	48	7.5	29.3	1	0.1	9.1	591	37	11
Nelson	458	23.3	344	75.2	28.1	97	21.2	17.2	16	3.5	9.8	1	0.1	9.1	437	14	7
Totals	1,967	100.0	1,226	.....	100.0	566	.....	100.0	164	.....	100.0	11	.....	100.0	1,811	108	48
Per cent	100.0	.....	62.3	.....	.....	28.8	.....	.....	8.3	.....	.....	0.6	.....	.....	92.0	5.5	2.5
Ten-year average, 1957–66	2,117	.....	1,288	.....	.....	574	.....	.....	202	.....	.....	53	.....	.....	1,863	147	107
Per cent	100.0	.....	60.8	.....	.....	27.2	.....	.....	9.5	.....	.....	2.5	.....	.....	88.0	6.9	5.1

(107) DAMAGE TO PROPERTY OTHER THAN FORESTS, 1966[1]

Forest District	Forest Products Cut, Logs, Lumber, Etc.	Buildings	Railway, Logging, and Sawmill Equipment	Miscellaneous	Total	Per Cent of Total
Vancouver	$17,344	$6,300	$18,270	$15	$41,929	25.5
Prince Rupert	39,429	2,500	47,631	.....	89,560	54.5
Prince George	120	3,450	400	1,870	5,840	3.6
Kamloops	15,000	8,500	.....	1,032	24,532	14.9
Nelson	181	.....	.....	2,310	2,491	1.5
Totals	$72,074	$20,750	$66,301	$5,227	$164,352	100.0
Per cent	43.9	12.6	40.3	3.2	100.0	.....
Ten-year average, 1957–66	$101,454	$35,351	$184,252	$25,487	$346,544	.....
Per cent	29.3	10.2	53.2	7.3	100.0	.....

[1] Does not include intentional slash-burns (for this item *see* Table No. 121).

(108) DAMAGE TO FOREST-COVER CAUSED BY FOREST FIRES, 1966—PART 1[1]

Forest District	Merchantable Timber				Immature Timber	
	Net Area Killed	Total Volume Killed	Salvable Volume of Timber Killed	Net Stumpage Loss	Net Area Killed	Present Value
	Acres	M Cu. Ft.	M Cu. Ft.	$	Acres	$
Vancouver	55	126	15	9,152	67	2,324
Prince Rupert	333	801	592	3,928	686	17,082
Prince George	2,229	1,105	306	19,981	21,958	620,202
Kamloops	578	871	6	11,535	1,714	26,467
Nelson	310	603	534	2,927	690	11,705
Totals	3,505	3,506	1,453	47,523[2]	25,115	677,780[2]
Per cent	6.4	100.0	41.4	6.3	45.8	89.5
Ten-year average, 1957–66	62,037	93,606	30,733	1,530,645	63,862	1,381,964
Per cent	14.2	100.0	32.8	47.0	14.6	42.3

[1] Does not include intentional slash burns (for this item *see* Table No. 121).

[2] The dollar value of losses in merchantable and immature timber represents only stumpage loss to the Crown. Actual payroll loss to the Province is 10 times these figures.

DAMAGE TO FOREST-COVER CAUSED BY FOREST FIRES, 1966—PART II[1]

Forest District	Not Satisfactorily Restocked				Non-commercial Cover		Grazing or Pasture Land		Non-productive Sites		Grand Totals		
	Logged, Not Burned	Logged and Burned	Old Burn (Not Logged)	Damage	Area Burned	Damage	Area Burned	Damage	Area Burned	Damage	Area	Quantity	Damage
	Acres	Acres	Acres	$	Acres	$	Acres	$	Acres	$	Acres	M Cu. Ft.	$
Vancouver	188	32	.....	190	231	56	8	1	86	19	667	126	11,742
Prince Rupert	387	528	3	6,834	790	114	222	12	51	12	3,000	801	27,982
Prince George	149	150	134	3,678	7,599	2,365	5,151	258	6,382	1,580	43,752	1,105	648,064
Kamloops	1,218	.....	1	11,013	297	134	716	324	68	12	4,592	871	49,485
Nelson	206	42	.....	4,750	1,314	327	92	8	123	27	2,777	603	19,744
Totals	2,148	752	138	26,465	10,231	2,996	6,189	603	6,710	1,650	54,788	3,506	757,017
Per cent	3.9	1.4	0.3	3.5	18.7	0.4	11.3	0.1	12.2	0.2	100.0	100.0	100.0
Ten-year average, 1957–66	12,234	1,069	20,217	271,397	212,405	52,991	11,068	1,697	55,147	13,943	438,039	93,606	3,252,637
Per cent	2.8	0.2	4.6	8.3	48.5	1.5	2.5	0.1	12.6	0.4	100.0	100.0	100.0

[1] Does not include intentional slash-burns (for this item *see* Table No. 121).

(109) FIRE CAUSES, AREA BURNED, FOREST SERVICE COST, AND TOTAL DAMAGE, 1966

Cause	Fire Causes		Area Burned		Forest Service Cost		Total Damage	
	Number	Per Cent	Acres	Per Cent	Cost	Per Cent	Damage	Per Cent
Lightning	374	19.1	28,066	51.2	203,397	29.1	607,834	65.9
Recreational (campers, etc.)	230	11.7	3,301	6.0	81,776	11.7	42,157	4.6
Railroads operating	170	8.7	111	0.2	733	0.1	6,798	0.7
Smokers	281	14.3	806	1.5	26,488	3.8	13,742	1.5
Brush-burning (not railway or right-of-way clearing)	156	7.9	4,653	8.5	40,972	5.8	27,547	3.0
Range-burning	149	7.6	11,495	21.0	26,533	3.8	17,080	1.9
Road, power-, telephone-, and pipe-line construction	101	5.1	1,856	3.4	194,242	27.7	48,385	5.3
Industrial operations (logging, etc.)	164	8.3	1,935	3.5	68,744	9.9	130,504	14.2
Incendiary	14	0.7	858	1.6	7,232	1.0	8,520	0.9
Miscellaneous known causes	292	14.8	856	1.6	27,797	3.9	12,010	1.3
Unknown causes	36	1.8	851	1.5	22,498	3.2	6,792	0.7
Totals	1,967	100.0	54,788	100.0	700,412	100.0	921,369	100.0

(110) COMPARISON OF DAMAGE CAUSED BY FOREST FIRES IN LAST 10 YEARS

	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	Total, 10 Years
Total number of fires	1,249	3,058	1,474	2,635	3,102	1,536	2,345	1,120	2,685	1,967	21,171
Area burned (acres)	66,724	2,065,423	273,631	285,820	1,227,159	45,617	46,346	7,746	307,132	54,788	4,380,386
Standing timber destroyed or damaged (M cu. ft.)	1,278	358,149	8,481	122,293	315,532	3,972	7,953	306	114,585	3,506	936,055
Amount salvable (M cu. ft.)	391	98,517	2,110	40,010	119,223	1,279	3,357	117	40,872	1,453	307,329
Damage to forests	$123,032	$7,917,235	$1,342,849	$3,725,361	$12,820,694	$311,445	$308,475	$25,793	$5,194,473	$757,017	$32,526,374
Damage to other forms of property	130,204	408,183	869,569	299,657	368,476	280,700	225,797	151,338	567,162	164,352	3,465,438
Total damage	$253,236	$8,325,418	$2,212,418	$4,025,018	$13,189,170	$592,145	$534,272	$177,131	$5,761,635	$921,369	$35,991,812

FIRES CLASSIFIED BY FOREST DISTRICT AND COST PER FIRE OF FIRE-FIGHTING, 1966

Forest District	Total Fires	Total Forest Service Cost			Extinguished without Cost			Cost Money to Extinguish							
		Dollars	Per Cent	Average Expenditure per Cost Fire (Dollars)	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in Province	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in Province	Cost Less than $100 per Fire	Cost $100 to $1,000 per Fire	Cost over $1,000 to $5,000 per Fire	Cost over $5,000 to $10,000 per Fire	Cost over $10,000 per Fire
Vancouver	402	22,650	3.2	184.15	92	22.9	4.7	310	77.1	15.8	215	74	13	6	2
Prince Rupert	210	244,088	34.8	1,835.25	77	36.7	3.9	133	63.3	6.8	105	16	7	3	2
Prince George	258	235,555	33.6	1,784.50	56	21.7	2.8	202	78.3	10.3	88	91	18	2	3
Kamloops	639	133,128	19.1	559.36	258	40.4	13.1	381	59.6	19.3	270	92	14	4	1
Nelson	458	64,991	9.3	396.29	127	27.7	6.5	331	72.3	16.8	236	78	14	1	2
Totals	1,967	700,412[1]	100.0	886.59	610	.....	31.0	1,357	.....	69.0	914	351	66	16	10
Per cent	100.0	.....	.....	.....	31.0	.....	.....	69.0	.....	.....	46.5	17.8	3.4	0.8	0.5
Ten-year average, 1957–66	2,117	1,879,066	.....	.....	715	.....	.....	1,402	.....	.....	785	442	113	24	38
Per cent	100.0	.....	.....	.....	33.8	.....	.....	66.2	.....	.....	37.1	20.8	5.4	1.1	1.8

[1] Cost correct to date, subject to later revision.
Cost to other parties (824 cost fires), $436,676. Cost to Forest Service (790 cost fires), $700,412.
Detailed final costs are published one year in arrears in the table "Forest-protection Expenditures" in each Annual Report.

(112)

PROSECUTIONS, 1966

Forest District	Information Laid	Burning without Permit	Refusing to Render Assistance in Fire-fighting	Contravening a Forest Closure	Failing to Maintain Proper Fire-protection Equipment	Failing to Control and Extinguish Fire	Failing to Fall Snags and Remove Debris in Accordance with Regulations	Miscellaneous Offences	Fines		Served Sentence in Gaol	Suspended Sentence	Cases Dismissed	Cases Withdrawn
									Number	Amount				
Vancouver	9	1	2	—	6	—	—	—	7	$195	—	—	1	1
Prince Rupert	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Prince George	10	6	—	—	—	—	—	4	7	300	—	—	—	3
Kamloops	7	6	—	—	1	—	—	—	7	225	—	—	—	—
Nelson	5	—	5	—	—	—	—	—	5	125	—	—	—	—
Totals	31	13	7	—	7	—	—	4	26	$845	—	—	1	4
Ten-year average, 1957–66	41	14	14	4	5	1	1	2	35	$1,089	1	1	3	1

(113)

CONTRACT FLYING, 1966

Fixed-wing Aircraft

Forest District	Base	Type of Aeroplane	Hours Flown
Vancouver	Vancouver	Beaver	335
Prince Rupert	Smithers and various	Super Cub and various	1,220
Prince George	Prince George and Dawson Creek	Otter, Cessna, Super Cub, Beaver	1,176
Kamloops	Kamloops, Kelowna, and Williams Lake	Beaver, Cessna, Super Cub	1,443
Nelson	Nelson	Beaver, Apache	479
Total			4,653

Helicopters

Forest District	Base	Type of Helicopter	Hours Flown
Vancouver	Vancouver and Campbell River	Hiller	316
Prince Rupert	Smithers	Hiller	409
Prince George	Prince George and Fort St. John	Hiller	1,075
Kamloops	Kamloops	Bell G3B	527
Nelson	Nelson and Cranbrook	Bell, Hiller	511
Total			2,838

Air Tankers

Forest District	Base	Type of Aeroplane	Hours Flown
Vancouver	Prince George	Canso	8
Prince Rupert	Smithers	Avenger, Cessna	258
Prince George	Prince George	Canso	115
Kamloops	Kamloops and Kelowna	Avenger, Cessna	403
Nelson	Cranbrook	Avenger, Cessna	205
Total			989

(114)

NON-CONTRACT FLYING, 1966

Fixed-wing Aircraft

Forest District	Reconnaissance		Transportation of Men and Supplies		Water Bombing		Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Vancouver	15	$735	-----	-----	-----	-----	15	$735
Prince Rupert	82	2,050	7	$1,900	114	$46,040	203	49,990
Prince George	149	8,868	134	9,537	88	36,832	371	55,237
Kamloops	7	222	23	1,559	-----	-----	30	1,781
Nelson	32	1,437	13	812	-----	-----	45	2,249
Totals	285	$13,312	177	$13,808	202	$82,872	664	$109,992

Helicopters

Vancouver	4	$477	-----	-----	-----	-----	4	$477
Prince Rupert	-----	-----	-----	-----	-----	-----	-----	-----
Prince George	2	195	85	$11,197	-----	-----	87	11,392
Kamloops	-----	-----	-----	-----	-----	-----	-----	-----
Nelson	-----	-----	35	3,913	-----	-----	35	3,913
Totals	6	$672	120	$15,110	-----	-----	126	$15,782

(115) ANALYSIS OF SUPPRESSION-CREW FIRE-FIGHTING ACTIVITIES, 1966

Size of Fire When Attacked	Number of Fires	Subsequent Spread (by Number of Fires)				
		¼ Acre or Less	Over ¼ Acre to 1 Acre	Over 1 Acre to 5 Acres	Over 5 Acres to 50 Acres	Over 50 Acres
Spot (up to ¼ acre)	200	198	1	---	1	---
Over ¼ acre and up to 1 acre	46	34	10	1	---	1
Over 1 acre and up to 5 acres	49	12	2	29	5	1
Over 5 acres and up to 50 acres	13	---	---	---	12	1
Over 50 acres	1	---	---	---	---	1
Totals	309	244	13	30	18	4

(116) CONSTRUCTION OF PROTECTION ROADS AND TRAILS, 1966

	Light	Medium	Heavy	Total
	Miles	Miles	Miles	Miles
New road construction	18	47	38	103
Road maintenance	1,254	628	133	2,015
Totals, road construction and maintenance	1,272	675	171	2,118
New trail construction	4	2	58	64
Trail maintenance	180	109	1	290
Totals, trail construction and maintenance	184	111	59	354

(117) SUMMARY OF SNAG-FALLING, 1966, VANCOUVER FOREST DISTRICT

		Acres
Total area logged, 1966		100,067
Logged in small exempted operations[1]	4,724	
Assessed for non-compliance, less 21 acres subsequently felled	297	
		5,021
Balance logged acres snagged, 1966		95,046
Snags felled, 1966, by Forest Service Protection Division	4,318	
Snags felled, 1966, by Forest Service Reforestation Division	133	
		4,451
Total area snagged, 1966		99,497

[1] Exemption granted under subsection (3) of section 116 of the *Forest Act*.

SUMMARY OF LOGGING SLASH REPORTED IN 1966, VANCOUVER FOREST DISTRICT

(118)

	Acres	Acres
Total area logged, 1966		100,067
Area covered by full hazard reports	71,603	
Covered by snag reports but exempted from slash disposal	7,579	
Covered by acreage reports only (exempted from slash and snag disposal) [1]	4,724	
		83,906
Slash created and not reported in 1966		16,161

[1] Exemption granted under subsection (3) of section 116 of the *Forest Act*.

ACREAGE ANALYSIS OF SLASH DISPOSAL REQUIRED, 1966, VANCOUVER FOREST DISTRICT

(119)

	Acres of Slash		
	Prior to 1966	1966 [1]	Total Acres
Broadcast burning	33,572	33,355	66,927
Spot burning	2,058	2,618	4,676
Totals	35,630	35,973	71,603

1966 reports not recommending slash disposal	7,579	
1966 slash on very small operations exempted without special examination	4,724	
		12,303
Total area of slash dealt with, 1966		83,906

[1] Does not include the estimated 16,161 acres (*see* Table No. 118) created too late to be dealt with in 1966.

ANALYSIS OF PROGRESS IN SLASH DISPOSAL, 1966, VANCOUVER FOREST DISTRICT

(120)

Total disposal required (*see* Table No. 119) — Acres 71,603

Type of Disposal	Acres of Slash		
	Prior to 1966	1966	Total Acres
Spring broadcast burning	185	55	240
Spring spot burning	114	10	124
Fall broadcast burning	34,160	27,458	61,618
Fall spot burning	2,944	1,432	4,376
Total burning completed	37,403	28,955	66,358
Burning by accidental fires			188
Lopping, scattering, land-clearing, etc.			647
Total			67,193

Balance reported slash not yet abated	4,410
Slash created, 1966, acres assessed	371
Plus slash created too late to be dealt with, 1966	16,161
Total area of slash carried over to 1967 for disposition	20,942

Actual area burned in spring spot burning, 27 acres.
Actual area burned in fall spot burning, 638 acres.

The above figures do not include 1965 slash-burn reports received too late for inclusion in 1965 Annual Report, 2,574 acres.

SUMMARY OF SLASH-BURN DAMAGE AND COSTS, 1966, VANCOUVER FOREST DISTRICT

(121)

Total acres of forest-cover in slash fires, 1966	795
Net damage to forest-cover	$52,674.52
Net damage to cut products	255.00
Net damage to equipment and property	*Nil*
Total damage	$52,929.52

ENROLMENT AT ADVANCED COURSE, FOREST SERVICE TRAINING-SCHOOL, 1946–66

(131)

Forest District	Forest Assistants, Cruisers, Etc.	Rangers	Acting Rangers	Assistant Rangers	Clerks	Total	Graduates
Vancouver	2	—	—	3	—	5	5
Prince Rupert	—	—	—	3	—	3	3
Prince George	1	—	—	3	—	4	4
Kamloops	1	—	—	3	—	4	4
Nelson	—	—	—	4	—	4	4
Attendance, 1966	4	—	—	16		20	20
Attendance, 1965	—	—	—	—	—	—	—
Attendance, 1964	5	—	—	15	—	20	20
Attendance, 1963	5	—	—	15	—	20	—
Attendance, 1962	3	—	—	17	—	20	20
Attendance, 1961	3	—	—	17	—	20	—
Attendance, 1960	4	—	—	17	—	21	21
Attendance, 1959	4	—	—	17	—	21	—
Attendance, 1959	—	—	—	21	—	21	21
Attendance, 1958	—	—	—	21	—	21	—
Attendance, 1957	4	—	—	26	—	30	30
Attendance, 1956	4	—	—	26	—	30	—
Attendance, 1956	3	—	—	18	—	21	21
Attendance, 1955	3	—	—	18	—	21	—
Attendance, 1954	—	—	—	20	—	20	20
Attendance, 1953	—	—	—	21	—	21	—
Attendance, 1953	—	—	—	20	—	20	20
Attendance, 1952	—	—	—	20	—	20	—
Attendance, 1951	—	3	3	15	—	21	21
Attendance, 1950	—	3	3	15	—	21	21
Attendance, 1949	—	3	2	16	—	21	—
Attendance, 1948	—	4	2	12	2	20	20
Attendance, 1947	—	8	—	12	—	20	20
Attendance, 1946	—	2	9	9	—	20	20
Total graduates to December 31, 1966	—	—	—	—	—	—	295

NOTE.—From 1949/50 until 1962 the course was of nine months' duration, spread over 1½ years. From 1946 to 1949, and commencing with Class 13, 1963, a six-month course is involved, spread over one year.

ENROLMENT AT BASIC COURSE, FOREST SERVICE TRAINING-SCHOOL, 1962–66

(132)

	Total	Graduates
Attendance, 1966	*Nil*	*Nil*
Attendance, 1965	40	40
Attendance, 1964	20	20
Attendance, 1963	20	20
Attendance, 1962	20	20
Total graduates to December 31, 1966		100
Grand total of graduates, both courses		395

(141)

FOREST REVENUE, 1962–66

	12 Months to Dec. 31, 1962	12 Months to Dec. 31, 1963	12 Months to Dec. 31, 1964	12 Months to Dec. 31, 1965	12 Months to Dec. 31, 1966
Timber-licence rentals and fees	$352,418.29	$357,175.79	$362,707.84	$720,919.31	$771,170.84
Timber-berth rentals and fees	19,795.95	17,361.70	15,639.09	15,024.33	14,368.52
Timber-lease rentals and fees	73,139.35	63,629.77	68,446.06	86,230.58	106,852.12
Timber-sale rentals and fees	500,208.12	502,317.68	510,469.54	765,651.17	948,568.96
Timber-sale stumpage	26,315,940.41	30,199,623.94	37,221,058.19	42,031,437.70	42,643,936.30
Timber-sale cruising and advertising	346,627.67	386,735.44	487,503.76	325,847.00	223,236.17
Timber royalties	2,433,175.10	2,499,842.31	2,610,292.87	2,629,476.11	3,079,058.68
Grazing permits and fees	137,118.26	152,200.70	139,313.50	151,079.95	153,507.63
Forest-protection tax	550,949.16	523,598.00	522,672.70	559,007.55	570,202.65
Miscellaneous	161,447.52	173,192.07	210,330.47	273,738.16	245,350.02
Weight scaling	———	———	———	———	212,275.98
Federal Forestry Agreement	———	———	———	———	1,379,936.16
Totals	$30,890,819.83	$34,875,677.40	$42,148,434.02	$47,558,411.86	$50,348,464.03

(142)

AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, 1966

District	Royalty	Miscellaneous	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Forest Development Fund	Total
			Scaling Expenses	Scaling Fees				
Vancouver	$2,104,834.94	$11,560.98	$355,134.96	$1,502,167.66	$20,068,594.29	$428,713.98	$58,430.18	$24,529,436.99
Prince Rupert	407,092.21	11,816.43	54,263.64	183,620.20	4,973,069.20	202,500.58	56,045.68	5,888,407.94
Prince George	123,169.24	1,860.54	----------	----------	5,881,845.28	303,237.68	112,374.09	6,422,486.83
Kamloops	242,984.86	3,976.10	----------	----------	7,013,702.54	374,627.38	27,249.18	7,662,540.06
Nelson	155,232.11	5,338.16	----------	----------	4,095,526.96	257,943.78	5,198.01	4,519,239.02
Totals, 1966	$3,033,313.36	$34,552.21	$409,398.60	$1,685,787.86	$42,032,738.27	$1,567,023.40	$259,297.14	$49,022,110.84
Totals, 1965	$2,599,335.52	$13,019.78	$325,333.63	$1,526,114.51	$42,997,720.01	$1,520,404.68	$920,312.62	$49,902,240.75
Totals, 1964	$2,589,142.31	$9,757.95	$291,333.62	$1,141,321.90	$38,793,044.73	$1,381,881.96	$764,452.07	$44,970,934.54
Totals, 1963	$2,399,042.45	$11,244.13	$243,745.53	$922,206.05	$30,470,629.50	$1,258,855.66	$651,863.83	$35,957,587.15
Totals, 1962	$2,331,987.94	$8,727.97	$255,562.68	$1,006,764.72	$26,467,054.86	$1,224,600.21	$543,310.69	$31,838,009.07
Totals, 1961	$2,135,102.82	$19,504.27	$219,118.42	$995,399.98	$23,463,080.72	$1,235,002.32	$753,233.75	$28,820,442.28
Totals, 1960	$2,384,420.55	$10,724.64	$248,440.15	$1,259,004.69	$27,664,393.40	$1,103,354.27	$294,341.53	$32,964,679.23
Totals, 1959	$1,883,849.42	$10,321.39	$208,296.71	$1,013,297.52	$23,129,628.91	$1,020,645.57	$198,716.67	$27,464,756.19
Totals, 1958	$1,656,522.86	$13,720.12	$169,517.28	$788,929.53	$20,385,679.74	$970,108.77	$139,091.73	$24,123,570.03
Totals, 1957	$1,888,013.14	$15,930.85	$212,273.83	$909,138.97	$26,163,387.79	$939,036.10	$131,384.09	$30,259,164.77

(143) AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, FISCAL YEAR 1965/66

District	Royalty	Miscellaneous	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Forest Development Fund	Total
			Scaling Expenses	Scaling Fees				
Vancouver	$2,019,872.90	$3,075.80	$328,642.68	$1,513,582.85	$23,137,404.79	$399,825.47	$302,976.75	$27,705,381.24
Prince Rupert	311,538.29	4,235.54	34,903.80	170,317.73	5,022,790.44	200,528.85	118,953.67	5,863,268.32
Prince George	111,052.86	1,686.89	----------	----------	5,960,679.09	289,860.48	279,585.74	6,642,865.06
Kamloops	240,772.48	2,422.50	----------	----------	6,529,266.83	418,519.41	212,521.35	7,403,502.57
Nelson	152,151.36	1,530.40	----------	----------	4,008,318.01	278,193.85	14,857.81	4,455,051.43
Totals, 1965/66	$2,835,387.89	$12,951.13	$363,546.48	$1,683,900.58	$44,658,459.16	$1,586,928.06	$928,895.32	$52,070,068.62
Totals, 1964/65	$2,528,753.61	$10,200.85	$287,344.41	$1,148,796.45	$40,402,430.17	$1,375,540.12	$817,108.92	$46,570,174.53
Totals, 1963/64	$2,397,693.04	$10,103.02	$243,758.31	$933,939.47	$31,559,368.71	$1,271,232.39	$641,330.15	$37,057,425.09
Totals, 1962/63	$2,334,087.65	$10,478.79	$255,471.80	$1,001,506.52	$27,535,735.53	$1,215,900.43	$663,849.93	$33,017,030.65
Totals, 1961/62	$2,249,635.97	$18,336.53	$230,395.08	$1,006,719.97	$23,748,697.80	$1,256,074.86	$703,412.40	$29,213,272.61
Totals, 1960/61	$2,259,260.15	$11,752.91	$229,465.79	$1,174,335.71	$25,525,797.36	$1,123,343.86	$294,095.37	$30,618,051.15
Totals, 1959/60	$2,090,089.97	$10,073.48	$222,233.43	$1,097,022.68	$25,972,797.12	$1,027,388.60	$276,543.16	$30,696,148.44
Totals, 1958/59	$1,724,335.77	$10,278.72	$189,733.59	$857,356.03	$21,039,523.86	$980,609.33	$139,682.23	$24,941,519.53
Totals, 1957/58	$1,876,624.77	$18.418.04	$200,348.04	$890,547.82	$24,860,333.41	$930,780.33	$137,679.66	$28,914,732.07
Totals, 1956/57	$2,100,595.60	$12,817.18	$223,110.65	$825,245.69	$29,544,636.65	$917,775.18	$176,767.56	$33,800,948.51

(144) FOREST REVENUE, FISCAL YEAR 1965/66

Timber-licence rentals and fees	$847,929.43
Timber-berth rentals and fees	14,992.19
Timber-lease rentals and fees	104,407.88
Timber-sale rentals and fees	888,653.62
Timber-sale stumpage	44,895,133.96
Timber-sale cruising and advertising	290,506.40
Timber royalties	2,892,250.68
Grazing permits and fees	142,740.69
Forest-protection tax	570,827.94
Miscellaneous	215,443.39
Total	$50,862,886.18

(145) FOREST SERVICE EXPENDITURES, FISCAL YEAR 1965/66

General administration, protection, and management of forests	$11,952,531
Reforestation and forest nurseries	756,096
Forest research	247,085
Public information and education	114,861
Forest Service training-school	128,472
Grant to Canadian Forestry Association	17,500
Engineering services and forest-development roads	5,034,132
Fire suppression	2,697,163
Forest surveys	1,299,281
Silviculture	1,601,614
Grazing Range Improvement Fund[1]	77,864
Peace River community pastures	9,668
Total	$23,936,267

[1] Statement provided elsewhere.

(146) SCALING FUND

Deficit, April 1, 1965	$208,517.02
Collections, fiscal year 1965/66	2,003,583.98
	$1,795,066.96
Expenditures, fiscal year 1965/66	1,843,907.70
Deficit, March 31, 1966	$48,840.74
Collections, nine months, April to December, 1966	1,535,870.78
	$1,487,030.04
Expenditures, nine months, April to December, 1966	1,536,681.90
Deficit, December 31, 1966	$49,651.86

(147) GRAZING RANGE IMPROVEMENT FUND

Surplus, April 1, 1965	$7,828.55
Government contribution (section 13, *Grazing Act*)	82,485.70
	$90,314.25
Expenditures, fiscal year 1965/66	77,863.56
Surplus, March 31, 1966	$12,450.69
Government contribution (section 13, *Grazing Act*)	71,370.34
	$83,821.03
Expenditures, nine months, April to December, 1966	52,566.77
Surplus, December 31, 1966	$31,254.26

(148) PEACE RIVER POWER TIMBER SALVAGE

Expenditures, fiscal year 1965/66	$897,534.76
Recovered from British Columbia Hydro and Power Authority	897,524.76
Balance	$10.00

(151) DISTRIBUTION OF PERSONNEL, 1966

Personnel	Vancouver[1]	Prince Rupert	Prince George	Kamloops	Nelson	Victoria[2]	Total
Continuously Employed							
Deputy Minister, Chief Forester, and Assistant Chief Foresters	-----	-----	-----	-----	-----	4	4
Division Foresters	-----	-----	-----	-----	-----	7	7
Directors of Grazing and Public Information	-----	-----	-----	-----	-----	2	2
Forest Counsel and Personnel Officers	-----	-----	-----	-----	-----	3	3
District Foresters and Assistant District Foresters	2	2	2	2	2	-----	10
Foresters	13	9	12	14	10	104	162
Agrologists and Agrologists-in-training	-----	-----	2	5	2	-----	9
Engineers	-----	-----	-----	-----	-----	29	29
Forest Protection Officers	3	2	3	1	2	4	15
Technical Forest Officers	99	81	95	130	110	35	550
Superintendent of Scaling and Assistants	15	2	3	3	3	-----	26
Scalers, Official	69	-----	-----	-----	1	-----	70
Scalers, Official, temporary	86	5	33	22	2	-----	148
Comptroller, Accountant, Audit Assistants, and Administrative Officers	1	-----	-----	1	-----	8	10
Engineering, Mechanical and Radio	16	5	5	5	2	14	47
Public Information Officers	-----	-----	-----	-----	-----	2	2
Public Information Assistants	-----	-----	-----	-----	-----	1	1
Reforestation, Research, and Survey Assistants	-----	-----	-----	-----	-----	42	42
Nursery Superintendents	-----	-----	-----	-----	-----	1	1
Draughtsmen and Mapping Assistants	5	4	5	5	4	34	57
Clerks, Stenographers, and Messengers	99	34	35	33	25	98	324
Superintendent and Foremen, Forest Service Maintenance Depot	6	-----	-----	-----	-----	-----	6
Mechanics, Carpenters, and Technicians	23	3	7	-----	3	63	99
Launch Crewmen	18	8	-----	-----	-----	1	27
Forest Assistants	33	35	54	53	31	9	215
Truck, Tractor, and Equipment Operators	6	5	2	3	2	11	29
Foremen	7	1	-----	-----	-----	32	40
Miscellaneous[3]	7	2	2	2	3	121	137
Totals, continuous personnel	508	198	260	279	202	625	2,072
Seasonally Employed							
Technical Forest Officers	8	-----	12	-----	2	23	45
Patrolmen	-----	1	1	-----	5	-----	7
Lookoutmen	38	23	31	32	41	-----	165
Dispatchers, Radio Operators, and Clerks	6	2	3	4	8	-----	23
Fire-suppression Crewmen	48	21	20	61	54	-----	204
Reforestation—Snag-fallers, Planters, etc.	3	-----	30	-----	10	1,138	1,181
Truck, Tractor, and Equipment Operators	-----	1	10	3	5	23	42
Student and Survey Assistants and Engineering Aides	-----	-----	-----	-----	-----	67	67
Forest Assistants	6	-----	6	-----	8	97	117
Foremen	5	1	-----	2	1	54	63
Miscellaneous[4]	12	9	7	12	74	67	181
Totals, seasonal personnel	126	58	120	116	206	1,469	2,095
Totals, all personnel	634	256	380	395	408	2,094	4,167

[1] Includes Vancouver Scaling and Forest Service Maintenance Depot.

[2] Includes all divisional field staff except research personnel assigned to districts.

[3] Includes Stockmen, Cooks, Flunkeys, Timekeepers, Utility Men, Key-punch and Data Processing Operators, Photographers, and Construction Accountants.

[4] Includes Bridgemen, Powdermen, Carpenters, Launch Crew, Mechanics, Watchmen, Labourers, and Rock Drillers.

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