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

1968

Printed by A. SUTTON, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia.
1969

VICTORIA, BRITISH COLUMBIA, February, 1969.

To Colonel the Honourable JOHN R. NICHOLSON, P.C., O.B.E., Q.C., LL.D.,
Lieutenant-Governor of British Columbia.

MAY IT PLEASE YOUR HONOUR:

Herewith I respectfully submit the Annual Report of the Forest Service of the Department of Lands, Forests, and Water Resources for 1968.

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

The Honourable R. G. Williston,
Minister of Lands, Forests, and Water Resources,
Victoria, British Columbia.

SIR,—This is the Annual Report of the Forest Service for 1968.

F. S. McKINNON,
Deputy Minister of Forests.

(British Columbia Forest Service photo, 1968.)

Throughout summer months a number of university students work with British Columbia Forest Service in a variety of field projects. This young man, a U.B.C. engineering student, worked as a compassman with a forest-road survey team in the Kakweiken River area of Thompson Sound.

CONTENTS

	PAGE
1. Chief Forester's Report	11
2. Forest Inventory Division	13
Highlights	13
1968 Progress	13
Developments	14
3. Forest Research Division	15
Genetic Studies	15
Seedling Physiology Studies	16
Soil Classification	16
Ecology	16
Data Processing	16
Silviculture—	
Vancouver Forest District	16
Prince Rupert Forest District	17
Prince George Forest District	17
Kamloops Forest District	17
Nelson Forest District	17
Canada Land Inventory	18
4. Reforestation Division	19
Forest Nurseries	19
Improvements	19
Forest Tree Seed	20
Reconnaissance and Survey Work	21
Planting	22
Co-operation	23
Interdepartmental Forestry and Corrections Camp Programme	24
5. Public Information and Education Division	26
News Releases and Special Articles	26
Photography	26
Motion Pictures	27
Film Library	27
Library	27
School Lecture Programme	27
Signs	28
Exhibits	28
Advertising	28

PAGE

6. Forest Management Division 29
Market Prices and Stumpage Trends 29
Lumber Prices 29
Log Prices 29
Stumpage Prices 29
Stumpage Adjustments 30
Sustained-yield Programme—
Public Sustained-yield Units 30
Pulp Harvesting Forests 31
Certified Tree-farms 31
Farm Wood-lot Licences 31
Tree-farm Licences 31
Working Plans 31
Silviculture 31
Scaling 32
Flood Basins—
Peace River 32
Mica 32
Libby 32

7. Grazing Division 33
General Conditions 33
Range 33
Hay 33
Markets and Prices 33
Range Management 34
Range Surveys 34
Range Improvements 34
Peace River Pastures 35
Co-operation 36
Administration 36
Grazing Permits 36
Hay Permits 36
Grazing Fees 37
Control and Enforcement 37

8. Engineering Services Division 38
Engineering Surveys 38
Design 38
Forest Management Engineering 38
Road Construction and Maintenance 40
Building Services and Marine Section 40
Mechanical Section 41
Forest Service Maintenance Depot 42
Radio Section 43

PAGE

9. Forest Protection Division 45
Weather 45
Fires 45
Occurrence and Causes 45
Cost of Fire-fighting 45
Damage 45
Fire-suppression Crews 45
Aircraft 45
Roads and Trails 46
Slash and Snag Disposal 46
Vancouver Forest District 46
Prescribed Burns 46
Vancouver Forest District 46
Prince Rupert Forest District 46
Prince George Forest District 46
Kamloops Forest District 47
Nelson Forest District 47
Fire-law Enforcement 47
Forest Closures 47
Protection Planning and Research 47
Fire Statistics 47
Visibility Mapping and Lookout Photography 47
Fuel-moisture Indicator Sticks 47
Insect Survey and Control 47
Research Projects 48

10. Forest Service Training-school 49
Enrolment and Graduation 49
Extra Courses and Functions 50

11. Accounting Division 51
Fiscal 51
Administration 51

12. Personnel Division 53
Communications and Training 53
Establishment, Recruitment, and Staff Turnover 53
Classification, Salaries, and Working Conditions 54

13. Personnel Directory, 1968 55

14. Appendix—Tabulated Detailed Statements to Supplement the Report of the Forest Service 59

REPORT OF THE FOREST SERVICE, 1968

CHIEF FORESTER'S REPORT

Production records were broken and progress in the forest industries was brisk throughout 1968. The year also saw further steps taken toward maximum use of our forest resources.

Here are some of the year's highlights:—

- Estimates show the unduplicated selling value of forest-industry products was $1,375,000,000, an increase of 14.1 per cent over 1967.
- The timber harvest passed the 1,700,000,000 cubic feet mark, an increase of nearly 130,000,000 cubic feet over the previous year.
- In wood products alone the value of shipments jumped nearly 20 per cent with an increase of more than $140,000,000.
- Pulp and paper shipments climbed by nearly $35,000,000, about 7 per cent over 1967. During the year two new pulp-mills were completed and started operations—one at Prince George, the other at Skookumchuk—bringing to 19 the number of pulp (only) mills now operating in British Columbia.
- Financial returns to the Province reached a record high. Royalty and stumpage rates, combined with an 8.2-per-cent increase in the volume of timber scaled, brought total charges to $58,036,564, 44.9 per cent above the 1967 figure.
- Direct forest revenue was $53,841,116, up 26.7 per cent over the previous year, with timber-sale stumpage (comprising more than four-fifths of this revenue) rising to $44,390,571, an increase of 27.8 per cent.
- Beachcombers with special licences under section 150 (18) of the *Forest Act* recovered nearly 900,000 cubic feet from Masset Inlet in the Queen Charlotte Islands, about 200,000 cubic feet from shores of Vancouver Island's west coast, and more than 23,000 cubic feet from beaches of Babine Lake.
- The export of logs from British Columbia totalled 185,458,779 board-feet, 1.8 per cent of the year's cut. Of this, approximately 97½ million board-feet came from Crown grants with export privileges, and nearly 88 million board-feet deemed surplus to requirements of industry.
- There were 1,647 forest fires throughout the Province in 1968 (compared with 3,216 in 1967), and they covered 33,381 acres. Fire-fighting costs totalled $862,600.

Surveys on public sustained-yield units continued throughout 1968, and unit standard information is now available on 78,000,000 acres. By the end of the year, allowable annual cut figures for all existing (and proposed) units were available to the public. The reports provide data on the volume of wood available under three conditions: (1) where there are no licensees in a public sustained-yield unit complying with close utilization (maximum use) standards, (2) where some operate at these standards, and (3) where all licensees are following close-utilization procedures.

A revised form of timber-sale harvesting licence was introduced late in 1968 to encourage total adoption of close utilization and maximum use of forest resources. It is also hoped operations of the wood-product industries will provide a greater proportion of useable material for the pulp and paper industry.

Tree-improvement and seed-collection programmes received special attention by the Research Division throughout the year, with encouraging results, while new programmes were developed in its data-processing operations.

Among highlights of the Engineering Services Division's work in 1968 were projects related to preparation for flooding of large forested areas at the Libby, Mica, and Peace River dam-sites.

Progress made by the Reforestation Division indicates the target of 75,000,000 seedlings per year will be reached by 1975. Throughout 1968, 21,130,500 trees were planted on 57,590 acres, of which the Forest Service handled 6,235,700 or 29.5 per cent. Close to 12,000 bushels of cones were collected, and they will yield approximately 3 tons of seed. Nearly 17 tons of seed are now in storage.

Initial development started on the new 465-acre Surrey Nursery, in Surrey, with a planned ultimate production of more than 40,000,000 seedlings annually.

A major step was taken in the communications field in 1968 when the Forest Service acquired Telex. Ten permanent units and one for seasonal use were installed to provide an efficient and dependable communications system linking all five forest districts and the Victoria headquarters.

Production of forage on Crown range was above average, and stockmen had no serious problems connected with range use.

At Green Timbers, the Forest Service's training-school, 24 men graduated from the 15th advanced course, and a similar number completed the seventh basic training course. To date a total of 319 men have graduated from the school's advanced course and 148 from the basic training programme.

The year saw major administrative changes in the Service's Information Division with the appointment of a new forester-in-charge and a new assistant.

The permanent Civil Service establishment of the Service stood at 884 at the end of 1968.

All told, 1968 was a good year for the forest business of our Province, and there is every indication the favourable trends will continue. The way world demand and markets for wood products are shaping up, it is quite likely the forest industry of British Columbia will develop into at least a $2-billion-a-year business within the next seven years. Such a target can be reached with wise management and with maximum use of our resources.

BRITISH COLUMBIA FOREST SERVICE
INVENTORY DIVISION

UNIT SURVEYS 1961+

COMPLETED (1961-67 Fieldwork)

2. Arrowhead
5. Barriere
8. Big Bar
10. Blueberry
12. Bowron
13. Burns Lake
16. Chilko
18. Cranbrook
21. Dean
22. Dewdney
24. Edgewood
25. Fernie
29. Granby
30. Hecate
32. Kettle
34. Kingcome (Seymour, Klinaklini)
39. Monkman
41. Nakusp
42. Narcosli
44. Nechako
45. Nehalliston
46. Nicola
49. North Thompson
50. Okanagan
51. Ootsa
52. Parsnip
54. Prince George S.S.A.
55. Purden
56. Quadra (Redonda, Sayward, Texada)
57. Queen Charlotte
59. Raft
62. Salmo
63. Salmon Arm
64. Shuswap
66. Skeena
67. Slocan
68. Smithers
69. Soo
72. Stum
74. Upper Kootenay
77. Westlake
80. Windermere
81. Yalakom

AVAILABLE INFORMATION

(a) Maps - all at 1/4 mile to 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 (1968 Fieldwork)

1. Adams
31. Kamloops Region S.S.A.
33. Kinbasket
47. Niskonlith
58. Quadra (Sechelt)
60. Rivers Inlet
87. Fort Nelson Proposed

PLANNED (1969+ Fieldwork)

3. Ashnola
4. Babine
6. Barton Hill
7. Bell-Irving
9. Big Valley
11. Botanie
14. Canoe
15. Carp
17. Cottonwood
19. Creston
20. Crooked River
23. Eagle
26. Finlay
27. Fort St. James S.S.A.
28. Furry Creek S.S.A.
34. Kingcome (Cape Scott, Broughton)
35. Lac La Hache
36. Lardeau
37. Longworth
38. Moberly
40. Morice
43. Naver
48. Nootka
53. Peace
58. Quesnel Lake
61. Robson
65. Similkameen
70. Spallumcheen
71. Stuart Lake
73. Takla
75. Vancouver
76. Wapiti
78. Williams Lake
79. Willow River
82. Alsek Proposed
83. Boundary Proposed
84. Dawson Creek S.S.A. Proposed
85. Dease Proposed
86. Pontas Proposed
88. Kechika Proposed
89. Klappan Proposed
90. Kotcho Proposed
91. Liard Proposed
92. Sikanni Proposed
93. Stikine Proposed
94. Taku Proposed

TREE FARM LICENCES

MAJOR PARKS

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 UNIT SURVEYS
OF AREAS UNDER PUBLIC MANAGEMENT
AS AT DECEMBER 31, 1968

FOREST INVENTORY DIVISION

HIGHLIGHTS

Unit survey progress on public sustained-yield units continued, and information to unit standard is now available for 71,000,000 acres. By 1976 all established public sustained-yield units plus all proposed northern sustained-yield units should have been surveyed to this standard.

Allowable annual cuts for proposed and established units were available by the end of 1968. The calculations show the amount of wood available at close utilization under three different conditions—(1) when no one (past), (2) a portion (present), and (3) all (future) are operating to close-utilization standard.

A new Provincial inventory to be published early in 1969 will provide (by unit) volumes to two levels of utilization, areas by cover class, mean annual increments, rotations, allowable cuts, and other pertinent information.

After two years of preparation, a cruising manual providing uniform method and compilation among all forest districts, industry, and the Forest Service is being distributed. Implementation and administration of the manual will be the responsibility of the Forest Management Division.

1968 PROGRESS

Field efforts were directed to classification and sampling of mature and immature stands, derivation of loss factors, and determination of the growth and yield of immature stands.

In 1968 the Division completed field work to unit standard on five public sustained-yield units, one proposed public sustained-yield unit, one special sale area, and three small parcels added to the Windermere Public Sustained-yield Unit. A total of 12,089,880 acres was brought to unit standard.

Table A.—1968 Field Work

UNIT STANDARD INVENTORY

Unit	Maps Classified	Number of Samples		Total Estimated Acreage
		Immature	Mature	
Adams P.S.Y.U.	35	29	131	583,846
Fort Nelson P.S.Y.U. (proposed)	225	219	262	4,274,889
Kamloops Region S.S.A.	67	194	132	1,239,554
Kinbasket P.S.Y.U.	118	98	287	2,370,668
Niskonlith P.S.Y.U.	20	25	37	359,278
Quadra (Sechelt) P.S.Y.U.	58	22	75	952,825
Rivers Inlet P.S.Y.U.	105	87	198	2,017,334
Windermere P.S.Y.U. (additions)	38	4	21	291,486
Totals	666	678	1,143	12,089,880
LOSS FACTORS				
North Thompson P.S.Y.U.	-----	-----	23[1]	-----
GROWTH AND YIELD				
Cranbrook P.S.Y.U.	-----	66	-----	-----
Fernie P.S.Y.U.	-----	31	-----	-----
Upper Kootenay P.S.Y.U.	-----	20	-----	-----
Windermere P.S.Y.U.	-----	31	-----	-----
Totals	-----	148[2]	-----	-----

[1] Felled samples. [2] Permanent samples.

Field crews used a wide variety of equipment. Good use was made of motorcycles on old logging-roads only accessible from salt water. Future operations in northern units will require a suitable swamp vehicle.

The Division completed office work on all the 1967 units in Table B by September, 1968, and all were released except the Purden and Bowron.

Table B.—Production of Final Forest-cover Maps for 1967 Projects

Public Sustained-yield Unit	Number of Maps[1]	Forest and Non-forest Area in Acres			Volume in M Cu. Ft. on Mature Crown Area
		Crown	Alienated	Total	
Barriere	22	326,925	30,267	357,192	479,628[2]
Bowron	12	156,207	2,604	158,811	357,582[2]
Edgewood	20	297,938	14,279	312,217	331,665[2]
Granby	33	643,186	52,734	695,920	368,737[2]
Nakusp	23	311,847	17,902	329,749	396,707[2]
North Thompson	54	983,673	53,189	1,036,862	1,625,336[2]
Purden	37	609,197	1,508	610,705	1,691,589[2]
Queen Charlotte	132	1,504,887	93,702	1,598,589	6,736,768[3]
Raft	36	557,435	48,368	605,803	767,731[2]
Quadra (Sayward)	19	217,236	47,061	264,297	576,442[3]
Slocan	30	517,862	40,212	558,074	342,344[2]
Totals	418	6,126,393	401,826	6,528,219	13,674,529

[1] Scale: 20 chains to 1 inch.
[2] Volumes, 7.1"+d.b.h. close-utilization standard less decay.
[3] Volumes, 9.1"+d.b.h. close-utilization standard less decay.

The Loss Factor Section has completed new taper curves for larch, Coast immature fir, cedar, hemlock, alder, maple, cottonwood, birch, and aspen. The Division is also publishing new zonal diameter-class loss factors to replace or supplement those in Forest Survey Note No. 8. Local factors for hemlock and balsam in the Bell-Irving, Dewdney, and Hazelton portion of the Skeena Public Sustained-yield Unit are now available.

The Growth and Yield Section, using both temporary immature and permanent immature growth samples, has produced an additional 49 local volume-over-age and 133 local diameter-over-age curves. The former provide mean annual increment, and the latter average tree diameters for growth types at any stand age.

DEVELOPMENTS

During 1968 the Wapiti Public Sustained-yield Unit was established, and 20-chain photography was obtained for a unit standard survey in 1969. Since 70-mm. helicopter photography taken with two Linhof cameras suspended from a new boom continues to be promising, it is planned to survey a portion of the Wapiti by this method. To make interpretation and measurement possible with fixed-base 70-mm. photography, a Wild 40 autograph plotter and EK5 co-ordinate printer have been leased from Wild of Canada Ltd. This system is linked to an I.B.M. card punch.

Other public sustained-yield units to be inventoried in 1969 are the Ashnola, Big Valley, Cottonwood, Lardeau, Naver, Nootka, Similkameen, Willow River, and proposed Fontas.

The loss-factor objective is to strengthen zonal diameter-class factors, especially minor species in each zone, and to localize the factors for major species in public sustained-yield units. Work will continue in the decadent hemlock-cedar stands of the Arrowhead, Eagle, Longworth, and Robson Public Sustained-yield Units. Consideration must be given soon to a loss study of commercial species north of the 56th parallel of latitude, as the unit survey programme is moving in that direction.

Since permanent growth samples have been established in the South Transition Bioclimatic Region, the Interior Wet Belt Region, and the East Kootenay Region, it is planned to establish samples in the South Coast Bioclimatic Region in 1969.

FOREST RESEARCH DIVISION

A detailed report on the research programme for 1968 will appear in the annual Forest Research Review compiled at the end of the fiscal year.

GENETIC STUDIES

The Cowichan Lake Experiment Station is the centre for Coastal tree-improvement investigations of Douglas fir. An additional 5 acres are being cleared adjacent to the nursery-site. The sprinkler system was improved by installing a larger pump and additional sprinklers for the transplant area.

A third series of intraspecific crosses of Douglas fir raised at the nursery were established on five test-sites on Vancouver Island. A total of 13,879 seedlings was planted in the spring, and survival on completion of the first growing season was 95 per cent. The first measurements on the test-sites established prior to 1968 will be made in 1969.

There was adequate production of both female and male strobili at Lake Cowichan, and controlled pollinations were made on the clones of 16 plus trees and on 10 first-generation inbreds. The first pollinations were made on the progeny of two trees which were selected for good form and vigour in 1954. Another 15 provenances of Douglas fir from New Mexico, Arizona, California, Colorado, Montana, and British Columbia were established in the breeding arboretum.

A paper on " The Role of Tree Breeding and Other Tree Improvement Practices in Reforestation " was given at the annual meeting of the Canadian Institute of Forestry, St. John's, Nfld.

A total of 88 provenances of Douglas fir, raised at the nursery, was planted on a 25-acre test-site at 400 feet elevation near Sooke on Southern Vancouver Island. Sufficient 1+1 stock is available for planting two additional test-sites in the spring of 1969. Seedlings were grown for planting 11 test-sites in the 1969/70 planting season.

At Sooke all plants were treated with Arcotal as a precaution against browsing by deer.

A range-wide collection of seed, cones, and foliage from 150 lodgepole pine provenances has been assembled, and marks the first stage in a study of geographic variation in this species. In the spring of 1968, seed of 30 provenances were sown in the research nurseries at Cowichan Lake and Red Rock as a pilot study for comprehensive sowings scheduled for 1969.

At the new Red Rock Research Centre, near Prince George, a small nursery of 4 acres was graded, and a few beds were sown to lodgepole pine and white spruce to test fertility and nursery practices.

A long-term programme for producing genetically improved seed of Interior spruces has been planned for this centre. The first step was the selection of 183 trees from the adjoining region to the east. Six were selected with unusual form to demonstrate inheritance traits, as opposed to environmental traits. The remaining trees were selected for their better than average form, and these will be the basis for a tree-improvement programme. Wind-pollinated seed was collected from them and scion material for rooting and grafting was collected last winter. The seed will be used for a small-scale progeny trial preliminary to controlled crossing of the scion material when it reaches flowering stage.

A breeding arboretum of hardy spruces will be started from exotic material and selected material from throughout the Interior of British Columbia.

SEEDLING PHYSIOLOGY STUDIES

A study in frost hardiness indicates no change in 2–0 Douglas fir nursery stock results from storage in darkness (in plastic-lined paper bags) at 32° to 35° F. Consequently plants lifted in September or early October and placed in cold storage remain susceptible to frost damage. On the other hand, frost-hardy plants placed in cold storage in January remain frost hardy at least until April, when plants growing outside in the nursery have lost much of their winter frost hardiness.

SOIL CLASSIFICATION

The soil-classification project to develop technique and criteria for mapping and interpretation of forested lands, reported in 1967, has been favourably accepted by tree-farm licensees, and a few companies are presently planning to undertake mapping of their holdings on Vancouver Island.

An analysis and interpretation of the fertilizer projects initiated by Pacific Logging and Cominco has been undertaken at the request of these companies, and this information will be used in the interpretation of the above soil classification.

ECOLOGY

A field trip to Aleza Lake in September attended by Forest Service personnel and industrial foresters examined part of the experimental area of E.P. 528, " Durability of Scarified Seedbeds " (B.C.F.S. Research Note No. 42). The purpose of this field trip was to demonstrate that the effectiveness of soil scarification is of limited duration because of rapid weed invasion, especially on moist sites.

DATA PROCESSING

Research requests for data processing during 1968 increased and constituted the major work load throughout the year.

New programmes (information analysis, hierarchical polythetic classification, descriptive statistics, silvicultural data summary, and other miscellaneous programmes) were developed, others were modified (scatter plot programme analysis of variance, covariance analysis, multiple regression analysis) and one (Duncan's multiple range test from the University of British Columbia) has been adapted to comply with the local computing facilities.

Assistance has been given to the Canada Land Inventory programme in developing its meteorological-data summary.

During 1968 a system was designed to compute adjustments to stumpage rates as a result of fluctuations in lumber prices. Data for Nelson and Prince George Forest Districts have been assembled and two months of adjustments calculated for the Nelson Forest District.

Computer malfunctions of an intermittent nature occurred during the year, and a system of control checks was added to the system to catch mismanipulation of data.

A second forester was made available for training in systems design and programming and has been undergoing training since May.

SILVICULTURE

Vancouver Forest District

Survival figures in the western hemlock establishment trial continue to demonstrate the advantages of a northerly aspect, shade, and a mineral-soil planting

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, 1968

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

PUBLIC SUSTAINED YIELD UNITS

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

P.H.A.

NO. 1
9. Big Valley
15. Carp
20. Crooked River

NO. 2
1. Adams
5. Barriere
6. Barton Hill
11. Botanie
23. Eagle

NO. 3
12. Bowron
37. Longworth

NO. 4
4. Babine
13. Burns Lake

NO. 5
17. Cottonwood

NO. 7
53. Peace

43. Never
44. Nechako
52. Parsnip

45. Nehalliston
46. Nicola
47. Niskonlith
49. North Thompson

39. Monkman
55. Purden

40. Morice

42. Narcosli

69. Takla

71. Stuart Lake
77. Westlake
79. Willow River

59. Raft
63. Salmon Arm
64. Shuswap
70. Spallumcheen

61. Robson

68. Smithers

58. Quesnel Lake

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

2. Arrowhead
3. Ashnola
7. Bell-Irving
8. Big Bar
10. Blueberry
14. Canoe
16. Chilko
18. Cranbrook
19. Creston
21. Dean
22. Dewdney
24. Edgewood
25. Fernie

26. Finlay
29. Granby
30. Hecate
32. Kettle
33. Kimbasket
34. Kingcome
35. Lac la Hache
36. Lardeau
38. Moberly
41. Nakusp
48. Nootka
50. Okanagan
51. Ootsa

56. Quadra
57. Queen Charlotte
60. Rivers Inlet
62. Salmo
65. Similkameen
66. Skeena
67. Slocan
69. Soo
72. Stum
74. Upper Kootenay
75. Vancouver
76. Wapiti
78. Williams Lake
80. Windermere
81. Yalakom

SPECIAL SALE AREAS

27. Fort St. James (O-I-C 1888/65)
28. Furry Creek (O-I-C 3909/67)
31. Kamloops Region (O-I-C 1826/66)
54. Prince George (O-I-C 2811/62)

TREE FARM LICENCES

T.F.L. No.

1. Colgar Limited
2. Elk Falls Company Limited
3. Pacific Logging Company Limited
5. Weldwood of Canada Limited
6. Rayonier Canada (B.C.) Limited
7. MacMillan, Bloedel Limited
8. Boundary Sawmills Ltd.
9. S. N. Simpson Limited
10. Timberland Development Co. Limited
11. Boundary Sawmills Ltd.
12. Bendickson Logging Ltd.
13. Galloway Lumber Company Ltd.
14. Crestbrook Forest Industries Ltd.
15. Oliver Sawmills Limited
16. Pondosa Pine Lumber Company, Ltd.
17. British Columbia Forest Products Ltd.
18. Clearwater Timber Products Ltd.
19. Tahsis Company, Ltd.
20. MacMillan, Bloedel Industries Ltd.

T.F.L. No.

21. MacMillan, Bloedel Industries Ltd.
22. British Columbia Forest Products Limited
23. Colgar Limited
24. Rayonier Canada (B.C.) Limited
25. Rayonier Canada (B.C.) Limited
26. The Corporation of the District of Mission
27. British Columbia Forest Products Limited
30. Sinclair Spruce Lumber Company Ltd.
32. Vernon Box & Pine Lumber Co. Ltd.
33. Shuswap Timbers Ltd.
35. B.C. Interior Sawmills Ltd.
36. F. & R. Logging Co. Ltd.
37. Canadian Forest Products Ltd.
38. Empire Mills Limited
39. MacMillan, Bloedel Limited
40. Skeena Kraft Limited
41. Eurocan Pulp and Paper Co. Ltd.

MAJOR PARKS

1. Bowron Lake
2. Garibaldi
3. Glacier
4. Golden Ears
5. Hamber
6. Kokanee
7. Kootenay
8. Manning
9. Mount Revelstoke
10. Mount Robson
11. Monashee
12. Muncho Lake
13. Mount Seymour
14. Stone Mountain
15. Strathcona
16. Tweedsmuir
17. Wells Gray
18. Yoho
19. Cathedral

medium. The species and spacing study initiated in 1962 is well established, and, with the exception of the western red cedar, which have been heavily browsed, most trees have assumed dominance over competing vegetation. Competition effects due to spacing can be expected to commence soon. All the plots at Port Renfrew and Franklin River have been cleaned and each tree numbered. Final measurements of total height and current leader growth have been made.

The first in a series of plots comparing bare-root seedlings and mud-pack seedlings was established at four locations on the Coastal Mainland. Planting was carried out at regular intervals throughout the spring, summer, and fall.

Prince Rupert Forest District

Research activities were concentrated on preparation of final reports for several completed projects and maintenance of previously established active investigations. Two new projects were initiated. A two-provenance lodgepole pine spacing trial was established on a 10-acre clear-cut north of Fort Fraser, and preliminary field studies related to the Prince Rupert District slash-burning programme were made to determine the silvicultural impact of prescribed burning policies.

Prince George Forest District

A moderate to heavy seed crop on white spruce throughout the Prince George District was successfully forecast on the basis of a bud-forcing trial conducted in early February. The occurrence of this crop resulted in a study of seed maturity on white spruce with weekly cone-sampling in four stands during August and September. A study was established to determine the feasibility of planting white spruce on fresh to moist sites throughout the summer. The first of three annual plantings was carried out during the summer of 1968. Early results suggest bare-root planting throughout all or most of the growing season is feasible.

Kamloops Forest District

The study of the costs and benefits associated with the rehabilitation of decadent stands was continued and expanded.

Despite numerous equipment failures, an aerial seeding trial of Douglas fir and Engelmann spruce was completed early in 1968. The seeding of spruce was a failure, but the Douglas fir seeding was successful with good germination and survival. The dispersal pattern of seed was unfavourable and indicated the necessity of better ground control and a different flying pattern during aerial seeding.

Further seeding tests were carried out late in 1968 to determine the reasons for the poor results obtained from the spruce seeding.

Nelson Forest District

After a 10-year study of a partial cutting in the Wet Belt forest type, satisfactory growth and regeneration were produced by a salvage cutting. Of the cutting methods tried, this was the method that also removed the largest volume. The other methods tried were a diameter-limit cutting, improvement cutting, and no cutting (control).

The rehabilitation study of overmature cedar-hemlock stands at Blaeberry Creek continues. Bad weather interrupted the fall burning programme.

CANADA LAND INVENTORY

The Research Division continues to be associated with several Provincial and Federal organizations in the British Columbia programme of the Canada Land Inventory. Soil classification and capability rating for agriculture and forestry was undertaken in the East Kootenay, Peace River, and North Central Interior regions. The survey of the East Kootenay was completed.

The gathering of new climatic data was undertaken in these regions to aid in land-use interpretations.

REFORESTATION DIVISION

FOREST NURSERIES

Winter loss of stock was normal at most nursery-sites, but a mid-winter thaw at Red Rock caused flooding in low areas and above-average losses. Flooding followed by freezing temperatures and saturated soil resulted in minor frost-heaving losses to spruce and hemlock at the Duncan Nursery.

Weather conditions during the year were generally favourable for nursery stock. Nearly all nurseries reported above normal precipitation, particularly during the growing season. Lower than average temperatures during this period in some cases had an adverse effect on growth of stock and, to a lesser degree, on the rate of germination. Spring and fall frosts were seasonal, and with irrigation frost damage was minimal. Extremely low temperatures were recorded late in 1968, but snow cover protected the nursery stock.

Except for a small number of beds at the Telkwa Nursery, all seed was drill-sown during the 1968 season, and favourable results have been reported from all nurseries.

In the older nurseries, control of weeds is still a major cost item. At Duncan and Green Timbers a new technique of weed control in 1–0 stock was made possible by drill sowing of seed-beds. Equipment was devised to protect the trees while inter-row spaces were sprayed with Gramoxone. Gramoxone—a form of paraquat —was used because it is non-selective and kills all species of weeds and grasses even at advanced stages of growth. It dessicates all green growth but becomes inactive on contact with the soil, and leaves no harmful residues. Extreme care must be taken to prevent the material making contact with tree foliage, and equipment is being improved to this end. Weeds are not a problem at new nurseries established on newly cleared land and lighter soils.

Total seed-beds sown this season amounted to 10,913 (including 1,820 in the fall of 1967), this being a record for any one year. Inventories of 1–0 stock indicate the planned production of 42,254,000 trees from these beds will be achieved.

In the fall an additional 889 seed-beds were sown at Red Rock, Telkwa, and Campbell River.

A total of 20,905,000 trees was shipped from Forest Service nurseries to planting projects in 1968.

A highlight of the year was the acquisition of 468 acres south-east of Cloverdale. About 300 acres are well drained, with friable soil, excellent for growing conifer nursery stock. Development has commenced at this new site, and sowing of the first seed-beds is planned for the spring of 1969.

IMPROVEMENTS

Construction and improvements of new nurseries progressed actively. At the Red Rock Nursery and Research Centre, the administration building started in 1967 was completed, with a domestic water supply, major pumping units, pump-house, and field supply-lines for irrigation being installed. A six-bay implement-shed and a seedling-storage unit is being built at Red Rock. Final clearing for 1969 seed-beds and transplant beds was completed, and rough clearing and levelling were carried out on the area to be sown next year.

The water-supply system at the new Campbell River Nursery was also completed in 1968. This project involves an intake pump at John Hart Lake, 3,000 feet of 6-inch pipe to the level-controlling tower, and a further 4,000 feet of 6-inch

gravity line to the storage reservoir at the nursery. A 3,200-foot extension of 3-inch pipe was also installed for the Snowdon Nursery, where another storage reservoir is under construction.

These projects, together with the laying of 2,500 feet of field mains, were completed in November. A three-car garage, temporary office, and storage area were also built. Production at the Campbell River Nursery commenced in 1968 with the sowing of seed-beds on the first 18-acre block. Later, clearing was finished on the second block and a start was made on the third.

Among projects started at the Chilliwack River Nursery were water mains for three fields, a soil-shed also serving for cone storage, and a 10,700-foot fence.

Final clearing at the Chilliwack Nursery of an additional 20 acres and rough clearing of another 35 brings the total area under cultivation there to 75 acres.

A start was made on developing the new Surrey Nursery. Main and secondary power-lines, a well for domestic water, and repairs to an existing residence were completed by the end of the year.

The improvement programme for existing nurseries was reduced but remained active. An implement-shed and garage were built at Koksilah, while main projects at Green Timbers involved curbing the road along one field and renovating a shelving system in the tree-storage units. The pumping-station was rebuilt at Rayleigh Nursery, a four-bay implement-shed was constructed, and a new road—including a railway crossing—was built to provide convenient access from Highway No. 5.

Complete development of the new nurseries, along with the projected expansion at established ones, will provide sufficient facilities to produce the scheduled 75,000,000 trees annually by, or before, 1975.

FOREST TREE SEED

The 1967 flower-bud set, which showed promise of a good cone crop in 1968, failed to produce the heavy crop expected. Abortion of flowers and conelets, combined with subsequent losses to frost and insects, resulted in light to medium crops throughout the Province. Collectable crops were located only after much reconnaissance work.

Except for the low elevations and transitional zones, cone crops on the Coast were light, while in the Interior crops were rated at light to medium and patchy in distribution. Insects and rusts were particularly prelavent in the Kamloops District, and this was reflected in collections far below those planned.

The best crops occurred in the Prince George District and, to a lesser extent, in the Nelson District, where actual collections approached the goals set. Crops were poorer than average in the Prince Rupert District. The following table summarizes cone collections of 1968:—

Summary of Cones Collected (Bushels)

Forest District	Species					Total
	Douglas Fir	Sitka Spruce	Interior Spruce	Lodgepole Pine	Other	
Vancouver	369.0	.....	67.5	.....	....	436.5
Prince Rupert	654.5	239.0	262.5	797.0	....	1,953.0
Prince George	673.5	.....	3,385.5	430.0	1.0	4,490.0
Kamloops	1,612.5	.....	258.0	.....	....	1,870.5
Nelson	1,745.0	.....	1,406.0	.....	30.0	3,181.0
Totals	5,054.5	239.0	5,379.5	1,227.0	31.0	11,931.0

Extraction of the 2,625 bushels collected in 1967 was completed early in 1968 with a yield of 976 pounds of seed, most of which was Interior spruce and lodgepole pine. The private extraction of cones collected by industry in 1967 produced an additional 294 pounds of seed, which was put in storage for use by companies. Extraction of the 1968 harvest commenced in November.

Minor improvements to the extractory were necessary, and a gravity table was acquired for seed separation. Cleaner seed from this process is necessary for more efficient use of seed drills during sowing.

A minimum of work was undertaken with seed-production areas in 1968. This programme has reached the point in the Vancouver District where maintenance and operation are being conducted very efficiently at the local level. In the Interior, timing and application of fertilizers to these plots require more investigation, and until this work can be pursued more aggressively, no further development is warranted. In the Prince George District, re-marking of boundaries and general clean-up was completed on two areas, and 79.5 bushels of cones were harvested from one plot.

At the Campbell River Seed Orchard, routine maintenance was carried out in the clonal portion, while the remaining 6 acres were planted with half-sib seedlings grown from plus-tree seed collected in 1966. Survival of these seedlings has been good. The balance of this plus-tree stock, which was grown at the Research Division nursery at Lake Cowichan, will be held for planting in the Koksilah Seed Orchard and to replace future losses at Campbell River. During 1968, 61 of the ramets in the Campbell River Orchard produced pollen and 28 ramets produced a total of 711 cones.

In the Seed Centre, 428 germination tests were completed—many for research purposes. Among these was a study of an X-ray technique for predicting sowing rates for Douglas fir.

Laboratory and field studies were also made to adjust the sowing rates of several species from broadcast sowing to the use of seed drills. Other tests were made with regard to cone and seed storage. Some 1,990 pounds of seed for 9,989 seedbeds were tested, weighed out, treated, and shipped to various nurseries, and 46 miscellaneous seed requests for 133 seed lots were processed.

Tree seed held at the end of 1968 totalled 33,585 pounds, most of which is Coastal Douglas fir. In spite of the 1968 collections, shortages still exist, particularly in the Prince Rupert District, where an estimated 1,000 pounds of seed is needed to bring the inventory into line with indicated requirements. High-elevation Coast Douglas fir remains in short supply, and approximately 5,000 pounds of this seed is needed to meet the expected demand.

RECONNAISSANCE AND SURVEY WORK

The examination and plantability assessment of current cut-over and backlog not satisfactorily restocked areas is a major part of the reforestation programme and demands much time of the field staff. The information is necessary for annual programming and long-term planning of seed requirements. On the Coast, Vancouver District crews examined 21,650 acres of new cut-over and 8,642 acres of old N.S.R. tracts on the Mainland. Of this total, some 17,000 acres (56 per cent) were in plantable condition, bringing the total area available for planting to approximately 41,000 acres.

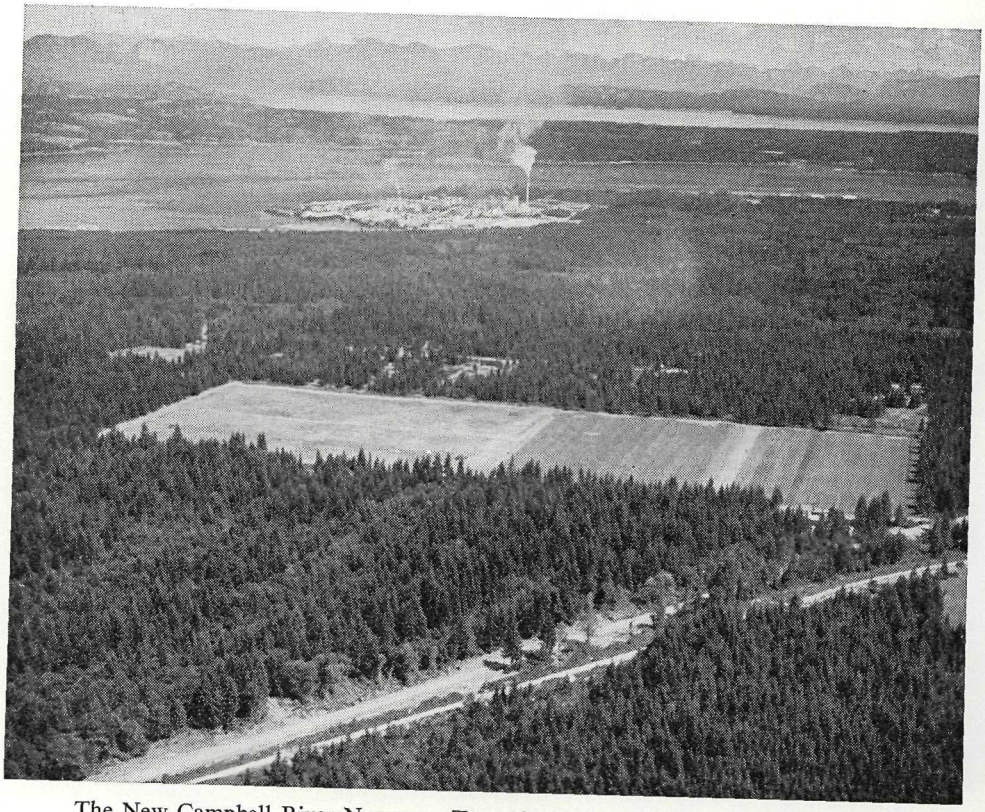
On Vancouver Island, Divisional crews assessed 4,769 acres of which 4,102 (86 per cent) were ready for planting. Of this total, about 1,300 acres were planted in the fall of 1968.

In the Interior no large-scale regeneration surveys were made, but district crews undertook limited surveys on special areas covering 36,927 acres, of which 7,131 acres were in readily plantable condition. Increased site-preparation programmes are indicated for the balance of these lands. For example, in the Prince George District, where 12,428 acres were examined, 4,578 were found to be unsatisfactorily restocked but only 687 acres (15 per cent) is plantable, and in the Kamloops District 13,038 acres were found to be N.S.R. with only 4,754 (36.5 per cent) plantable. Some of these areas may become restocked naturally as a result of the 1968 seedfall, but the extent and success will not be known for several years.

A preliminary reconnaissance was made of the Blaeberry River prepared area under the cedar-hemlock rehabilitation project with the recommendation a pre-planting survey be made there following completion of site-preparation treatments in the fall of 1969.

PLANTING

During 1968, the total planting by all agencies amounted to 21,130,500 trees on 57,590 acres, of which the Forest Service planted 6,235,700 trees (29.5 per cent) on 14,203 acres of Crown land. (*See* summary of planting, Table 22.)



The New Campbell River Nursery. Two 18-acre blocks have been cleared and prepared since the summer of 1967. The first block contains 10 million seedlings which will be ready for planting in the autumn of 1969. In the background is the Elk Falls pulp-mill. A new MacMillan Bloedel logging-road is seen in the foreground.

On the Coast, Crown land planting was below that of 1967 because of reduced fall planting. Limited access, accommodation, and tree-storage facilities in the field continue to hamper planting operations, particularly in remote areas on the outer coast.

The launch " Forest Cruiser " and two chartered boats were used to service planting projects on the west coast of Vancouver Island. An analysis of survival has emphasized the inadvisability of fall planting under more extreme site conditions, and fall planting was reduced and confined largely to low elevations of Vancouver Island.

Following successful trials of mud-pack stock in 1967, the Vancouver District planted 500,000 encapsuled seedlings in the spring of 1968. This operational trial, designed to provide information on production and costs, revealed various problems in co-ordinating tree supply and storage in the field. Knowledge gained from this project will be of considerable value in the future.

In the fall 10,800 mud-packs, container (bullet), and bare-root seedlings were planted out on a wide variety of sites by Division crews. This marked the start of a study to determine the suitability of various types of planting stock to different ground and climatic conditions, and the possibility of exending the planting season.

Contract planting of Crown lands, started in 1967 on a trial basis, was continued in 1968. Commercial (public auction) contracts were let for the planting of 530 acres, and licensee contracts were awarded for an additional 1,072 acres. Contractors' interest is encouraging, and results to date are satisfactory. Inmate crews planted 274 acres under the Forestry Service and Corrections Camp programme.

In the Interior, planting started late in April, with all projects completed before the dry weather. As on the Coast, access, crew accommodation, and labour supply were the main factors affecting the reforestation programme. In the Prince Rupert District, crews of women were hired on several projects with satisfactory results. No fall planting was undertaken in the Southern Interior because of a stock shortage. The Prince George and Prince Rupert Forest Districts completed a number of projects before inclement weather arrived.

Trials with mud-packs and container seedlings were conducted in the Interior, and formal studies are planned for 1969.

In the year's planting, 4,964 survival sample plots were established and 6,712 plots in older plantations were re-examined. Survival studies are continually providing useful information about the interacting effects of species, season, elevation, and region on planting success. Spruce plantations in the Nothern Interior continue to prove successful—survival rates of over 80 per cent after five years are quite common.

CO-OPERATION

The nursery-development programme continues to rely heavily on the co-operation of other Forest Service divisions. Facilities of the Engineering Services Division enabled considerable progress in the planning and construction of improvements described earlier. Vehicles of the Engineering Services and Inventory Divisions hauled cones collected throughout the Province to Duncan and moved other material for nursery establishment and operation.

With co-operation of the districts, two-day cone-collection workshops were held at various centres in preparation for the 1968 cone harvest. They were well attended by men from industry, correctional officers, and Forest Service personnel. Some 200 men received training in cone-crop assessment, seed-maturity determination, collecting techniques, cone handling and storage.

Instruction was given to students at the University of British Columbia and at the Forest Service training-school. In October, divisional staff personnel took part in the " Skogdag " at Penticton and presented a display of planting and seeding equipment and techniques. Various nurseries were opened to a number of organizations for educational tours.

Close co-operation with industry and other Government departments is vital to a number of projects. One of these is the development of the container and mud-pack planting programme. During 1968, activities were well co-ordinated, and some planting of this stock was carried out by crews representing the Federal Government, industry, and the Forest Service. Information on these planting studies is freely exchanged. The same spirit of co-operation exists in other activities, including tree-farm Forestry Committees on the Coast and in the Interior, the Reforestation Board, and the Tree Improvement Board. Representation at the Western Forest Nurserymen's Biennial Meeting prompted a visit to the United States to examine new nursery equipment and techniques.

Interdepartmental Forestry and Corrections Camp Programme

Inmate populations throughout the camps were comparatively lower in 1968 and work on many projects was restricted. Forest nurseries operating in co-operation with this programme maintained their production. Fire-suppression crews were organized and trained in all camps, but in a cool summer they had limited action. Corrections staff from two centres attended planting and cone-collection workshops sponsored by the Forest Service.

Inmate crews in the Chilliwack Valley cleared 5.5 miles of access road and maintained the forest-development road and assisted in extension of the main road to Paleface Creek and maintained the Ford Mountain and Frost Creek roads. Logs salvaged from the road rights-of-way and the Chilliwack River log jam produced lumber for camps and bridges in the area.

Inmate crews cleared 50 acres and stumped another 45 at the Chilliwack Nursery site. Other crews lifted and shipped 1,320,000 trees from nursery fields. One small planting project brought total inmate planting in the valley to 612,000 trees since 1958. Twenty-eight acres were cleared of vegetation, the 12-acre spacing trial on Larsen's Bench was cleaned, and the Cultus Lake Ranger Station was landscaped.

Nursery work at Snowdon and Campbell River occupied crews from Snowdon Camp, while Lakeview crews were busy with log salvage. At the Snowdon Nursery, 2,010,000 seedlings were transplanted and 1,314,000 trees were lifted and shipped. At the Campbell River Nursery, inmate crews cleared 18 acres, salvaged logs, and used smaller material for camp fuel. A 5-acre site was cleared and an implement-shed was built. More than 2,300 seed-beds were prepared and drill sown, and considerable work was done on a water-supply and irrigation system.

Inmate crews from Snowdon and Lakeview Camps planted 83,000 trees on 192 acres during the year, while others from Lakeview landscaped the Sayward Ranger Station and worked on initial flood-control work.

Trainees from the Haney Correctional Institution did an outstanding job of operating the Haney Nursery in 1968, with 770,000 seedlings transplanted and 287,000 trees lifted and shipped for out-planting. An extensive road-maintenance programme was conducted in the Blue Mountain Forest and included redecking of several bridges.

The Alouette Nursery shipped 500,000 trees, and nearly 1,000,000 seedlings were transplanted by residents. Resident crews also undertook a 7-acre drainage-improvement project and brushed out 6 acres of nursery ground.

A considerable volume of salvage material was removed from Alouette Lake but only a small portion was usable.

In the Prince George District, men from the new Hutda Lake Camp cleared 295 acres of snags in preparation for burning. Material from the sewage lagoon and an expired timber-sale area was salvaged.

The Hutda Lake crews collected 212 bushels of cones, planted 31,000 trees, and cleaned up the Forest Service property at Punchaw Lake. Crews from the Prince George Gaol completed 20 miles of slashing and burning along the Willow Forest Development Road and assisted in clearing and burning at the Red Rock Centre.

Inmates from Kamloops help at the Rayleigh Nursery, where they constructed a large implement-shed, painted nursery buildings, and landscaped the building area. The highlight of the year was the initiation of a detached grazing project on Opax Mountain, where 4 miles of fencing and trails were built in connection with a range experiment. The Clearwater Camp supplied 3,000 treated cedar posts, while Rayleigh Camp crews produced another 1,200. The stand treatment project at Heffley Lake continued, and during the winter 12 acres were cleaned and planted. Inmates helped fight two fires during the summer.

PUBLIC INFORMATION AND EDUCATION DIVISION

Progress of the Forest Service maintained a steady pace throughout 1968, and this was reflected in activities of the Public Information and Education Division.

It was also a year of major change at the administration level following the untimely death of its Director and departure of the Division's Assistant Director. In August, a member of the Inventory Division was appointed Forester in Charge of the Division, and in October a new assistant was named.

Despite a relatively quiet fire season, many news-media inquiries were handled during the summer months, several feature-type articles were distributed, and about 2,000 individual queries about the Forest Service were answered.

By late 1968 the Division was making plans for intensified efforts in the fields of news and feature release distribution, audio-visual presentations, public displays, lectures, publications, and photography.

NEWS RELEASES AND SPECIAL ARTICLES

During the 1968 fire season—quiet compared to the previous year—a normal pattern was followed in the release of fire-situation stories to the publicity media. With co-operation from the Protection Division, it was possible to answer all queries about various fires throughout the Province, and to issue a weekly summary. There were no closures during the season, but special releases relating to suspension of fire permits in certain areas were distributed.

About 60 news stories dealing with various activities of the Forest Service were released during the year, in addition to a number of special feature-type articles requested by individual magazines and other publications.

PHOTOGRAPHY

Photographic demands continued to expand during 1968, and with additional requests for audio-visuals, the photographic staff was unable to cope with all assignments, partly through lack of funds and staff. Laboratory work was frequently sent to commercial photo finishers to enable staff work on technical assignments. This incurred further costs, plus staff time on shipping and sorting, taxing the Section's function and funds beyond the point of economical efficiency.

A total of 14,117 prints was produced, a considerable increase over 1967. Of these, 1,069 were in colour, compared with 317 the previous year.

To update the Section's photo library, major assignments of 1968 were all still photography and resulted in 614 black-and-white and 646 colour file negatives, a 100-per-cent increase over 1967. Black-and-white prints of these additions were sent to all forest districts.

With the acquisition of slide duplicating equipment and increased demand for 35-mm. slides, 360 original colour slides were filed and 1,010 duplicates were made. The largest requirement for duplicates was a sound-slide show, " Fire Season," the first produced by the Division. Three copies of the show were made, and others will be produced in 1969 for presentation to the general public.

Numerous special assignments were undertaken in 1968, including photo stories on Coast scaling and a location survey on the Kokweiken River. Field trips in the Kamloops and Prince George Districts provided photographs illustrating allowable waste, its disposal, and close-utilization scale, primarily for the Management Division and district protection personnel. Full photo coverage was given

the Red Rock Nursery and various Prince George District research projects. Clearing and progress in the Peace pondage area was also extensively photographed.

Colour coverage of new nurseries was provided for the Reforestation Division, and colour shots of new Ranger buildings and Forest Service boats were taken for the Engineering Services Division. Colour photographs and slides of logging slash in the Sayward Forest were obtained for the Vancouver District.

In the fall the largest single assignment commenced—a comprehensive colour-photo coverage of the falling, loading, hauling to tidewater, and final departure for Japan of logs selected to form the British Columbia pavilion at Expo '70 in Osaka.

The demand for 70-mm. positives increased by 50 per cent over 1967, and 2,688 were produced, chiefly for the Engineering Services Division in the A-40 plotter.

More than 560 X-ray sheets were developed for the Research Division.

Motion Pictures

Increased requirements for still photography resulted in insufficient time and funds to continue a full motion-picture programme.

Only 2,200 feet of 16-mm. colour film were shot, mostly on the Inventory Division's safety training programme. Four subjects were filmed and rough-edited. They covered axe safety in camp, fly-camp safety, clothing and safe work habits for fieldmen, and power-saw use. Sound will be added to these in 1969. Two demonstrations were filmed for the Protection Division.

The Forest Service film " Up in Smoke " was sounded and released early in the year. The film was an award winner in the 10th annual industrial film competition sponsored by Industrial Photography Magazine.

Film Library

A total of 217,847 persons—adults and students—saw films made available by the film library throughout 1968. This represented a 25-per-cent increase over 1967.

The heaviest demand for forestry films came from schools and various training establishments, and another significant increase was noted in the number of persons viewing films on permanent loan to British Columbia Houses in London and San Francisco. In 1968 the combined audiences totalled 13,293, as compared with 5,740 in 1967. (*See* Table No. 31 in the Appendix.)

LIBRARY

The librarian visited the Vancouver Forest District to update its library, and the Protection Officer requested a suitable classification for his division library. This was completed and is working satisfactorily.

Inter-library loans numbered 247.

The library is being used more extensively by Forest Service personnel and by foresters in industry. Technical Forest Officers writing their British Columbia registered forester's examination were assisted with numerous texts and papers.

SCHOOL LECTURE PROGRAMME

An acute staff shortage seriously curtailed the 1968 lecture programme. Two schools were visited in the Vancouver Forest District. When time permitted, a lecturer visited school librarians and teachers in lieu of presenting formal classroom lectures. Such visits were useful for discussion of Forest Service publications available to schools and forestry teaching methods.

A teachers' convention and a careers exposition were also attended by the lecturer. (*See* Table No. 32 in the Appendix.)

SIGNS

A sign-evaluation programme was completed in 1968 with a decision to redesign and standardize all signs. Work commenced on this project and will continue in 1969 and 1970 in co-operation with other agencies of the Pacific Northwest.

The highway sign-painting programme ("Keep B.C. Green — Use Your Ashtray") continued for the 15th and final year.

EXHIBITS

A new design was started for the Forest Service permanent display in the British Columbia Building of the Pacific National Exhibition. Preliminary construction was completed for installation in the exhibit area in 1969.

The Forest Servce had a display in the Festival of Logging at the Pacific National Exhibition for the third consecutive year, and approximately 28,000 people toured the tower facilities. An estimated 35,000 visitors saw the complete exhibit, in which the theme was "Reforestation and Research."

One new exhibit was constructed. Exhibits were also displayed at two teachers' conventions, two exhibitions, and one careers exposition.

ADVERTISING

The paid advertising programme of 1968 was confined to radio announcements on 33 stations throughout the Province. Excellent co-operation was received from the stations, which generously supplemented prepared tapes and scripts with public service protection messages.

A limited number of display advertisements, authorized by the Department of Industrial Development, Trade, and Commerce, were also used.

FOREST MANAGEMENT DIVISION

Despite the I.W.A. strike in the Southern Interior in 1967 and early 1968, total production for 1968 rose to a record high of 1,702,454,852 cubic feet. Coast operations showed a 9.4-per-cent increase and the Interior 6.7 per cent. The Prince George Forest District registered a 15.1-per-cent increase, and the Interior of the Prince Rupert Forest District recorded an increase of 11.5 per cent over 1967.

The I.W.A. strike resulted in a 6.1-per-cent production drop in the Nelson District. During the first five months of 1968 production in the latter district dropped 51.4 per cent from the same period in 1967, but in the last three months increased 83 per cent.

There was no significant change in production by species, all contributing approximately the same percentage as last year.

Considering increased production on a close-utilization basis, it is surprising to note the number of chippers incorporated with sawmills dropped to 186, compared with 197 in 1967. This is attributed to the consolidation of a number of mills and is borne out by the reduction of active mills from 931 to 902. Nevertheless, the production of chips increased from 4,379,684 units in 1967 to approximately 4,736,000 units in 1968.

Balloon logging, introduced in the Vancouver Forest District in 1967, is still being used for logging inaccessible areas in the Greater Vancouver Water District. This method is suitable for logging steep slopes and high areas, but must be restricted to areas that cannot be logged economically by conventional methods.

In the East Kootenay a mobile barker-chipper unit was tested. The company concerned was faced with small-growth pine and pine-spruce types, and it wanted a more economical way to chip such material on site.

The tree-shearer is becoming more common in the Interior, and finds its best use on flat ground in smaller and more homogeneous stands of timber.

MARKET PRICES AND STUMPAGE TRENDS

Lumber Prices

The demand for lumber remained high throughout 1968, and lumber prices—at record highs in the last quarter of 1967—continued to increase. At the year's end, selling prices were 35 to 40 per cent higher than the second quarter of 1967.

The lumber market will probably not hold at its present level but is not likely to slip back to pre-1967 level, where lumber prices had fluctuated in the $60 to $65 per 1,000 board-feet range.

Log Prices

The demand for logs continued at a high level, and prices increased steadily, throughout the year.

Stumpage Prices

Before Crown timber is sold, the Forest Service determines its market value on the stump, and two factors which influence stumpage rates are the cost of converting the standing timber into merchantable products and the products' selling price. The products' price must cover extraction and processing costs and provide for a reasonable profit. Stumpage price is that portion of the selling price remaining after provision for logging costs and profit. A small change in selling price will have a substantial effect on the stumpage price.

A significant increase in products' prices during 1968 resulted in increased appraised stumpage prices. The average price bid for Crown timber was $6.26 per 100 cubic feet, almost double the 1967 average of $3.21 and above the average for the years 1962 to 1966, inclusive, when stumpage rates were $3.01, $3.36, $4.09, $4.20, and $4.25 respectively per 100 cubic feet.

The weighted average price per 100 cubic feet for licences sold in the Interior increased from $2.58 in 1967 to $5.86 in 1968, and the comparable average price on the Coast increased from $6.03 to $7.38.

These average stumpage prices, shown in Table No. 65 in the Appendix, reflect the volumes sold at " salvage value only " rates plus the volumes included in close-utilization licences and cutting permits at a standard 55 cents per 100 cubic feet.

The average stumpage price per 100 cubic feet for all species, excluding close-utilization and salvage wood, was $7.49 on the Coast, compared with $6.09 in 1967, and $7.41 in the Interior, up from $3.10.

Stumpage Adjustments

Stumpage prices are adjusted to reflect changes in selling prices. There are two adjustment procedures:—

(1) A sliding scale, providing for adjustment when the selling price increases or decreases by 15 per cent from the selling price on which existing stumpage rates are based.

(2) A schedule system, providing for a rate change when the selling price changes by at least $5 from that on which the last effective rate was based. This method is mandatory for all timber-sale licences sold after March 1, 1967.

The sliding-scale system will continue for the term of existing licences providing for such adjustment.

Selling-price increases resulted in 22,953 upward adjustments—7,397 under the sliding scale and 15,556 under the schedule method.

SUSTAINED-YIELD PROGRAMME

Public Sustained-yield Units

The number of public sustained-yield units has increased through creation of the Wapiti unit near Dawson Creek in the Prince George Forest District (*see* Appendix Table No. 50). This, and new inventories in some units, contributed to the increased productive area, volume, and commitment shown in the table.

As the pulp-chip market develops, more operations are converting to close utilization, and as a result have been granted up to a maximum one-third increase in annual allowable cuts.

Progress was made in policies and procedures to govern the sale of additional cutting rights to complete the commitment of the annual allowable cut to close-utilization standards. Undoubtedly, improved utilization procedures will leave logged areas in better condition for reforestation.

During 1968, 39 timber-sale harvesting licences were sold throughout the Province. This form of tenure enables consolidation of the licencee's operations in a unit. Licensees will have to convert their operations to close-utilization standards as soon as a chip market becomes available, and each licensee will contribute to logging-operation planning, road development, and general unit management.

Interest developed in deciduous species for furniture stock and resulted in the award of nine timber harvesting licences in eight units, permitting the harvest of

specified volumes of broad-leaved species. These licences limit the cut volume of mixed coniferous trees and require construction of a plant to manufacture furniture components. Through harvest of previously undesirable species, these licences will contribute to greater use of wood and better unit management.

Pulp Harvesting Forests

The number of pulp harvesting forests was increased by one to 22, by designation of the Ootsa Public Sustained-yield Unit in March of 1968. They are included as sustained-yield units in Table No. 50.

Certified Tree-farms

Two tree-farm certificates were cancelled on sale of property, but certificates were renewed for two others, and the number certified remained at 45, as indicated by Table No. 48.

Farm Wood-lot Licences

With cancellation of five farm wood-lot licences and reinstatement of two others, the number of such licences in the Province was reduced by three to 43, as indicated in Table No. 49.

Tree-farm Licences

Conversion to close-utilization standards continued in 1968, and increased utilization showed the need for improved forest inventories for future production, and many tree-farm licensees are planning or have completed a new forest inventory based on modern techniques.

A new working-plan format, introduced in 1968, has already improved forest practices generally.

Production from tree-farm licences continued to climb in 1968 with the record cut of 515,466,148 cubic feet, representing an increase of 15 per cent over 1967. Production is still within the sum of the allowable cuts for all tree-farm licences.

Working Plans

All five forest districts have established working plans for each public sustained-yield unit and play a vital role in the timber-sale harvesting licence programme.

SILVICULTURE

The stand-treatment programme continued its important role in natural forest regeneration. Stand treatment was practised by all forest districts to promote natural regeneration. A variety of cutting methods was used.

Most Interior forest districts were active in developing scarification programmes for seed-bed preparation. In the Prince George Forest District, 3,482 acres were scarified at an average cost of $13.43 per acre. Similar programmes were carried out by tree-farm and timber-sale licensees.

The site-rehabilitation project in the Blaeberry River valley, near Golden, was extended into the Noisy Creek drainage, near Mabel Lake. Surveys covering 16,000 acres have been completed in the Blaeberry River and Noisy Creek drainages. Clearing and burning operations started in the Blaeberry River valley, where 1,250 acres have been cleared, including 250 acres also burned. Clearing and burning will continue in 1969 and will be followed by planting in 1970.

SCALING

Conversion from manual scaling to weight scaling continued, as seen in the following table:—

Forest District	Number of Weigh-scales by December 31st—					
	1963	1964	1965	1966	1967	1968
Vancouver	----	----	1	1	5	5
Prince Rupert	----	----	1	8	8	10
Prince George	----	5	9	16	21	27
Kamloops	2	4	4	12	17	19
Nelson	----	----	1	3	4	20
Totals	2	9	16	40	55	81

In the Prince George District 56 per cent of the district's total production was scaled by weight. In the Kamloops and Nelson Districts nearly 50 per cent of production was scaled by weight, and in the Prince Rupert District weight scaling is expected to increase rapidly.

Scaling Licences

A total of 139 new licences was issued in 1968.

FLOOD BASINS

Peace River

Flooding behind the Bennett Dam started in 1968, with clearing operations producing 23,022,381 cubic feet of timber. Clearing operations included recovery of floating material.

Mica

In the Mica Dam flood basin production remained at the same level as 1967 with a total scale of 5,909,454 cubic feet. Dam-construction progress made it necessary to set deadline dates for logging on timber licence areas. The Engineering Services Division started planning clearing operations.

Libby

Five timber sales were sold during 1968 in the Libby Dam flood area. Further sales will be made in the north end, but in the south and central areas the Engineering Services Division is conducting clearing operations. Merchantable logs will be sold by public auction.

GRAZING DIVISION

GENERAL CONDITIONS

Although 1968 had its problems, notably adverse haying conditions, no single factor had a profound influence on the range live-stock industry—in direct contrast to 1967, when the long dry summer affected many aspects of the industry. A light fire season permitted closer supervision of Crown ranges by the Forest Service field staff and enabled attention to work neglected in 1967.

The winter of 1967/68 was milder than normal, except in the Peace River area, where conditions were average. Feed supplies were adequate and stock was in good condition. Range production was good and beef gains normal. Cattle prices held up well, but costs of production were up. The ranch labour situation remained difficult, particularly with respect to competent range riders. Ranch sales appear to have declined.

The number of cattle permitted on Crown range was about the same, with slight increases in the south offset by reductions in the north. Sheep numbers increased slightly.

RANGE

Slow early range growth was due to cool, dry weather. Range-growth studies indicate this condition is normal, and range turnout dates must be set accordingly. Above average range production was due to rain throughout the growing season. Below normal production on wet natural meadows, particularly in the north, was due to excess moisture and low soil temperatures.

Most ranges which suffered in the 1967 drought showed satisfactory recovery. The exceptions were found on drier sites, which will require several years of careful management before production is restored. Some range seedings on exposed sites suffered winter damage and produced less than expected. Water levels were sufficient to provide average stock-watering conditions.

Loss of stock due to toxic plants and predatory animals was below normal. Bears were responsible for losses in several localities, and coyotes were blamed for killing 25 calves in the Princeton area. Timber wolves were a problem in the north. No disease problems occurred during the year.

Highway accidents involving live stock took a heavy toll in some areas. This problem is being eased with a progressive fencing programme by the Department of Highways and grazing permittees, and with regulations making it illegal to have stock on highways. The first such regulation covering several highways became effective in September. The highway fencing programme will greatly facilitate the management of adjoining range units.

HAY

Hay growth was excellent, but haying conditions were poor throughout most of the range area. Many ranchers had insufficient hay last winter and quality was poor. Well-organized farmers and ranchers who took advantage of weather breaks or made silage had sufficient feed for at least a normal winter.

MARKETS AND PRICES

Cattle prices varied but were slightly higher than in 1967. The average price received by cattlemen through the British Columbia Livestock Producers' Co-operative Association was $22.37 per hundredweight, compared to $22.01 in 1967.

RANGE MANAGEMENT

Most Crown ranges are stocked to capacity, and the demand for use exceeds properly allowable limits in most areas. Careful management is required if Crown range use is to be increased. Forage production and utilization can be increased on most Crown ranges, but there are distinct limitations, such as soil type and climate.

Most Crown range is timbered, and virtually all such areas are subject to other uses which increase management costs and limit effectiveness and curtail development possibilities. For example, hunters and other recreationists may disturb the distribution of stock, and because they often leave gates open, cattle-guards become necessary. Drainage and brush-mowing may deprive waterfowl of nesting areas and moose of winter browse, and timber production may also be affected.

Unplanned alienation removes productive land from the Crown range and adversely affects range management. Alienation results in an immediate loss of Crown range and usually impedes management by creating chequerboard land-status patterns.

Several reserves from alienation were requested following discussions with Lands Service personnel.

During the year every opportunity was taken to teach and promote improved management techniques. Numerous illustrated talks were presented, and permittees were encouraged to accompany Forest Officers on range inspections. In northern areas, emphasis was placed on bringing turnout dates in line with range readiness.

Range readiness and yield studies provide a guide to proper turnout dates and rates of stocking. The light fire season permitted more inspections to check range use and condition, and efforts were made for a co-operative approach to range management and improvement planning by units. Results were encouraging.

Range Surveys

The range survey programme was continued in 1968. Field work commenced in 1967 on the Big Creek and Lillooet Stock Ranges and on the Coldwater-Iron Mountain unit of the Nicola Stock Range was completed. Field work was also undertaken on the Joe Rich-Greystokes area of the North Okanagan Stock Range and on the Loon Lake unit of the Clinton Stock Range. Extensive reconnaissances were also carried out in a number of areas, and Grazing Division personnel participated in several land-use studies, mainly in the Peace River area.

Range Improvements

An extensive range-improvement programme was a major feature of Grazing Division activity in 1968. The upward revision of grazing fees in 1967 resulted in increased funds being available for range improvements in 1968. Permittees also contributed extensively to the programme, mainly with labour and equipment.

During the year $145,586 was spent from the Range Improvement Fund. Net assistance to the range-improvement programme from the Fund was $142,517. The increased funds permitted a larger and more diversified programme.

Structural improvements included 2 stock bridges, 31 cattle-guards, 79½ miles of drift fencing, 6 mud-hole fences, 11 fenced enclosures for experimental studies or demonstration purposes, 163½ miles of trail, and 37 water developments.

In addition, 685 acres of deciduous cover were cleared by bulldozer and seeded to create improved pasture. In the East Kootenay Valley 150 acres of bitterbrush were railed down and broadcast burned in an experiment to reduce this plant and

increase useful forage production. Miscellaneous treatments, including ditching and brush-mowing, were applied to determine low-cost methods of improving the production of natural meadows. Approximately 3,700 acres of brush-infested range, mainly in the Peace River area, were burned under controlled conditions. The fertilizer trial commenced in the East Kootenay in 1967 was expanded.

In co-operation with the Department of Agriculture, 200 acres of Crown range were treated for grasshopper control. Nine abandoned industrial sites covering 77 acres were cleaned up and seeded. In co-operation with the Department of Agriculture, Department of Highways, and permittees, chemical control of noxious weeds encroaching onto Crown range from highways was carried out in several areas.

Beavers in some range areas are flooding valuable natural meadows. In co-operation with the Fish and Wildlife Branch, techniques have been developed to curtail the beaver population in selected areas. Four sites were treated in 1968. In four cases where predatory animals were causing severe losses of stock on Crown range, the Fish and Wildlife Branch assisted in control measures.

Seeding continued in 1968. In all, 63,005 pounds of grass and legume seed were used, the largest quantity to date: 37,905 pounds were sown on denuded ground resulting from logging and other industrial activity on Crown range, 1,350 pounds were used on a prepared seed-bed on depleted grassland, and 3,750 pounds on specially cleared sites. The remainder (20,100 pounds) was aerially seeded on approximately 3,600 acres of usable Crown range which had been devastated by wild fire the previous year. With the exception of the aerial seeding, most seeding was undertaken by co-operating permittees, with seed, equipment, and supervision being supplied by the Forest Service.

The Division devised a new system of recording range improvements. All improvements within a Crown range unit are now designated as a single project and recorded on one map.

Peace River Pastures

Seven pastures were in operation in 1968. Improved pasture resulting from past clearing, breaking, and seeding is confined to 4,800 acres on three of them. Two other pastures have improvements, such as fencing, trails, and water developments. The remaining two have only fencing designed to hold stock.

Eight miles of new or replacement fencing, 13 miles of trail, 7 miles of service road, 2 small storage sheds, 3 stock-watering dugouts, 2 corrals, and 2 cattle-guards were constructed. Routine maintenance was carried out on 90 miles of fence, 46.5 miles of trail, and 19 miles of service roads and other miscellaneous improvements.

Controlled burns are a useful tool in suppressing brush on the native ranges. A total of 16,000 acres of pasture land was treated in this manner in 1968. Another 600 acres of such pasture were sprayed with herbicides, and 75,000 pounds of fertilizer were distributed on 750 acres of cultivated pasture. The Beaverlodge Research Station gave technical advice and other assistance in connection with both the herbicide and fertilizer applications. A total of $19,529 was spent on this work.

An uneconomic farm unit within the Groundbirch pasture was purchased under the *Agricultural Rehabilitation and Development Act* with the Federal Government bearing one-half the cost of $10,000.

An expanded study of cattle gains was made in 12 herds for selected periods on various forage types, and results will provide a useful guide in the economic aspect of pasture development.

In 1968, 98 permittees grazed 2,371 cattle and 71 horses within the pasture projects, a slight increase over 1967.

Pasture managers were employed in three pastures, with permittees paying an assessment in addition to grazing fees for herding services supplied by the Forest Service.

CO-OPERATION

The 66 live-stock associations recognized under the provisions of the *Grazing Act* continue to perform a vital function in liaison between the Forest Service and range users. Greater emphasis is being placed on contact with smaller range unit groups for management and improvement planning, and such contacts are always under the ægis of the recognized associations. During 1968 a total of 188 association or sub-group meetings was attended by Forest Officers.

The British Columbia Beef Cattle Growers' Association remained active during the year on subjects of industry-wide importance, including the use of Crown range. The British Columbia Livestock Producers' Co-operative Association again supplied the live-stock price figures necessary for calculating the grazing fees under the sliding scale. This producer-owned marketing agency sold approximately 47.6 million pounds of beef animals from the range area during the year. The Forest Service enjoyed excellent co-operation with a number of Provincial and Federal agencies on a variety of range problems.

ADMINISTRATION

Grazing on Crown range remained approximately the same as in 1967, but the increased range-improvement programme and competing uses of range land added to the work load.

A Grazing Division staff meeting was held in Victoria in mid-year, and preparation of a grazing manual of instruction was nearly completed.

The establishment of Cathedral Park resulted in the loss of a range area, but with adjustments in permit areas, reductions in existing permits will not be necessary. Arrangements between the grazing permittee and the Fish and Wildlife Branch resulted in grazing being discontinued in the Ashnola region in the interest of California bighorn sheep. The proclamation of the *Creston Valley Wildlife Management Area Act* in November placed final control of grazing under the Management Authority, but the Forest Service will continue to act as administrative agent for the Management Authority with respect to grazing.

Grazing Permits

During the year, 2,053 grazing permits were issued authorizing the depasturing of 188,183 cattle, 6,338 horses, and 7,090 sheep on Crown ranges. Permits issued show a slight decrease from 1967. Cattle numbers were virtually the same, horses slightly less, and sheep up slightly from the previous year. (*See* Table No. 81 in the Appendix.)

Expressed in animal unit months (the equivalent of one mature cow on the range for one month), total use authorized for all classes of stock was 857,219 animal unit months—9,320 less than in 1967.

Hay Permits

A total of 209 hay-cutting permits was issued for the harvesting of 2,148 tons of hay, approximately the same as the previous year. The hay-cutting fee remained at $1 per ton.

Grazing Fees

Grazing fees are on a sliding scale related to prices received by producers the previous year. Except for developed pastures in the Peace River area, grazing fees per head per month were 44 cents for cattle, 55 cents for horses, and 11 cents for sheep. These fees represent a 7.3-per-cent increase over those charged the previous year.

A separate scale of fees is in effect for the fenced and reserved pastures in the Peace River area. These fees are not on a sliding scale and remained at the rate of 50 cents per head per month for cattle, 62½ cents for horses, and 12½ cents for sheep for natural forage, and $1 per head per month for cattle, $1.25 for horses, and 25 cents for sheep on cultivated pasture.

Control and Enforcement

The extent of Crown range, together with the fact that private properties are scattered throughout, makes control of use extremely difficult. However, frequent range inspections, stock counts, and the judicious use of the authority to seize and detain stock grazing in trespass pursuant to the *Grazing Act* result in reasonably effective control. This situation was normal in 1968, and most infractions were rectified with a warning. Direct action was necessary to remove stock from the Crown range in a few instances. One case of repeated trespass was successfully prosecuted in Court.

ENGINEERING SERVICES DIVISION

ENGINEERING SURVEYS

Area and route studies, special investigations, and road-location surveys with design and cost estimates were carried out by several crews throughout the Province. Table No. 91, Forest Road Programme, 1968, lists the jobs and miles of reconnaissance and location completed. Personnel also conducted site surveys, road classifications and evaluations, investigation and survey of right-of-way problems, and provided general engineering assistance on many requests from the District Foresters.

Broad area studies were continued in the Prince George, Kamloops, and Nelson Districts to classify existing roads and plan long-term forest road systems. Some 2,900 miles of roads were traversed by vehicles in this work. An area investigation of the Chilcotin region east of Tweedsmuir Park (including portions of the Chilco, Narcosli, West Lake, Stum, Ootsa, and Nechako Public Sustained-yield Units) was conducted for assessment of main access routes. A preliminary study was made of the proposed Fort Nelson Public Sustained-yield Unit for an evaluation of road requirements related to possible development of the area's forest resources. Development engineers also undertook numerous smaller investigations for District Foresters.

Survey crews completed 86.8 miles of road location, which included new roads as well as survey—for gazetting purposes—of existing roads through alienated lands. Some relocations were made over public road and forest road; several miles of as-built survey was done; site surveys and plans were completed for several bridge-sites, highway junctions, and one public rail crossing. Thirteen miles of right-of-way to facilitate an extension of the Willow River Forest Road as an off-highway haul route to the industrial park immediately south of Prince George was located. Site plans were also made for Snowdon, Red Rock, and Pierce Creek Nurseries.

The work of the Land Titles Subsection continues to increase with the growing need to establish reserves, status investigation areas and road routes, and research ownership of various roads and lands. During the year, several sections of road through alienated land were gazetted as forest roads to consolidate essential forest road systems.

DESIGN

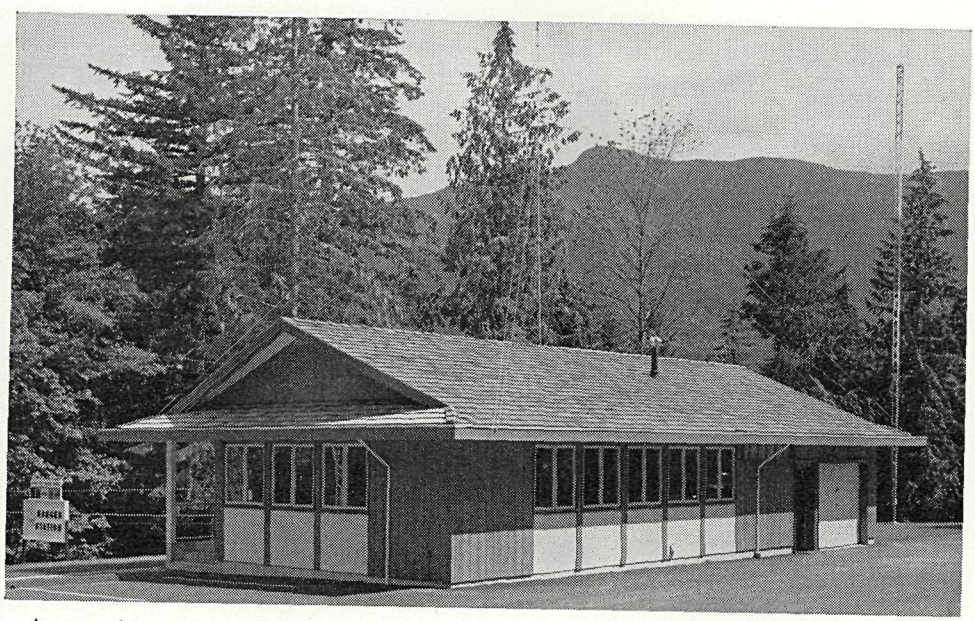
Designs, drawings, and specifications were prepared for eight pressure-creosoted timber bridges. These included two for the Bowron River Forest Road, two for the Suskwa Forest Road, and for crossings of the Lillooet River, the Halfway River, and the North Thompson River. About 18 preliminary sketches and estimates for proposed bridges were made.

Studies on bridge overloads and their effects included the collection of data on logging-truck dimensions and weights, and the development of a simple recording deflection gauge.

FOREST MANAGEMENT ENGINEERING

Engineering work in connection with the preparation of large forested reservoirs for flooding continued to be a major portion of the Division's activities. Surveys were undertaken in the Mica reservoir area, and a programme was prepared for waterway-improvement work prior to flooding. Another crew was assigned to the Libby reservoir to complete the survey and layout work for clearing of the Canadian portion of that pondage.

Helicopter with boom and 70-mm. cameras suspended below on photographic mission in Mica reservoir area.



A recently constructed Ranger district administration building serving the local forest resource.

On the Peace pondage, site preparation for navigation channels, shore access, and other public-use areas continued on 14,800 acres. The Division's own forces treated 10,600 acres while contractors prepared the remainder. Despite wet weather conditions, non-merchantable wood material on 9,545 acres was disposed of—primarily by burning. In the Peace River section, 1,200,000 cubic feet of merchantable trees were felled and bucked for recovery and utilization after flooding, and 1,530 boom sticks were made for the control of debris and holding of merchantable timber.

The forest-inventory method of using 70-mm. fixed air-base stereophotographs developed by the Inventory Division was tested on an operational scale in the Mica reservoir investigation. Photographs of several hundred possible sample plots were taken, and measurement of tree height and crown diameter to obtain data for compilation of wood volume is now in progress.

Computer programmes were prepared for a number of problems. The major ones were the calculation of tree heights, diameters, and volumes from photogrammetric measurements, evaluation of radio-wave harmonics, retrieval of data from forest-fire statistics, and control of random timber marks. The latter two programmes were prepared for Protection and Management Divisions respectively.

ROAD CONSTRUCTION AND MAINTENANCE

Construction work was undertaken on nine projects. Work on the Chilcotin South, Nicoamen River, and Chilliwack River Forest Roads was completed, while unfavourable weather for construction delayed completion of projects in the northern part of the Province until 1969. Rehabilitation of the Elk River Forest Road and the Goat River Forest Road was started, to improve access for the protection and administration of the forest resource in these two valleys. During the year 49.9 miles of road were completed, including seven permanent timber bridges.

Structural maintenance was carried out on 900 miles of existing road. A major reshaping and resurfacing job was completed over a 25-mile section of the Parsnip River Forest Road, and structural maintenance on other roads was greater than that of previous years. The gravel resurfacing programme on selected forest roads was resumed after a year's delay due to other work of higher priority.

BUILDING SERVICES AND MARINE SECTION

Requests for services continue to increase, particularly in the engineering phases of the Reforestation Division's extensive forest-nursery development. Eight major projects were in the final design stage late in 1968, with contracts to be called in 1969.

Price increases were experienced in all activities, with labour costs being the major factor. Material delivery difficulties eased in some commodities, and utilization changes were made in others to overcome poor delivery dates.

The Division library increased over the year by 100 books and pamphlets—all dealing with new developments in engineering.

1968 saw completion of a new station at Fauquier to replace the one at Edgewood and was the largest of 89 major and minor contracts awarded during the year. Other major projects included construction of a Ranger office building at New Denver and a refrigeration building now being built at the Red Rock Nursery. Drawings were produced for the construction of a new station at Gold River, a Ranger office building at Vernon, and a new station at Kelowna. These are now being built by district project crews. Numerous miscellaneous projects were designed and constructed for district and divisional use.

Maintenance carried out on service buildings included refurbishing the exterior of the hangar at Smithers, renovation of the heating and ventilating system at the Forest Service Training-school, and a ventilation system for the paint-shop and repairs to a building at the Forest Service Maintenance Depot.

Three trailers no longer usable as dwelling units were reassigned for use as lunchrooms by forest-nursery field workers. Twenty-one new accommodation trailers, ranging from 16 to 40 feet, were purchased in 1968. Three truck-borne camper coaches were acquired, and as a new departure for summer field parties one hard-top tent trailer was purchased.

To provide accommodation for the land acquisition and clearing staffs in the Libby pondage area, a 30- by 52-foot triple-unit office complex was designed, purchased, and installed at Cranbrook.

The Division inspected the manufacture of glue-laminated girders, ranging from 45 to 135 feet in length, for eight timber bridges. Two of the shorter bridges were fabricated from the pieces of the Bulkley River Bridge girders damaged in transit in 1967. Inspection was also made of a damaged 135-foot glue-laminated bridge girder, which was later purchased by the Department for a nominal sum and refabricated to make a 60-foot float for use at Kitimat.

Two new nurseries, developed in 1967 at Campbell River and Red Rock, were extended this year with major additions to the irrigation systems. Development of the first phase of the water-supply and irrigation systems at the new Surrey Nursery was placed under contract for completion early in 1969. Numerous domestic water systems were designed for district and divisional operations, and a number of well-drilling contracts were completed.

An additional five deep-vee fibreglass outboard and transom-drive runabouts were provided for Ranger staff use. The majority of these were equipped with trailers so boats may be stored at Ranger stations and then towed to operational sites. A used 40-foot steel tug was purchased for use on the newly formed Peace River pondage in the Prince George District. Several small craft were supplied throughout the Service on a replacement basis.

MECHANICAL SECTION

1968 saw no significant change in the pattern of purchasing, though minor trends were noticeable. The over-all increase was 16 vehicles. The largest increase was in the pick-up truck category with 10 additional four-wheel-drive vehicles and 24 two-wheel-drive vehicles. Panels and station wagons decreased by 13. The number of passenger vehicles and large trucks showed little change.

In the heavy-equipment category, five rubber-tired tractors in the 50-horsepower range were purchased for use by the Reforestation Division, using two existing tractors for trade-in. Three crawler tractors—one each of 385 horsepower, 280 horsepower, and 170 horsepower—were purchased for road construction and clearing projects. A medium-sized gravel-screening plant was purchased for forest-road surfacing programmes. A boom drill mounted on a log raft was obtained for the Peace pondage area.

A repair depot is being installed at Cranbrook to service Forest Service equipment being used in the East Kootenay area for road construction, reservoir clearing, and other projects.

Considerable interest continues to be shown in mud, muskeg, and snow units. Snow toboggans increased in number from 34 to 50, with the Nelson District taking most of the increase. These units are filling a valuable role in forest-management work, especially in winter cruising operations. Demonstrations of various types of

mud and muskeg units were held, and modest purchases have been made. The small " Ranger " tractor has proven popular, and a four-wheel-drive swivel-frame vehicle has also been found very useful.

Forty-two outboard motors and 67 chain saws were purchased, but 29 outboards and 41 chain saws were removed, resulting in a net gain of 13 and 26 respectively. A mild fire season reduced emergency purchases to zero, and the fire-pumps and other fire-fighting equipment passed the summer with a minimum of trouble. A list of mechanical equipment is in Appendix Table No. 92.

To assist the mechanical staff to stay abreast of new technology in their specialized fields, two district mechanical superintendents and one shop foreman attended a mechanical maintenance course at the University of Seattle. In the fall the Mechanical Section conducted a 10-day course of instruction at the Forest Service training-school.

Inspection tours were made to all the districts, and the quality and maintenance of all mechanical equipment were satisfactory.

FOREST SERVICE MAINTENANCE DEPOT

Modernization continued to improve efficiency at the depot. Machine and mechanical repair-shops were reorganized and consolidated, and one central parts room was established. In the reorganization, the Division's Victoria warehouse was closed and engineering and other equipment was integrated with the warehousing facilities at the depot.

Installation of heating and ventilation, foundation, paving, electrical work, dredging, and placing of riprap to protect the dyke were completed.

The transport pool hauled a total of 2,892 tons of material and equipment, and 63 trailers and Porta building units were towed to projects and locations throughout the Province. The five truck units travelled 200,000 miles on 312 assignments.

Mechanical work included the overhaul and shipping of 742 fire-pumps, outboard motors, chain saws, light plants, lawn-mowers, trail motorcycles, and marine engines. In addition, 132 new units were tested and shipped to the districts. Reconditioning and repairing of field operating equipment continued, and the coupling of 130,000 feet of discharge hose was completed.

Other work included the machining and assembling of 2,637 hose, pump, valve, marine, and trailer fittings and the machining, cutting, and welding services for the general work programme of the depot. Regular maintenance for five transport truck tractors and 17 trailer units was provided, and 76 light trucks and 17 units of heavy equipment were maintained and overhauled during the year. Twenty-six new units were checked and fitted with necessary equipment, requiring the fabrication of flat decks, A frames, and bodies for some units. The fabrication of two fire-retardant mixers, 60-foot pile-driver leads, and similar work was completed.

The marine work programme included annual refits for 29 launches and 82 launch repairs. Jet craft, river boats, small runabouts, and landing-craft were overhauled, and various types of new small craft were outfitted. A 40-foot-long steel tug, purchased for the Peace pondage project, was moved to the depot for modification.

Work started on the rebuilding and repowering of the launch " Oliver Clark II," formerly the " B.C. Surveyor."

Rebuilding, modifying, or repairs to 26 Porta buildings and trailers was completed, and 356 units consisting of crates, furniture, pallets, truck box liners, and F.M. radio bases were manufactured. Much work required in the changes to the

depot buildings for the consolidation of shops and stockrooms, and regular plant maintenance, was carried out by the carpentry shop crew.

RADIO SECTION

Ninety radios were purchased during 1968—85 very high frequency (V.H.F.), frequency modulation (F.M.) sets; and five high frequency (H.F.) single side band (S.S.B.) units. Nineteen units were traded in against these purchases for a net increase for the year of 71 units. All F.M. units purchased were for use at the Ranger district level.

A Province-wide study of radio communication requirements of the Forest Service was carried out in 1967, and as a result Telex was introduced into the Service in July of 1968. To date, one seasonal and 10 permanent machines have been installed. Four are in Victoria, one at each district headquarters, one in Smithers, and the seasonal machine is in Fort Nelson. The use of Telex for written messages and Telpak for oral traffic made obsolete the H.F. and V.H.F. circuits used for Victoria-district headquarters traffic, and this service was terminated in October.

A preventive maintenance programme for equipment, including maintenance service and down-time records, was introduced during the summer. Three Victoria radio technicians became responsible for co-ordinating the maintenance programme and providing field supervision on an area basis.

Prior to the fire season, the performance of all available gain antennas for mobiles was evaluated, and of all models tested, one proved to be particularly efficient. A sufficient number of these antennas was purchased to fully equip four Ranger districts for field evaluation. Initial reports from the field show an average of 20 to 25 per cent increase in range due to these antennas. Though they are more prone to damage under field conditions, the improvement in communication justifies their use. It is expected these antennas, in conjunction with gain antennas at the Ranger base station, should make a significant improvement in the communicating range.

Of importance to the water bombing and aircraft patrol programme was the provision by the Department of Transport of the frequency 164.04 megahertz (MHz). This frequency, adjacent to the fire-fighting frequency of 163.83 MHz, permits use of two-frequency portable radios to ensure an alternate voice-channel back to the base of operations.

In the Vancouver Forest District, the portable F.M. repeater used for Pemberton-Squamish coverage was replaced by a line-controlled remote unit controlled by either station. Communications in these high-hazard districts are greatly improved. A mobile repeater at Newcastle Ridge is being installed and will provide coverage for five northern Vancouver Island Ranger districts. Planning for further district improvement is under way.

Mobile communications in the Prince George Forest District have been improved through the installation of a remote-control unit for Fort Fraser Ranger District and a thermo-powered solid-state repeater in the Dawson Creek district.

The Prince Rupert Forest District mobile trunk system was improved. Two weak paths through mountainous terrain were strengthened by means of higher gain antennas. The mobile coverage for the Burns Lake Ranger District was greatly increased with a low-powered remote-control unit located at Boer Mountain.

In the Kamloops Forest District a tube-type repeater powered by an unreliable a.c. generator was replaced by a battery-powered solid-state unit. Tatla Lake and Clinton Ranger Districts will enjoy improved communications through the installation of remote-control units in their areas.

A thermo-powered solid-state repeater was installed on Buchanan Mountain, Nelson Forest District, giving improved mobile coverage to both the Kaslo and Lardeau Ranger Districts. An H.F. S.S.B. circuit was installed between Nelson headquarters and Mica Ranger Station, and though H.F. propagation characteristics still limit communication on these frequencies, an improvement between Mica and Nelson is noted.

During the summer, seven Ranger districts were given an intensive survey of their communications needs. Several recommendations of the report are being implemented, and the survey programme will be continued in 1969.

FOREST PROTECTION DIVISION

WEATHER

The 1968 fire season started with seasonal temperatures and below average rainfall. The moderate hazard conditions which developed were reduced to low in June, when most of the Province experienced cooler than normal temperatures with above average rainfall.

During July and August thunderstorms developed at frequent intervals. As a result, there were few locations where any appreciable hazard built up. In late August unsettled weather developed and carried through September, and the fire season officially terminated on September 30th.

FIRES

Occurrence and Causes

The summer of 1968 produced less than the average number of fires with a total of 1,647, well below the 10-year average of 2,172. Lightning was the principal cause, accounting for 43 per cent of the fires. This single cause is a considerable increase over the serious 1967 season, in which only 29 per cent of the fires were in this category and is above the 10-year average of 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 $741 per cost fire, compared with $4,233 the previous year. Total suppression cost for the year was $862,600, of which $698,700 was accounted for by the Forest Service and $163,900 by other agencies. The 10-year average for fire-suppression costs is $2,698,400. (*See* Tables Nos. 102, 109, and 111 in the Appendix.)

Damage

The 33,381 acres of forest cover burned represented approximately 13 per cent of the 10-year average of 252,610 acres. The damage to forest cover was $455,872, compared with the 10-year average of $2,969,389. (*See* Tables Nos. 108 and 110 in the Appendix.)

FIRE-SUPPRESSION CREWS

There were 14 suppression crews of 7 to 10 crewmen plus foreman and cook, and 11 two- or three-man initial attack crews employed at strategic locations in the three southern districts. Sixteen two-man crews were also employed at various locations in the Prince George and Prince Rupert Districts.

During the low-hazard periods of the season, these crews worked on a variety of other projects.

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

AIRCRAFT

Thirty-five aircraft were under contract during the 1968 fire season. This is slightly fewer than 1967. These were six helicopters, three fixed-wing general-purpose aircraft, six light fire-spotter aircraft, four Canso air tankers, 11 Avenger air tankers, and five aircraft for bird-dog duties.

The crash of one air tanker with the loss of its two crew members was deeply felt by district personnel and the Forest Service as a whole.

ROADS AND TRAILS

The programme of road and trail construction and the reconstruction of existing roads linking up Forest Service and logging roads was continued, improving access to various areas for protection and management purposes. An exception was the Prince George Forest District, where a wet summer prevented any major operations. (*See* Table No. 116 in the Appendix.)

SLASH AND SNAG DISPOSAL

Vancouver Forest District

In the Vancouver Forest District, snags on 2,119 acres were felled. Contract crews completed 75 acres, the Agassiz inmate crew handled 24 acres, and the regular Forest Service crew looked after 2,020 acres.

PRESCRIBED BURNS

Forest District	Forest Service	Industry	Total
	Acres	Acres	Acres
Vancouver	*Nil*	77,831	77,831
Prince Rupert	1,536	4,893	6,429
Prince George	285	*Nil*	285
Kamloops	3,059	3,351	6,410
Nelson	1,020	7,590	8,610
Totals	5,900	93,665	99,565

Vancouver Forest District

Wet conditions from late August through September reduced the number of slash burns. Burning commenced in mid-August along the west and north coastal areas of Vancouver Island. Results were generally poor, but some good burns were made on southern exposures.

Similar conditions prevailed for the east coast of Vancouver Island and the Mainland. Few slash burns were attempted until late September, when a high-pressure ridge developed along the south coast and lasted through the first week of October. During this two-week period most operators on the south-eastern portion of Vancouver Island, the Sunshine Coast, Squamish, Pemberton, and Fraser Valley commenced large-scale burning operations.

The 1968 slash-burning season was satisfactory, with considerably more slash being abated than was anticipated in view of a wet August. In addition to the 77,831 acres cleared during 1968, 4,903 acres of older slash were considered abated to a satisfactory level by natural means.

Prince Rupert Forest District

Slash-burning weather was limited during the year, and results were disappointing. Two spring burns were carried out—one at Terrace and one in the Morice Valley. The fall burning season started in Kitimat, Terrace, Kitwanga, and Hazelton on August 20th. Rain started three days later and prevented further burning. Despite inclement weather, 6,429 acres of slash were disposed of satisfactorily.

Prince George Forest District

A wet summer followed by heavy fall rains made slash-burning almost impossible. A total of 285 acres of slash was abated in the spring by the Forest

Service, and slash disposal over 15,611 acres which was planned for 1968 will continue in 1969.

Kamloops Forest District

The wet fall of 1968 was poor for slash-burning, but the Forest Service handled 3,059 of 4,119 acres earmarked for burning. Industry burned 3,351 acres of 6,270 planned. The remainder will be done in 1969.

Nelson Forest District

Wet weather commenced in late August, continued into the fall, and curtailed the slash-disposal programme. Of 12,485 acres of slash to be disposed of by industry, 7,590 acres were completed, indicating a good attempt by industry in the hazard-abatement programme. The untreated areas will be attended to in 1969. (*See* Tables Nos. 115 and 116 in Appendix.)

FIRE-LAW ENFORCEMENT

Prosecutions under Part XI of the *Forest Act* resulted in 14 charges. Ten of them involved burning without a permit. Prosecutions of 1968 represented 42 per cent of the 10-year average of 33.

FOREST CLOSURES

No forest closures were imposed during the 1968 season under section 122 of the *Forest Act,* but campfire permits were suspended in the Vancouver Forest District between August 2nd and 14th.

PROTECTION PLANNING AND RESEARCH

Fire Statistics

The Provincial Fire Atlas was maintained in the plotting of all fires by cause, size, and location. This atlas continues to be a valuable reference to other divisions and outside agencies.

The backlog of coding fire statistics has been completed and is now on a current basis, and plans are under way on computerized programmes for various studies.

Visibility Mapping and Lookout Photography

No field work was required in visibility mapping or lookout photography during 1968. It was the second time since 1945 that crews were not engaged in this work.

Fuel-moisture Indicator Sticks

The spring field test to determine acceptable tolerances for fuel-moisture sticks manufactured during the winter was undertaken at Ashcroft in April. Of the 1,098 sets shipped in 1968, 59 per cent went to industry, 4 per cent to the Federal forestry, and 37 per cent to the Forest Service.

During November, 1,280 fuel-moisture sticks were manufactured at the Forest Products Laboratory in Vancouver for use in 1969.

Insect Survey and Control

To protect Interior pine stands, the European Pine Shoot Moth Regulations were approved March 19, 1968 (Order in Council No. 864), and amended December 12, 1968 (Order in Council No. 3948). Vancouver Forest District was declared a quarantine zone, and any movement of pines from that district required prior treatment and authorization.

A specialized balsam wooly aphid survey was made of ornamental balsam trees and shrubs in all urban communities in the Southern Interior in the area lying south of the 51st parallel, north and east of the Fraser River. This survey stemmed from the 1967 discovery of *Adelges piceæ in* ornamental balsams in Oliver and Penticton. No evidence of the aphid was found in the 1968 survey.

Research Projects

The Planning and Research Section was reorganized to provide definite fields of responsibility to staff members and modified work procedures to increase efficiency.

The Section obtained adequate space in a Government-leased building, permitting the construction of a shop for equipment testing and development, weather-instrument repairs, and adequate storage of equipment and materials. Future work will benefit substantially by this acquisition.

A new publication titled "Planning and Research Report" will keep all Service staff advised of completed protection projects and where detailed information can be obtained. Besides in-service distribution, the report is sent to all forest-protection agencies in Canada with the hope it will result in a better exchange of information between protection people. Seventeen reports were distributed during 1968.

Many projects were in various stages of completion at the end of 1968. Some of the highlights were as follows:—

—After years of testing various products for protecting maps on lookout fire-finders it was found a plexiglass cover worked best. Covers were cut, drilled, and distributed to all lookouts.

—The Forest Service drip torch was modified again, and 200 were manufactured and distributed. This latest model will be used for future production.

—A prototype flame-thrower, suitable for vehicle mounting for slash ignition, was manufactured and sent to one forest district for testing.

—Supplies of two-man two-day ration kits were purchased, boxed, and distributed to all forest districts.

—A prototype portable fire simulator for training purposes was constructed and is undergoing tests before being introduced for in-service training. The unit will cost less than $2,000.

—Reports were completed on sprinkler systems for prescribed burns, two types of fire-camp mattresses, window-tinting of lookouts, a ground and air fire-detection test using an Australian-made infra-red fire-detector telescope, the pocket-size fuel-moisture stick balance, a secondary lookout shelter, the practicability of lookout fire-finder telescopes, and a hose-carrier for roll-fold hose.

—The preparation and revision of handbooks required considerable time, and five handbooks should be ready for distribution in 1969. These cover guides for fire supression, lookoutmen, fire-weather instruments, air-tanker operations, and broadcast burning of logging slash.

—Equipment evaluation and testing continued as new products became available from industry.

—Liaison continued with agencies in fields of mutual interest. These embrace meteorology, pest control, fire-danger indices, and representation on various protection sub-committees of the National Research Council and on the Rehabilitation Committee of the Forest Service.

FOREST SERVICE TRAINING-SCHOOL

ENROLMENT AND GRADUATION

The 15th class of advanced trainees consisting of 24 men completed the second term and graduated on April 5, 1968, bringing the total number of graduates of the advanced course to 319.

The seventh class of basic trainees (Basic Course No. 7) consisted of 24 men. They enrolled on September 16, 1968, and graduated three months later. The total number of graduates from the basic course is now 148.

Subjects covered during the term were as follows:—

Advanced Course No. 15, Spring, 1968 (January 8th to April 5th)

Subject	Days Allotted
Forest Management Policies and Procedures	9
Pre-suppression	3
Scaling (Coast)	14
Scaling (Interior)	1½
Public Speaking	4½
Fire Suppression	2
Vancouver Island Trip	4
Sales and Appraisals	6
Navigation	3
Measurements	8
Engineering Services	2
Photogrammetry	2
Public Information and Education	1
Personnel and Safety	2½
Fish and Game Department	1
Spares	1
Closing	½
Total days	65

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

Basic Course No. 7, Fall, 1968 (September 16th to December 17th)

Subject	Days Allotted
Mathematics	2½
Pre-suppression	8
Surveying	5½
Fire Suppression	13
Photogrammetry	3
Mechanical Equipment Maintenance and Operation	10
Measurements	6
Reforestation	1½
Silviculture	3
Forest Protection Policies and Procedures	4
Forest Management Policies and Procedures	7
Mapping	1
Opening, closing	½
Total days	65

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

EXTRA COURSES AND FUNCTIONS

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

Course for Lookoutmen.—The school provided room, board, facilities, and instruction for this course. Twenty-one men took the course—11 from the Kamloops Forest District and 10 from the Prince George Forest District. The course was held during the period of April 29th to May 2nd.

Course for Fieldmen of the Forest Inventory Division.—The school provided room, board, facilities, and minor assistance with instruction for this course. Two-and-one-half-day sessions for two different groups were held. A total of 60 men attended the sessions during the period May 6th to 10th.

During the year the school's instructional facilities were used intermittently by the Vancouver scaling classes, and short courses and seminars were conducted by the Vancouver Cruising Section and the Reforestation Division.

Four groups of official scalers, totalling 75 men, attended a one-day introductory course conducted by the school staff.

The Canadian Forestry Association conducted one week of outdoor classroom lectures, with 500 elementary students from the surrounding area attending.

During the summer one instructor assisted at a fire-control course held at Williams Lake.

One instructor attended a one-week workshop on the fire simulator held at the Forest Technology School, Hinton, Alta.

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

The reading course on the *Forest Act* was updated and 464 copies were distributed to the districts and divisions along with 390 copies of the mathematics reading course.

ACCOUNTING DIVISION

FISCAL

In direct reversal of the situation in the 1967 calendar year, the financial return to the Forest Service in 1968 climbed to record proportions. While a significant portion resulted from statutory increases in the rates of timber royalties, forest protection tax, and timber-berth rentals and fees, the bulk of the additional revenue was from timber-sale stumpage.

Confirming the encouraging market outlook at the beginning of the year, prices being obtained for forest products rose to record heights and were reflected in corresponding stumpage-rate adjustments. Other contributing factors were settlement of the costly strike in the Southern Interior in May and readjustment of some zone price differentials on the Coast. At the close of the year, the outlook for the industry was optimistic, with favourable market conditions expected to continue well into 1969.

The increase in royalty and stumpage rates combined with an 8.2-per-cent increase in the volume of timber scaled to push charges to $58,036,564 (*see* Table No. 142 in the Appendix)—an increase of 44.9 per cent over the 1967 figure. All forest districts registered substantial percentage increases—Prince Rupert District leading the way with 59 per cent, followed by Prince George District with 53.5 per cent, Vancouver District at 42.3 per cent, Nelson District at 38.3 per cent, and Kamloops District at 35.8 per cent. Operations in the latter two districts early in 1968 were restricted by the strike.

Direct forest revenue (*see* Table No. 141 in the Appendix) increased by 26.7 per cent to $53,841,116. Timber-sale stumpage (which constitutes over four-fifths of the revenue) rose to $44,390,571, an increase of 27.8 per cent over the previous year. Timber-sale rentals and fees and timber-sale cruising and advertising registered minor increases—2 and 9 per cent respectively. Many timber sales have been included in timber-sale harvesting licences, and, under the latter tenure, rental is only charged on the areas being operated currently.

Timber-licence rentals and fees were down 18 per cent, probably due to the elimination of logged-off areas and later payment from some licensees than in 1967. Timber-berth rentals and fees increased tenfold as the rates on these old Dominion tenures were brought into line with those charged on timber licences, timber leases, and timber sales. Timber-lease rentals and fees showed an increase of 14.4 per cent, possibly due to deferred payment by some holders from the previous year.

Miscellaneous revenue increased by 20 per cent, mainly due to payment of some large fire-fighting claims. Weight-scaling cost recovery was up 60.1 per cent to $635,742 as the adoption of this form of scale spreads in the industry. Proceeds from the Federal Forestry Agreement amounted to only $34,391, representing payment of the final claim under the Balsam Woolly Aphid Agreement, which expired March 31st.

Financial tables, on a fiscal-year basis, for the period ended March 31, 1968, are included in the Appendix (*see* Tables Nos. 143, 144, and 145), and detailed expenditure information may be found in the Public Accounts, published annually by the Department of Finance.

ADMINISTRATION

Work of the Division continued to expand, and staff turnover was a significant problem. Long delays in obtaining replacements constituted a serious loss of man-hours, which made it difficult to maintain maximum efficiency.

The fire season was moderate, but expenditure accounting remained at a high level as field activity expanded in several areas, notably in reforestation and engineering projects.

Timber-sale accounting became increasingly complex as adjustments were made to meet requirements of new policies established by Management Division. Application of the " continuous deposit " system accelerated as older timber sales expired, and will continue for many years until it is completely effective. Stumpage adjustments resulting from rising market prices were frequent and time-consuming.

The condition of accounts receivable continued to improve, each district reporting only a small percentage of delinquent accounts. Difficulty experienced during the Interior strike was adjusted later in the year.

In forms control, a catalogue was completed and supplied to all districts and the training-school for use with an index, already in use. Meetings of the co-ordinating committee were held monthly.

Removal of marine hazards caused by drift logs continued in the log salvage district. During 1968 permittees marketed 28,681,781 feet board measure through Gulf Log Salvage Co-operative Association, licensee of the log-receiving station. In addition, approximately 5,000,000 feet board measure of low-grade drift and nearly 6,000,000 feet board measure of low floating logs and deadheads were recovered by permittees. This was a substantial increase in recovery and resulted in a corresponding reduction in floating marine hazards.

The timber industry is proposing more effective security and protective measures to curb log losses from booms and storage areas.

Efforts to encourage clearing logs from beaches commenced in 1967 with the advertisement and sale of licences to remove beached logs. Four licences were extended in 1968, resulting in removal of 894,326 cubic feet from shores of Masset Inlet, Queen Charlotte Islands, and 190,580 cubic feet from the west coast of Vancouver Island.

During 1968 five new applications to remove timber from beaches were received, and two new licences were sold. One resulted in removal of 23,383 cubic feet from the shoreline of Babine Lake.

Control of log export under Part X of the *Forest Act* continues to receive close scrutiny by the Export Advisory Committee and the Accounting Division. Though log stocks during the year have diminished considerably, pressure for export continues.

PERSONNEL DIVISION

There were no changes in the senior administrative staff and no disruption in the administration of the service. Reforestation continued its expansion programme. A classification review was completed on the Mechanical Superintendent group, resulting in salary increases for most of these personnel.

The Chief Forester and Personnel Officer met the committee of the Society of British Columbia Forest Officers and the British Columbia Government Employees' Association to discuss a society brief on working conditions and employee welfare. At a second meeting the same group presented its brief to the Civil Service Commission. A general salary increase for all employees became effective April 1st.

COMMUNICATIONS AND TRAINING

The biennial District Foresters' meeting was held in Victoria, enabling District Foresters and Assistant District Foresters to discuss problems of mutual interest. Ranger meetings were held in the Kamloops, Prince George, and Prince Rupert Districts, with local or zone meetings held in the Vancouver and Nelson Districts. The Forest Management Division held three meetings with district staffs concerning general management, scaling, and close utilization, and the Engineering Division held a meeting for field engineers. Both Forest Inventory and Engineering Services Divisions held pre-season training sessions for students employed for the summer field season. The Research Division held a meeting of regional research officers in Victoria to discuss projects and programmes.

The Personnel Officer and Assistant Personnel Officer took part in vocation-day programmes at secondary schools in the Victoria area and other Forest Service officers took part in similar programmes throughout the Province. One Forester and one Forest Protection Officer commenced Class XIII of the Public Administration Course under the Executive Development Training Programme. One employee, a Forest Protection Officer, graduated from Class X of this programme.

Five employees were selected for Class V of the correspondence course in basic public administration, and three employees graduated from Class IV of this course. One Forester was sent on a three-month course in forest genetics. Informal training continued for junior foresters and junior engineers, as well as field training for the Ranger staff.

ESTABLISHMENT, RECRUITMENT, AND STAFF TURNOVER

The permanent Civil Service establishment of the Forest Service remained at 884, with no new positions added. During the year 111 persons received Civil Service appointments and 127 left the Service. Four Forest Service 25-year certificates and badges were earned. Five employees were guests at a Provincial Executive Council luncheon, where they received certificates for 25 years of continuous government service. There were 10 retirements and 36 transfers of permanent staff. Ten graduate foresters and one graduate engineer left the Service, while 11 graduate foresters and two engineers were hired.

Turnover of Civil Service staff, including full-time casual staff, was 10.9 per cent, an insignificant increase from 10.8 per cent in 1967. Prince Rupert suffered the greatest disruption at 20 per cent, followed by Prince George, Vancouver, and Kamloops with 12.5, 12.4, and 12.2 per cent respectively. Vancouver scaling and Victoria headquarters were the same at 9.4 per cent, and Nelson was again lowest at 6.5 per cent.

Professional-staff turnover showed improvement at 4.6 per cent, compared with 5.9 per cent in 1967, while technical-staff turnover increased from 3.2 per cent in 1967 to 5.3 per cent in 1968. Highest turnover was recorded in the clerical group at 21.3 per cent. Figures ranged from 37.5 per cent for the Prince Rupert District to 12.9 per cent in the Nelson District.

In the matter of discipline, one employee was released during probation. Three permanent employees were suspended with intent to dismiss—two resigned and one was reinstated. A number of disciplinary suspensions were imposed, mainly for minor infractions of rules and safety regulations. Four employees had annual merit increases withheld.

A total of 1,211 written applications for employment was received and processed by the personnel office, in addition to those handled by district and divisional staff. Promotional examinations were held by the Civil Service Commission for draughtsmen and mapping assistants to the advantage of numerous Forest Service employees. Written examinations were held for four competitions, and oral examinations were held at panel interviews to fill 45 positions. The Personnel Officer and Assistant Personnel Officer helped to fill 127 other positions. More than 500 candidates sat for the annual spring examination for Technical Forest Officer 1, and 140 qualified for 18 vacancies. All vacancies were filled, and a long list of eligible candidates remained for subsequent vacancies. At the same time, 172 employees took the annual examination for Technical Forest Officer 2, and 96 qualified.

Twenty-four employees completed the basic training course at the Forest Service training-school, and 24 others graduated from the advanced course and were promoted to Technical Forest Officer 3 as Deputy Rangers.

CLASSIFICATION, SALARIES, AND WORKING CONDITIONS

Classification reviews were requested for 48 positions. At the end of the year 29 had been approved and 19 rejected. An organizational review was requested for the administrative office of the Vancouver Forest District. A review of Forest Agrologist salaries in comparison with the salaries of other positions with related professional qualifications resulted in adjustments to some of the Forest Agrologist grades. This matter is still under review.

Nine employees were registered as professional foresters. General working conditions were unchanged, but the Personnel Officers met with the Chief Personnel Officer of the Civil Service Commission to discuss the granting and control of sick leave. Discussions were held with the Civil Service Commission on housing problems and other matters of employee welfare. Results were indecisive, and the matter is still under review. Efforts will continue for improved working conditions.

A total of 277 accidental injuries was suffered by employees—24 to temporary fire-fighters and 26 to temporary tree-planters and cone-collectors. Of the 227 injuries for the regular staff, 44 were time loss and 183 required medical aid only. The time-loss frequency for regular staff was 9.9 time-loss accidents per million man-hours worked, compared with 14.6 for 1967. Time-loss accidents for regular staff were 19.4 per cent of the total accidents, compared to 28.5 per cent in 1967. There were no fatal accidents in the Forest Service in 1968. Throughout the year 25 British Columbia Safety Council awards of merit were won by various groups in the Forest Service. Worthy of note were the Kamloops and Prince Rupert Districts' bronze awards; Prince George District's silver and gold awards; Forest Inventory's gold award; and the Nelson District, which achieved a bronze-on-gold, a silver-on-gold, and a " million man-hours " award. Net result: of the 19 Prime Minister's safety awards presented to various British Columbia Government departments, six went to the Forest Service.

PERSONNEL DIRECTORY, 1968

(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
Lyons, E. H. - - - - - - - - Forester i/c 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
Lehrle, L. W. W. - - - - - Forester i/c Forest Service Training-school

Services Branch Division Heads:

Young, W. E. L. - - - - - - - Forester i/c Forest Inventory Division
Robinson, E. W. - - - - - - - - Forester i/c Reforestation Division
Spilsbury, R. H. - - - - - - - - Forester i/c Research Division
Hemphill, P. J. J. - - - - - Engineer 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. (Cultus Lake); 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); Doerksen, V. J. (Lund); Stefanac, G. (Thurston Bay); Archer, W. C. (Sayward); Campbell, R. A. (Echo Bay); Moss, R. D. (Port McNeill); Teindl, A. J. (Port Hardy); Brooks, T. (Campbell River); Hannah, M. (Courtenay); Norbirg, H. (Parksville); Howard, W. G. (Nanaimo); Sykes, S. J. (Duncan); Antonelli, M. W. (Langford); Thomas, R. W. (Lake Cowichan); Haley, K. (Alberni); Doerksen, H. G. (Tofino); Gill, D. E. (Pemberton); de Hart, D. E. (Gold River); Hawkey, G. F. (Chatham Channel).

PRINCE GEORGE FOREST DISTRICT

N. A. McRAE - - - - - - - - - - - - DISTRICT FORESTER
Young, W. - - - - - - - - - - - - Assistant District Forester

Forest Rangers:

Graham, J. G. (McBride); Little, J. H. (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); Osborne, H. (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. (Mackenzie).

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); Jackson, R. C. (Salmon Arm); Jones, G. G. (Sicamous); Berard, R. K. M. (Lillooet); Kuly, A. (Vernon); McDaniel, R. W. (Penticton); Baker, F. M. (Princeton); Petty, A. P. (Clinton); Ward, J. G. (Williams Lake); Donnelly, R. W. (Alexis Creek); Hewlett, H. C. (Kelowna); Noble, J. O. (Ashcroft); Pearce, F. (Merritt); Lynn, J. F. (Blue River); Loomer, I. M. (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
W. F. Tuttle - - - - - - - - - - Assistant District Forester

Forest Rangers:

Anderson, W. R. (Queen Charlotte City); Gilgan, N. P. (Prince Rupert); Harvie, T. (Terrace); Quast, H. W. (Hazelton); Reiter, D. (Kitwanga); Pement, A. R. (Smithers); Simmons, C. F. (Telkwa); Dodd, G. F. (Houston); Jaeger, J. F. (Burns Lake); Weinard, R. H. (Bella Coola); Jones, W. H. (Southbank); vacant (Lower Post); Waldron, W. C. (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. (Mica); Trenaman, R. G. (Edgewood); Russell, P. F. (Elko); Webster, G. R. (Spillimacheen); Hamann, L. O. (Cranbrook West); Thompson, H. B. (Beaverdell); Bellmond, C. N. (Salmo); Hamilton, H. D. (Revelstoke).

APPENDIX

TABULATED DETAILED STATEMENTS TO SUPPLEMENT THE REPORT OF THE FOREST SERVICE

CONTENTS

Table No.		Page
	Research Division	
11.	Status of Research Projects Active in 1968	63
12.	Research Publications, 1968	63
	Reforestation Division	
22.	Summary of Planting, 1959–68	64
	Public Information and Education Division	
31.	Motion-picture Library, 1959–68	65
32.	Summary of Coverage by School Lecturers, 1959–68	66
	Forest Management Division	
47.	Summary of Basic Data for Tree-farm Licences (Private Sustained-yield Units)	67
48.	Summary of Basic Data for Certified Tree-farms (Private Sustained-yield Units over Crown-granted Lands)	67
49.	Summary of Basic Data for Farm Wood-lot Licences (Private Sustained-yield Units)	68
50.	Summary of Basic Data for Public Sustained-yield Units	68
51.	Value Added by Manufacture and Estimated Net Value of Logging, 1959–68	69
52.	Water-borne Lumber Trade (in M B.M.), 1959–68	70
53.	Total Amount of Timber Scaled in British Columbia during Years 1967 and 1968: (A) in F.B.M., (B) in Cubic Feet	71
54.	Species Cut, All Products, 1968: (A) in F.B.M., (B) in Cubic Feet	72
55.	Total Scale, All Products, 1968 (Segregated by Land Status and Forest Districts): (A) in F.B.M., (B) in Cubic Feet	73
56.	Timber Scaled in British Columbia during 1968 (by Months and Forest Districts)	74
57.	Number of Acres Operating under Approved Annual Allowable Cuts, 1959–68	75
58.	Total Scale of All Products from Areas Operated under Approved Annual Allowable Cuts, 1959–68	76
59.	Logging Inspections, 1968	77
60.	Trespasses, 1968	78
61.	Areas Cruised for Timber Sales, 1968	79
62.	Timber-sale Record, 1968	79

TABLE NO. PAGE

63. Competition for Timber Sales Awarded, 1968 80
64. Timber Sales Awarded by Forest Districts, 1968 81
65. Average Stumpage Prices as Bid, by Species and Forest Districts, on Timber Sales during 1968, per C C.F. Log Scale 82
66. Average Stumpage Prices Received, by Species and Forest Districts, on Timber Scaled on Tree-farm Licence Cutting Permits during 1968 83
67. Timber Cut and Billed from Timber Sales, 1968 84
68. Saw and Shingle Mills of the Province, 1968 85
69. Export of Logs (in F.B.M.), 1968 86
70. Shipments of Poles and Other Minor Products, 1968 86
71. Summary of Export of Minor Products for Province, 1968 87
72. Timber Marks Issued, 1959–68 87

GRAZING DIVISION

81. Grazing Permits Issued, 1968 87

ENGINEERING SERVICES DIVISION

91. Forest Road Programme, 1968 88
92. Forest Service Mechanical Equipment, 1968 89

FOREST PROTECTION DIVISION

102. Reported Approximate Expenditure in Forest Protection by Other Agencies, 1968 89
103. Fire Occurrences by Months, 1968 90
104. Number and Causes of Forest Fires, 1968 90
105. Number and Causes of Forest Fires for the Last 10 Years 90
106. Fires Classified by Size and Damage, 1968 91
107. Damage to Property Other than Forests, 1968 92
108. Damage to Forest Cover Caused by Forest Fires, 1968—Parts I and II 92–93
109. Fire Causes, Area Burned, Forest Service Cost, and Total Damage, 1968 94
110. Comparison of Damage Caused by Forest Fires in Last 10 Years 94
111. Fires Classified by Forest District and Cost per Fire of Fire-fighting, 1968 95
112. Prosecutions, 1968 96
113. Analysis of Suppression-crew Fire-fighting Activities, 1968 97
114. Construction of Protection Roads and Trails, 1968 97
115. Summary of Logging Slash Reported in 1968, Vancouver Forest District 97
116. Analysis of Progress of Slash Disposal, 1968, Vancouver Forest District 98

FOREST SERVICE TRAINING-SCHOOL

131. Training-school Enrolment and Graduations 98

ACCOUNTING DIVISION

TABLE NO.		PAGE
141.	Forest Revenue, 1964–68	98
142.	Amounts Charged against Logging Operations, 1968	99
143.	Amounts Charged against Logging Operations, Fiscal Year 1967/68	100
144.	Forest Revenue, Fiscal Year 1967/68	101
145.	Forest Service Expenditures, Fiscal Year 1967/68	101
146.	Scaling Fund	101
147.	Grazing Range Improvement Fund	102
148.	Peace River Power Timber Salvage	102

PERSONNEL DIVISION

151.	Distribution of Personnel, 1968	103

(11) STATUS OF RESEARCH PROJECTS IN 1968

Active at beginning of year	86
Terminated	8
New projects	18
Active at end of year	96

RESEARCH PROJECTS BY DISTRICTS

Subject	Vancouver	Prince Rupert	Prince George	Kamloops	Nelson
Land classification	1	----	1	2	----
Forest fertilization	2	----	----	----	----
Tree breeding	5	----	----	----	----
Plant ecology	2	----	----	----	1
Silvicultural systems	----	----	----	----	1
Natural regeneration	----	1	1	1	2
Choice and trial of species	6	2	2	1	----
Seed	----	----	1	----	1
Nursery practice	11	1	2	----	----
Direct seeding	----	2	1	4	----
Planting	9	8	5	1	2
Tending of stands	9	1	----	2	2
Statistics	2	----	----	----	----
Management: Economics	1	----	----	----	----
Totals	48	15	13	11	9

(12) RESEARCH PUBLICATIONS, 1968

Forest Research Review for Year Ended March, 1968, British Columbia Forest Service.

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Schmidt, R. L. (1968): A Simple Device for Sowing Experimental Seed Lots at Uniform Spacing. Tree Planters' Notes, Vol. 19, No. 3, pp. 9–11.

van den Driessche, R.; Austin, K. H.; Balderston, M. B.; and Stewart, A. G. (1968): A Portable Meter for Measuring Impedence of Tree Seedling Stems. Forestry Chron. 44(2):35–36.

van den Driessche, R. (1968): A Comparison of Growth Responses of Douglas Fir and Sitka Spruce to Different Nitrogen, Phosphorus, and Potassium Levels in Sand Culture. Canadian J. Bot. 46(5):531–537.

van den Driessche, R. (1968): Growth Analysis of Four Nursery-grown Conifer Species. Canadian J. Bot. 46(11):1389–1395.

SUMMARY OF PLANTING, 1959–68

Year	Forest Service on Crown Land		Forest Service on Crown-granted Land (Forest Act, Sec. 152)		Companies 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										
1968[1]	3,731.0	8,349	86.0	212	9,050.3	25,827	5,268.9	16,205	18,136.2	50,593
1967	4,052.1	9,237	.....	.....	7,036.6	21,784	3,860.6	11,710	14,949.3	42,731
1966	3,856.0	9,241	19.0	55	8,431.9	24,762	3,828.8	11,352	16,135.7	45,410
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
Previously planted	88,450.4	105,599	6,544.0	7,733	25,680.4	47,549	2,320.9	2,936	122,995.7	163,817
Totals to date	109,090.0	155,777	15,192.9	27,217	89,819.4	235,158	30,005.2	84,750	244,107.5	502,902
Interior										
1968[1]	2,504.7	5,854	.....	.....	360.3	921	129.3	222	2,994.3	6,997
1967	1,785.3	3,747	.....	.....	634.0	1,491	95.5	207	2,515.1	5,445
1966	2,292.6	4,835	.....	.....	568.6	1,919	120.7	304	2,981.8	7,058
1965	1,755.9	5,442	.....	.....	614.9	2,735	130.4	382	2,501.2	8,559
1964	1,102.2	2,999	.....	.....	199.5	968	45.2	128	1,346.9	4,095
1963	595.4	1,304	.....	.....	329.7	906	5.9	11	931.0	2,221
1962	553.1	1,146	.....	.....	346.3	1,007	10.0	25	909.4	2,178
1961	408.3	1,008	.....	.....	248.0	625	1.8	3	658.1	1,636
1960	195.7	354	.....	.....	187.8	416	2.6	3	386.1	773
1959	756.8	1,289	.....	.....	81.9	114	29.9	42	868.6	1,445
Previously planted	2,227.2	3,211	.....	.....	436.9	728	199.8	267	2,863.9	4,206
Totals to date	14,177.2	31,189	.....	.....	4,008.2	11,830	771.1	1,594	18,956.5	44,613
All planted to date	123,267.2	186,966	15,192.9	27,217	93,827.6	246,988	30,776.3	86,344	263,064.0	547,515
All planted this year	6,235.7	14,203	86.0	212	9,410.6	26,748	5,398.2	16,427	21,130.5	57,590

[1] Subject to corrections due to late returns.

MOTION-PICTURE LIBRARY, 1959–68

Stock Records

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Films in library at January 1st	83	92	95	140[1]	144	151	148	169	174	194
Films withdrawn during year	10	2	2	1	3	9	12	4	6	48
New films added during year	19	5	3	5	10	6	33	9	26	46
Films in library at December 31st	92	95	96	144	151	148	169	174	194	192
Films used during year	83	96	96	145	150	142	164	173	191	239

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

Circulation Records

Number of loans made during year	468	374	344	473	955	483	535	578	739	833
Number of film loans during year (one film loaned one time)	1,454	749	776	957	1,926	990	1,070	1,320	1,516	1,556
Number of showings during year	1,622	1,217	1,085	1,490	1,146	1,115	1,535	2,164	2,369	2,797
Number of audiences—										
Adults	17,329	12,277	13,096	10,576	7,691	10,511	16,069	16,522	29,396	21,771
Children	54,429[1]	90,658	57,366	76,699	64,946	64,057	80,333	100,628	108,707	110,381
Mixed	51,421	62,405	69,896	67,777	40,386	32,438	17,236	24,242	34,099	85,695
Totals	123,179[1]	165,340[1]	140,358	155,052	113,023	107,006	112,638	141,392	172,202	217,847

[1] Including attendances of school lecturers.

(32)

SUMMARY OF SCHOOL LECTURE COVERAGE, 1959–68

Forest District	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	Total
Vancouver—											
Number of school visits	108	117	57	60	28	9	50	51	59	2	541
Number of lectures given	162	145	113	109	64	33	72	52	67	2	819
Attendance	35,082	30,380	9,644	19,493	7,325	3,450	8,644	4,911	10,994	188	130,111
Kamloops—											
Number of school visits	47	48	3	.....	4	13	3	24	41	.....	183
Number of lectures given	49	54	9	.....	8	42	3	24	45	.....	234
Attendance	5,420	5,203	640	.....	1,285	6,150	500	3,262	6,658	.....	29,118
Nelson—											
Number of school visits	62	36	40	15	.....	.....	.....	41	.....	.....	194
Number of lectures given	75	59	64	35	.....	.....	.....	48	.....	.....	281
Attendance	9,972	5,094	5,834	2,910	.....	.....	.....	6,754	.....	.....	30,564
Prince George—											
Number of school visits	76	5	27	21	29	.....	3	.....	.....	.....	161
Number of lectures given	82	5	28	23	38	.....	5	.....	.....	.....	181
Attendance	5,600	820	3,076	2,419	4,195	.....	715	.....	.....	.....	16,825
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	314	206	127	96	74	22	56	118	100	2	1,115
Number of lectures given	393	263	214	167	151	75	80	132	112	2	1,589
Total attendance	61,209	41,497	19,194	24,822	15,240	9,600	9,859	15,717	17,649	188	214,978

(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)	Allowable Cut (M Cu. Ft.)
		Crown	Private	Total		
Vancouver	17[1]	2,441,224	1,204,999	3,646,223	6,588,983	334,090
Prince Rupert	6[1]	3,452,387	168,111	3,620,498	10,741,284	126,617
Prince George	2	461,625	1,599	463,224	521,617	10,600
Kamloops	7	722,380	1,841	724,221	776,669	14,585
Nelson	6	1,268,638	47,833	1,316,471	2,677,277	40,550
Totals	36	8,346,254	1,424,383	9,770,637	21,305,830	526,442

[1] Two tree-farm licences located in both districts.

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

Within Tree-farm Licences

Forest 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	83,399	198,462	31,848	313,709	351,389	689,168	31,725
Prince George	1	123	1,131	.....	1,254	1,280	331	37
Nelson	2	1,177	3,114	394	4,685	4,925	3,678	187
Totals	14	84,699	202,707	32,242	319,648	357,594	693,177	31,949

Not Included within Tree-farm Licences

Vancouver	21	128,383	272,790	34,063	435,236	473,304	109,337	36,286
Nelson	10	112,258	177,815	80,814	370,887	494,016	219,035	9,154 (334,231)
Totals	31	240,641	450,605	114,877	806,123	967,320	328,372	45,440 (334,231)
Grand totals	45	325,340	653,312	147,119	1,125,771	1,324,914	1,021,549	77,389 (334,231)

Figures in parentheses are Christmas trees.

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

Forest 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	14	1,990	258	2,248	3,155	4,136	145	4,281	81.6
Prince Rupert	5	1,570	235	1,805	3,261	2,330	97	2,427	33.2
Prince George	14	3,185	193	3,378	3,600	5,685	105	5,790	102.3
Kamloops	4	1,115	146	1,261	1,420	660	18	678	26.0
Nelson	6	1,633	840	2,473	2,629	1,256	263	1,519	33.4
Totals	43	9,493	1,672	11,165	14,065	14,067	628	14,695	276.5

(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 (Includes N.S.R. and N.C.C.)			
Vancouver	6	3,292,708	1,359,951	5,112,308	10,155,953	26,664,431[1]	150,263
Prince Rupert (Coast)	4	3,952,561	302,836	4,441,963	11,745,980	27,334,581[1]	41,247
Prince Rupert (Interior)	7	5,753,818	3,156,445	9,249,502	14,058,660	24,951,151[2]	51,489
Prince George	23	14,295,719	13,589,347	29,641,662	42,105,705	43,415,089[2]	214,524
Kamloops	23	9,164,437	11,120,533	21,530,775	28,460,187	25,374,066[2]	127,319
Nelson	14	2,681,983	4,959,722	8,569,697	14,213,178	10,555,287[2]	67,338
Totals	77	39,141,226	34,488,834	78,545,907	120,739,663	158,294,605	652,180

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

BRITISH COLUMBIA FOREST INDUSTRIES, VALUE ADDED BY MANUFACTURE, AND ESTIMATED NET VALUE OF LOGGING, 1959–68

(Estimated net value in thousands of dollars.)

BASIS: OLD STANDARD INDUSTRIAL CLASSIFICATION AND TOTAL INDUSTRY CONCEPT

Industry	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Forestry (logging)	(234,895)	(276,289)	(286,705)	(351,522)	(358,267)	(405,036)	N.A.	N.A.	N.A.	N.A.

BASIS: REVISED STANDARD INDUSTRIAL CLASSIFICATION AND NEW ESTABLISHMENT CONCEPT

(Value assessed by manufacture in thousands of dollars.)

Logging industry	N.A.	N.A.	N.A.	N.A.	220,479	261,919	289,897	(303,500)	(304,400)	(340,000)
Wood industries—										
Saw and planing mills[1]	156,247	154,165	148,387	183,883	209,323	235,950	243,555	(249,400)	----------	----------
Coast	88,545	96,998	86,465	95,272	111,380	113,438	118,220	----------	----------	----------
Interior	67,702	57,167	61,922	88,611	97,943	122,512	125,335	----------	----------	----------
Shingle-mills[1]	N.A.	7,476	7,791	8,615	13,116	10,426	10,095	(11,400)	----------	----------
Sash, door, and millwork[2]	26,971	21,582	24,132	27,305	27,307	16,074	16,017	(17,100)	----------	----------
Veneer and plywood mills	40,183	36,148	35,485	43,844	51,793	55,631	62,058	(65,400)	----------	----------
Other wood industries[3]	6,828	7,331	4,649	4,655	5,124	5,593	8,769	(9,000)	----------	----------
Totals, wood industries	230,229	226,702	220,444	268,302	306,663	323,674	340,494	(352,300)	(365,700)	(449,000)
Pulp, paper, and allied industries—										
Pulp and paper mills	144,545	153,573	167,296	177,220	191,136	217,137	227,826	(226,200)	----------	----------
Other paper and allied industries[4]	15,968	15,944	15,664	17,221	17,951	20,303	19,503	(20,500)	----------	----------
Totals, pulp, paper, and allied industries	160,531	169,517	182,960	194,441	209,087	237,440	247,329	(246,700)	(253,300)	(266,000)
Totals, forest industries	N.A.	N.A.	N.A.	N.A.	736,229	823,033	877,720	(902,500)	(923,400)	(1,055,000)

N.A.=Not available.

NOTE.—Net value and value added statistics cannot be aggregated. Figures in parentheses estimated.

1 Shingle-mills included with sawmills up to 1960. Commencing in 1964, planing-mills included with sawmills.

2 Category changed from sash, door, and planing mills (excluding hardwood flooring) and excludes wood preservation, which is now (1964) included with "other wood industries." Planing-mills excluded commencing in 1964.

3 Includes the wood-preservation industry, wooden-box factories, the coffin and casket industry, and the miscellaneous wood industries.

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

Source: Bureau of Economics and Statistics, Victoria, British Columbia, and the Dominion Bureau of Statistics, Ottawa, Ont.

(52) WATER-BORNE LUMBER TRADE (IN M B.M.), 1959–68

Destination	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	10-year Average, 1959–68
Eastern Canada	10,481	9,680	8,828	11,394	5,295	6,057	727	.....	.....	.....	5,246
Africa	94,598	142,293	75,146	70,726	110,237	84,470	124,276	54,384	78,998	63,953	89,908
Australia	80,115	113,536	91,935	122,470	113,915	106,166	126,045	116,640	125,299	139,579	113,570
Belgium	4,080	21,937	31,300	22,810	34,009	37,596	30,272	34,128	40,557	36,823	29,351
China	.....	.....	.....	.....	.....	147	.....	.....	.....	.....	15
Eire	.....	3,684	4,773	6,465	6,013	7,223	6,179	3,953	1,938	589	4,082
France	3,184	9,883	11,061	21,922	26,371	38,744	61,397	47,101	37,460	32,992	29,011
Germany	.....	1,062	6,040	10,558	15,611	14,155	13,482	11,229	18,719	23,740	11,460
Greece	70	.....	.....	10	1	1,059	129	416	.....	50	174
Hawaiian Islands	2,133	7,755	12,887	6,813	5,433	3,483	3,946	1,778	525	2,036	4,679
Holland	4,569	6,272	13,866	21,802	19,068	20,789	21,920	20,080	25,740	35,416	18,952
Hong Kong	509	867	360	.....	172	300	302	163	222	1,296	419
India	27,581	9,793	.....	.....	5	.....	.....	.....	.....	.....	3,738
Israel	1,340	1,681	10,225	4,009	233	919	1,272	527	567	331	2,110
Italy	2,805	5,363	5,909	12,624	9,609	8,706	16,917	25,581	27,320	29,282	14,412
Japan	1,201	1,607	155,550	107,438	278,168	204,439	207,811	277,777	491,172	466,017	219,118
Korea	6,413	.....	.....	399	1,701	.....	.....	1,145	10	.....	967
Middle East	.....	.....	.....	.....	.....	.....	3,128	387	162	109	379
New Zealand	5,212	6,689	8,392	6,603	5,008	6,236	6,957	7,998	3,910	2,404	5,941
Puerto Rico	62,826	67,022	73,249	77,033	59,448	87,994	61,213	85,872	76,670	69,304	72,063
Scandinavia	16	66	30	184	212	242	53	99	26	66	99
South America	10,178	7,743	1,187	119	83	100	147	.....	2,630	2,998	2,518
South Sea Islands	8,068	13,414	9,970	10,477	10,042	10,794	14,697	8,804	7,099	7,592	10,096
Spain	.....	.....	.....	5,373	10,156	2,517	14,095	7,283	6,267	12,080	5,777
United Kingdom	267,293	518,090	422,939	442,237	465,428	695,196	535,894	470,941	535,053	388,055	474,113
United States	595,170	714,050	838,080	876,420	963,783	932,313	1,179,632	1,157,462	1,143,843	1,243,082	964,383
West Indies	8,478	10,796	5,482	7,913	8,901	12,494	8,541	10,398	11,206	10,349	9,456
Foreign, unclassified	1,333	2,068	1,906	1,227	230	570	413	291	3,695	829	1,256
Totals	1,197,653	1,675,351	1,789,115	1,847,026	2,149,132	2,282,709	2,439,445	2,344,437	2,639,088	2,568,972	2,093,293

TOTAL AMOUNT OF TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING THE YEARS 1967 AND 1968 IN F.B.M.

(53A) (All products converted to f.b.m.)

Forest District	10-year Average, 1959–68	1967	1968	Increase	Decrease	Net Increase
Vancouver	4,200,686,268	4,653,042,390	5,148,302,292	495,259,902		
Prince Rupert (C.)	608,122,050	747,114,468	760,630,644	13,516,176		
Totals, Coast	4,808,808,318	5,400,156,858	5,908,932,936	508,776,078		508,776,078
Prince Rupert (I.)	383,919,444	544,193,121	606,829,585	62,636,464		
Prince George	1,114,353,444	1,368,965,440	1,575,963,519	206,998,079		
Kamloops	1,281,402,617	1,222,232,110	1,256,150,882	33,918,773		
Nelson	752,845,591	731,900,911	687,444,016		44,456,896	
Totals, Interior	3,532,521,096	3,867,291,582	4,126,388,002	303,553,316	44,456,896	259,096,420
Grand totals	8,341,329,414	9,267,448,440	10,035,320,938			767,872,498

TOTAL AMOUNT OF TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING THE YEARS 1967 AND 1968 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, 1959–68	1967	1968	Increase	Decrease	Net Increase
Vancouver	700,114,378	775,507,065	858,050,382	82,543,317		
Prince Rupert (C.)	101,353,675	124,519,078	126,771,774	2,252,696		
Totals, Coast	801,468,053	900,026,143	984,822,156	84,796,013		84,796,013
Prince Rupert (I.)	66,768,599	94,642,282	105,535,580	10,893,298		
Prince George	193,800,599	238,080,946	274,080,612	35,999,666		
Kamloops	222,852,629	212,562,106	218,461,023	5,898,917		
Nelson	130,929,668	127,287,115	119,555,481		7,731,634	
Totals, Interior	614,351,495	672,572,449	717,632,696	52,791,881	7,731,634	45,060,247
Grand totals	1,415,819,548	1,572,598,592	1,702,454,852			129,856,260

(54A) SPECIES CUT, ALL PRODUCTS, 1968, CONVERTED TO F.B.M.

Forest District	Fir	Cedar	Spruce	Lodgepole Pine	Hemlock	Balsam	White Pine
Vancouver	1,242,968,844	1,054,911,936	77,480,010	394,506	1,827,097,362	804,010,056	30,207,480
Prince Rupert (C.)	29,278,674	113,635,314	184,899,714	371,610	342,577,164	66,969,306	
Totals, Coast	1,272,247,518	1,168,547,250	262,379,724	766,116	2,169,674,526	870,979,362	30,207,480
Prince Rupert (I.)	16,135	58,855,977	174,688,191	100,174,142	181,483,616	73,379,217	
Prince George	134,964,575	3,582,762	974,926,812	400,147,963	375,521	57,866,424	368,816
Kamloops	660,158,403	39,032,385	303,387,279	120,429,518	30,513,933	47,210,519	10,774,011
Nelson	125,002,303	91,006,854	234,791,274	32,751,770	76,736,246	59,363,420	16,624,279
Totals, Interior	920,141,416	192,477,978	1,687,793,556	653,503,393	289,109,316	237,819,580	27,767,106
Grand totals	2,192,388,934	1,361,025,228	1,950,173,280	654,269,509	2,458,783,842	1,108,798,942	57,974,586

Forest District	Yellow Pine	Cypress	Larch	Hardwood	Cotton-wood	Unspecified	Total
Vancouver	352,488	78,253,854	180	7,539,678	16,011,900	9,073,998	5,148,302,292
Prince Rupert (C.)		5,658,924		88,812	17,151,126		760,630,644
Totals, Coast	352,488	83,912,778	180	7,628,490	33,163,026	9,073,998	5,908,932,936
Prince Rupert (I.)		431		75,216	18,156,660		606,829,585
Prince George				62,669	3,667,977		1,575,963,519
Kamloops	33,161,636		9,168,818	1,442,353	872,027		1,256,150,882
Nelson	6,700,607		41,700,903	91,299	2,675,061		687,444,016
Totals, Interior	39,862,243	431	50,869,721	1,671,537	25,371,725		4,126,388,002
Grand totals	40,214,731	83,913,209	50,869,901	9,300,027	58,534,751	9,073,998	10,035,320,938

SPECIES CUT, ALL PRODUCTS, 1968, 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	207,161,474	175,818,656	12,913,335	65,751	304,516,227	134,001,676	5,034,580
Prince Rupert (C.)	4,879,779	18,939,219	30,816,619	61,935	57,096,194	11,161,551	
Totals, Coast	212,041,253	194,757,875	43,729,954	127,686	361,612,421	145,163,227	5,034,580
Prince Rupert (I.)	2,806	10,235,822	30,380,555	17,421,590	31,562,368	12,761,603	
Prince George	23,472,100	623,089	169,552,489	69,590,950	65,308	10,063,726	64,142
Kamloops	114,810,157	6,788,241	52,763,005	20,944,264	5,306,771	8,210,525	1,873,741
Nelson	21,739,531	15,827,279	40,833,265	5,695,960	13,345,434	10,324,073	2,891,179
Totals, Interior	160,024,594	33,474,431	293,529,314	113,652,764	50,279,881	41,359,927	4,829,062
Grand totals	372,065,847	228,232,306	337,259,268	113,780,450	411,892,302	186,523,154	9,863,642

Forest District	Yellow Pine	Cypress	Larch	Hardwood	Cotton-wood	Unspecified	Total
Vancouver	58,748	13,042,309	30	1,256,613	2,668,650	1,512,333	858,050,382
Prince Rupert (C.)		943,154		14,802	2,858,521		126,771,774
Totals, Coast	58,748	13,985,463	30	1,271,415	5,527,171	1,512,333	984,822,156
Prince Rupert (I.)		75		13,081	3,157,680		105,535,580
Prince George				10,899	637,909		274,080,612
Kamloops	5,767,241		1,594,577	250,844	151,657		218,461,023
Nelson	1,165,323		7,252,331	15,878	465,228		119,555,481
Totals, Interior	6,932,564	75	8,846,908	290,702	4,412,474		717,632,696
Grand totals	6,991,312	13,985,538	8,846,938	1,562,117	9,939,645	1,512,333	1,702,454,852

TOTAL SCALE OF ALL PRODUCTS BILLED IN 1968 IN F.B.M. (55A) (SEGREGATED BY LAND STATUS AND FOREST DISTRICTS)

Land Status	Vancouver	Prince Rupert (Coast)	Prince Rupert (Interior)	Prince George	Kamloops	Nelson	Total
Timber licences	1,011,224,838	101,443,152		25,047,753	3,950,187	8,933,695	1,150,599,625
Timber berths	92,722,866				41,281,843	53,140,350	187,145,059
Timber leases	256,031,994						256,031,994
Pulp leases	158,691,234	32,271,594					190,962,828
Pulp licences	19,055,196	45,138,582					64,193,778
Farm wood-lots	368,484		223,784	890,405	67,079	144,049	1,693,801
Timber sales	1,103,781,228	264,469,980	283,279,109	1,306,458,868	914,505,369	326,942,763	4,199,437,317
Tree-farm licences	781,312,524	262,463,886	273,513,672	81,636,022	50,937,416	184,424,586	1,634,288,106
Beachcomb, trespass	50,668,452						50,688,452
No mark visible	244,821,252						244,821,252
Miscellaneous	4,047,720	20,891,304	12,866,148	53,567,029	20,762,204	7,035,171	119,169,576
Sub-totals, Crown lands	3,722,725,788	726,678,498	569,882,713	1,467,600,077	1,031,504,098	580,620,614	8,099,011,788
Federal lands	20,173,788	15,407,106	1,692,633	2,410,084	23,115,167	836,688	63,635,466
Crown grants—							
To 1887	1,199,251,008	251,718		268,565	41,432,608	18,565,600	1,259,769,499
1887–1906	76,730,424	1,384,278	1,530,196	914,520	17,647,210	37,748,790	135,955,418
1906–1914	20,503,830	6,045,222	8,322,383	18,014,313	35,558,241	12,265,354	100,709,343
1914 to date	108,917,454	10,863,822	25,401,660	86,755,960	106,893,558	37,406,970	376,239,424
Totals	5,148,302,292	760,630,644	606,829,585	1,575,963,519	1,256,150,882	687,444,016	10,035,320,938

TOTAL SCALE OF ALL PRODUCTS BILLED IN 1968 IN CUBIC FEET (55B) (SEGREGATED BY LAND STATUS AND FOREST DISTRICTS)

(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	168,537,473	16,907,192		4,356,131	686,989	1,553,686	192,041,471
Timber berths	15,453,811				7,179,451	9,241,800	31,875,062
Timber leases	42,671,999						42,671,999
Pulp leases	26,448,539	5,378,599					31,827,138
Pulp licences	3,175,866	7,523,097					10,698,963
Farm wood-lots	61,414		38,919	154,853	11,666	25,052	291,904
Timber sales	183,963,538	44,078,330	49,265,932	227,210,238	159,044,412	56,859,611	720,422,061
Tree-farm licences	130,218,754	43,743,981	47,567,595	14,197,569	8,858,681	32,073,841	276,660,421
Beachcomb, trespass	8,444,742						8,444,742
No mark visible	40,803,542						40,803,542
Miscellaneous	674,620	3,481,884	2,237,591	9,316,005	3,610,818	1,223,508	20,544,426
Sub-totals, Crown lands	620,454,298	121,113,083	99,110,037	255,234,796	179,392,017	100,977,498	1,376,281,729
Federal lands	3,362,298	2,567,851	294,371	419,145	4,020,029	145,511	10,809,205
Crown grants—							
To 1887	199,875,168	41,953		46,707	7,205,671	3,228,800	210,398,299
1887–1906	12,788,404	230,713	266,121	159,047	3,069,080	6,565,007	23,078,372
1906–1914	3,417,305	1,007,537	1,447,371	3,132,924	6,184,042	2,133,105	17,322,284
1914 to date	18,152,909	1,810,637	4,417,680	15,087,993	18,590,184	6,505,560	64,564,963
Totals	858,050,382	126,771,774	105,535,580	274,080,612	218,461,023	119,555,481	1,702,454,852

TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING 1968, BY MONTHS AND FOREST DISTRICTS

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Vancouver—													
F.b.m.	59,505,100	76,371,891	112,124,964	100,227,487	127,618,162	113,568,237	106,819,337	86,663,895	83,969,901	127,081,266	125,243,991	92,005,784	1,211,200,015
Cubic feet	36,341,448	41,105,992	51,851,381	50,115,456	61,679,484	63,024,416	59,940,380	62,324,646	48,816,892	64,847,767	62,114,100	47,352,900	649,514,862
Lineal feet	210,850	244,662	565,885	250,391	236,430	555,138	642,059	2,422,538	[1]1,632,278	449,603	546,757	295,424	4,787,459
Cords	1,817	1,863	3,018	1,734	3,326	2,711	2,030	589	4,835	3,592	3,200	3,485	32,200
All products, cu. ft.	46,590,680	54,186,389	71,243,894	67,168,553	83,450,723	82,625,189	78,420,046	77,443,144	63,235,148	86,716,994	83,716,553	63,253,069	858,050,382
Prince Rupert (C.)—													
F.b.m.	9,796,308	7,894,431	8,863,235	13,679,851	10,265,351	16,194,444	16,655,225	22,524,395	18,744,984	20,515,799	16,735,027	7,692,164	169,561,214
Cubic feet	7,043,340	3,147,856	4,966,799	4,904,364	8,985,072	10,789,964	12,441,195	9,280,284	8,261,172	11,944,078	10,466,882	5,889,481	98,120,487
Lineal feet				54,060	126,840	29,090	22,505	102,890	16,476	118,105	4,805	865	475,636
Cords	40					180			150	60			430
All products, cu. ft.	8,680,078	4,463,594	6,444,004	7,224,884	10,791,093	13,524,235	15,233,944	13,111,516	11,408,656	15,457,956	13,259,657	7,172,157	126,771,774
Prince Rupert (I.)—													
F.b.m.	637,727	1,052,479	1,334,351	319,262	1,228,338	114,541	878,740	706,902	279,813	910,107	341,095	173,415	7,976,770
Cubic feet	9,169,635	9,148,203	12,983,189	3,917,408	6,035,441	6,549,936	8,568,675	9,935,667	7,515,569	13,711,101	10,570,518	5,438,686	103,544,028
Lineal feet	35,875	16,500	5,030	6,850	47,245	20,580	52,850	119,258	43,095	45,970	39,290	680	433,223
Cords	429	356	364	544	355	206	414	288	55	519	64	28	3,622
All products, cu. ft.	9,341,788	9,372,065	13,248,166	4,022,100	6,314,307	6,600,274	8,794,248	10,168,061	7,590,453	13,946,818	10,665,705	5,471,595	105,535,580
Prince George—													
F.b.m.	3,700,216	4,266,508	5,039,679	2,768,048	956,918	756,275	3,088,714	3,391,456	3,587,796	1,036,741	5,025,968	2,988,723	36,607,042
Cubic feet	26,712,536	39,466,638	48,366,582	23,534,302	4,921,253	9,374,245	15,368,117	21,954,295	22,883,733	20,029,001	18,517,380	16,282,965	267,411,047
Lineal feet	53,846	20,355	21,225	53,130	2,575	33,370	30,139	14,034	46,904	28,710	3,542	18,786	326,616
Cords	59	11	26	19	58	88	47	46	51	102	34	46	587
All products, cu. ft.	27,402,260	40,225,009	49,261,609	24,057,523	5,095,376	9,539,151	15,932,558	22,559,266	23,547,965	20,241,081	19,397,380	16,821,434	274,080,612
Kamloops—													
F.b.m.	1,926,649	2,912,056	5,171,431	3,647,565	4,008,071	5,677,948	4,355,880	4,488,723	3,109,051	3,585,602	4,787,551	3,523,974	47,194,501
Cubic feet	5,879,000	9,561,094	27,047,106	8,150,767	8,195,384	9,744,391	20,920,132	23,118,023	24,067,590	28,873,938	17,874,224	25,129,642	208,561,291
Lineal feet	2,575	400,185	140,702	107,705	40,561	92,719	115,390	181,981	207,730	168,299	187,595	94,459	1,739,901
Cords		240	521	936	106	396	272	278	475	343	362	528	4,457
All products, cu. ft.	6,216,000	10,391,132	28,081,167	8,948,204	8,933,425	10,831,314	21,791,052	24,057,504	24,809,247	29,656,744	18,879,682	25,865,552	218,461,023
Nelson—													
F.b.m.	2,472,090	1,975,684	2,452,347	2,441,595	2,590,416	3,403,945	3,803,600	2,195,804	2,281,859	4,039,712	4,377,811	4,958,947	36,993,810
Cubic feet	4,360,077	5,821,288	8,913,569	5,581,276	1,925,187	6,316,345	8,772,348	10,704,508	12,343,582	15,111,222	14,303,100	16,060,160	110,212,662
Lineal feet	10,240	333,089	113,463	172,028	120,230	182,605	222,860	223,100	22,780	677,207	75,806	72,484	2,225,892
Cords	683	573	1,749	1,253	664	632	2,656	1,672	676	1,857	1,169	2,095	15,679
All products, cu. ft.	4,864,226	6,448,959	9,598,737	6,239,463	2,523,202	7,087,339	9,836,658	11,399,203	12,812,922	16,360,842	15,214,238	17,169,692	119,555,481
Totals—													
F.b.m.	78,038,090	94,473,049	134,986,007	123,083,808	146,667,256	139,715,390	135,601,496	119,971,175	111,973,404	157,169,227	156,511,443	111,343,007	1,509,533,352
Cubic feet	89,506,036	108,251,071	154,128,626	96,203,573	91,741,821	105,799,297	126,010,847	137,317,423	123,888,538	154,517,107	133,846,204	116,153,834	1,437,364,377
Lineal feet	313,386	1,014,791	846,305	644,164	573,881	913,502	1,085,803	3,063,801	[1]1,295,293	1,487,894	857,795	482,698	9,988,727
Cords	3,028	3,043	5,678	4,486	4,509	4,213	5,419	2,873	6,242	6,473	4,829	6,182	56,975
All products, cu. ft.	103,095,032	125,087,148	177,877,577	117,660,727	117,108,126	130,207,502	150,008,506	158,738,694	143,404,391	182,380,435	161,133,215	135,753,499	1,702,454,852

[1] Debit.

(57) NUMBER OF ACRES OPERATING UNDER APPROVED ANNUAL ALLOWABLE CUTS, 1959–68

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	
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	85,894,600
1967	36	9,687,984	31	714,901	351	119,421	46	12,522	76	75,727,896	86,143,303
1968	36	9,770,637	31	806,123	350	116,594	43	11,165	77	78,545,907	89,133,832

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

(58)

TOTAL SCALE OF ALL PRODUCTS FROM AREAS OPERATED UNDER APPROVED ANNUAL ALLOWABLE CUTS, 1959–68

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	
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
1967	36	449,386,772	31	43,308,260	351	541,930	454,031	46	378,346	76	639,542,228	1,132,615,606
1968	36	515,466,148	31	65,574,000	350	499,373	413,398	43	289,177	77	700,560,822	1,281,890,147
Ten-year average, 1959–68	38	349,810,444	27	38,788,772	326	505,696	305,409	50	238,832	76	558,770,983	947,609,031

[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.

(59) LOGGING INSPECTIONS, 1968

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	966	1,641	2,607	2,431	2,916	5,347
Prince Rupert	472	530	1,002	2,102	889	2,991
Prince George	1,223	2,681	3,904	7,046	1,060	8,106
Kamloops	1,432	1,345	2,777	4,153	3,243	7,396
Nelson	626	1,561	2,187	1,748	1,984	3,732
Totals, 1968	4,719	7,758	12,477	17,480	10,092	27,572
Totals, 1967	5,118	7,431	12,549	17,663	9,488	27,151
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
Ten-year average, 1959–68	6,281	6,473	12,754	.....	.....	26,603

1 No breakdown made prior to 1961.

(60)

TRESPASSES, 1968

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	94	433	1,228,352	2,205	6	.....	47	12,030	.....	.....	5	$60,608.53
Prince Rupert	46	270	334,196	3,465	4	.....	.....	.....	2,800	28	1	37,398.41
Prince George	82	448	607,893	.....	7	.....	.....	.....	24,042	87	.....	67,828.08
Kamloops	109	604	331,487	23,418	715	.....	3,844	.....	.....	.....	.....	58,510.92
Nelson	47	474	565,987	4,925	46	.....	236	1,204	3,134	26	.....	36,092.26
Totals, 1968	378	2,229	3,067,915	34,013	778	.....	4,127	13,234	29,976	141	6	$260,438.20
Totals, 1967	319	1,724	2,785,911	9,365	2,910	.....	3,934	49,635	176	6	1	$184,724.80
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
Ten-year average, 1959–68	478	3,806	3,522,684	76,136	1,790	567	10,546	110,418	4,699	1,398	8	$236,807.47

(61) AREAS CRUISED FOR TIMBER SALES, 1968

Forest District	Number Cruised	Acreage	Saw-timber (M C.F.)	Pit-props, Poles, and Piles (Lin. Ft.)	Shingle-bolts and Cordwood (Cords)	Car Stakes, Ties, Posts, Shakes, Etc. (No.)
Vancouver	354	40,992	105,195	8,000	6,224	419,250
Prince Rupert	106	25,374	102,870	----------	205	102,000
Prince George	205	150,518	334,844	37,950	----------	----------
Kamloops	185	73,028	97,902	3,223,450	340	5,000
Nelson	40	24,683	33,074	----------	----------	178,700
Totals, 1968	890	314,595	673,885	3,269,400	6,769	704,950
Totals, 1967	848	310,325	549,807	6,014,850	12,352	319,450
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
Ten-year average, 1959–68	1,587	564,526	909,738	6,483,186	20,103	853,855

(62) TIMBER-SALE RECORD, 1968

Forest District	Sales Made	Sales Closed	Total Sales Existing	Total Area (Acres)	Area Paying Forest Protection Tax (Acres)	Total Security Deposit
Vancouver	332	458	994	402,915	392,837	$4,969,750.72
Prince Rupert	60	247	494	241,786	223,468	1,146,995.75
Prince George	194	255	841	457,637	392,426	2,717,764.13
Kamloops	162	318	1,156	742,985	704,076	3,236,636.54
Nelson	45	118	416	485,122	461,383	1,931,261.40
Totals	793	1,396	3,901	2,330,445	2,174,190	$14,002,408.54
Cash sales	448	------	------	----------	----------	----------
Total sales	1,241	------	------	----------	----------	----------

(63) COMPETITION FOR TIMBER SALES AWARDED, 1968

Forest District	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	313	94.3	18	5.4	1	0.3	332	12	344	73,303	89.5	6,921	8.5	1,637	2.0	81,861
Prince Rupert	60	100.0	-----	----	-----	----	60	28	88	42,823	100.0	-------	----	-------	-----	42,823
Prince George	187	96.4	5	2.6	2	1.0	194	33	227	150,930	98.5	1,639	1.1	650	0.4	153,219
Kamloops	153	94.4	5	3.1	4	2.5	162	279	441	78,073	97.4	1,516	1.9	587	0.7	80,176
Nelson	40	88.9	5	11.1	-----	----	45	96	141	28,102	98.0	576	2.0	-------	-----	28,678
Totals, 1968	753	95.1	33	4.2	7	0.7	793	448	1,241	373,231	96.5	10,652	2.8	2,874	0.7	386,757
Totals, 1967	745	96.0	24	3.1	7	0.9	776	373	1,149	412,070	97.4	9,101	2.1	2,021	0.5	423,192
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
Ten-year average, 1959–68	1,331	91.3	88	6.0	38	2.7	1,456	346	1,802	552,608	88.0	43,584	6.9	31,952	5.1	628,144

TIMBER SALES AWARDED BY FOREST DISTRICTS, 1968

Forest District	No. of Sales	Acreage	Saw-timber (Cu. Ft.)	Poles and Piling (Lin. Ft.)	No. of Posts	No. of Cords	No. of Ties	No. of Christ-mas Trees	No. of Car Stakes	No. of Cedar Shakes	No. of Fence Rails and Palings	Estimated Revenue
Vancouver	344	34,227	81,861,215	.....	3,500	6,203	.....	.....	.....	.....	.....	$6,639,706.03
Prince Rupert	88	15,618	42,823,000	41,600	1,000	714	.....	300	1,066	108,185	.....	2,179,485.70
Prince George	227	73,732	153,218,712	3,200	16,700	148	.....	.....	.....	.....	300	8,411,241.24
Kamloops	441	65,721	80,176,300	638,847	68,515	3,330	.....	.....	.....	.....	8,575	5,246,260.05
Nelson	141	22,724	28,677,800	1,322,030	123,939	574	.....	.....	6,000	315,940	.....	1,816,478.90
Totals, 1968	1,241	212,022	386,757,027	2,005,677	213,654	10,969	.....	300	7,066	424,125	8,875	$24,293,171.92
Totals, 1967	1,149	242,011	423,192,600	2,528,440	160,540	8,816	.....	1,750	7,515	210,930	12,584	$13,679,675.37
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
Ten-year average, 1959–68	1,802	462,866	628,145,198	6,008,117	492,845	16,853	7,843	665	9,577	354,060	26,830	$23,547,453.46

AVERAGE STUMPAGE PRICES, AS BID, BY SPECIES AND FOREST DISTRICTS, ON TIMBER SALES DURING 1968, PER HUNDRED CUBIC FEET LOG SCALE

(65)

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	26,227	$11.99	$0.20–30.70	17,205	$4.07	$0.20–10.00	1,026	$12.28	$2.60–13.50	24,946	$9.90	$3.70–25.00	10,642	$8.90	$1.60–20.00
Prince Rupert (C.)	1,132	11.62	8.10–12.30	1,773	2.36	2.10– 5.10	7,598	4.92	2.70– 8.30	7,837	3.98	2.40– 9.00	1,702	3.02	2.40– 3.50
Prince Rupert (I.)	.....	.....	.....	1,130	3.80	2.60– 6.40	5,311	7.22	1.70–10.50	9,545	4.05	1.10– 8.40	3,101	5.08	1.10– 6.80
Prince George	11,526	11.17	1.20–17.50	6,498	.71	.70– 6.80	79,358	5.82	.20–14.20	369	1.00	.70– 4.30	6,645	3.25	.20– 7.70
Kamloops	42,816	7.74	.25–15.40	3,198	2.46	.25–11.00	15,928	6.19	.25–12.50	4,071	4.48	.25– 9.30	3,546	3.52	.25– 7.50
Nelson	7,110	8.55	.25–15.10	1,683	5.61	.25– 8.50	12,363	5.89	.25–12.10	782	4.45	.90– 9.00	1,829	3.82	2.00– 5.10
Totals for Province	88,811	$9.55	$0.20–30.70	31,487	$3.19	$0.20–11.00	121,584	$5.99	$0.20–14.20	47,550	$5.89	$0.25–25.00	27,465	$4.82	$0.20–20.00

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	32	$4.14	$3.00–12.20	.....	.....	.....	.....	.....	.....	1,783	$3.39	$0.20– 9.20	81,861	$8.07	$0.20–30.70
Prince Rupert (C.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	3.19	2.00– 7.50	20,070	4.54	2.00–12.30
Prince Rupert (I.)	.....	.....	.....	3,597	$8.19	$1.10– 9.50	.....	.....	.....	69	3.31	1.10– 9.50	22,753	5.57	1.10–10.50
Prince George	.....	.....	.....	48,529	4.60	.20–26.10	.....	.....	.....	294	3.97	.20–11.60	153,219	5.49	.20–26.10
Kamloops	253	13.90	3.30–16.70	7,652	3.88	.50–11.30	1,351	$8.98	$6.30–12.70	1,358	4.62	.25–11.20	80,173	6.49	.25–15.40
Nelson	360	13.62	3.30–17.10	2,503	4.99	.55– 7.60	1,532	5.32	.55–13.20	516	4.28	.25– 7.50	28,678	6.32	.25–15.10
Totals for Province	645	$13.26	$3.00–17.10	62,281	$4.73	$0.20–26.10	2,883	$7.04	$0.55–13.20	4,048	$3.96	$0.20–11.60	386,754	$6.26	$0.20–30.70

AVERAGE STUMPAGE PRICES RECEIVED, BY SPECIES AND FOREST DISTRICTS, ON TIMBER SCALED ON TREE-FARM LICENCE CUTTING PERMITS DURING 1968

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	18,045	$8.99	$0.25–14.10	46,895	$3.31	$0.25–10.10	4,169	$7.14	$0.25–12.70	83,484	$5.76	$0.25–11.90	43,348	$5.46	$0.25–11.60
Prince Rupert (C.)	.....	.....	.....	2,153	1.76	1.40– 7.60	6,770	5.21	2.30–13.30	12,013	3.36	1.60– 8.30	1,315	2.37	1.90– 3.90
Prince Rupert (I.)	.....	.....	.....	7,716	2.11	1.00– 7.40	11,185	2.45	1.80– 4.20	19,777	2.85	1.50– 8.00	3,796	1.76	1.10– 3.80
Prince George	2,244	7.45	1.80–15.80	.....	.....	.....	10,052	6.48	1.70–12.20	.....	.....	.....	1,545	4.47	.90– 7.30
Kamloops	2,485	4.65	.90–14.00	41	3.63	1.10– 9.30	4,397	6.15	1.70–11.30	6	5.77	1.10– 9.50	539	3.43	.70– 6.80
Nelson	3,202	6.45	.20–16.30	3,602	2.48	.25–13.00	10,186	5.49	.20–13.70	4,102	1.64	.25–12.50	1,923	3.24	.25– 8.20
Totals for Province	25,976	$8.15	$0.20–16.30	60,407	$3.05	$0.25–13.00	46,759	$5.14	$0.20–13.70	119,382	$4.90	$0.25–12.50	52,466	$4.99	$0.25–11.60

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	5	$2.45	$2.00– 3.50	653	$2.11	$0.25– 4.10	.....	.....	.....	2,472	$2.94	$0.25– 5.50	199,071	$5.39	$0.25–14.10
Prince Rupert (C.)	14	1.91	1.10– 3.80	.....	.....	.....	.....	.....	.....	889	1.92	1.40– 3.10	23,154	3.64	1.40–13.30
Prince Rupert (I.)	1,658	1.76	1.10– 3.80	.....	.....	.....	.....	.....	.....	2,789	1.24	.80– 2.10	46,921	2.41	.80– 8.00
Prince George	195	2.27	1.50–11.00	.....	.....	.....	.....	.....	.....	94	.55	.55– .55	14,130	6.31	.55–15.80
Kamloops	1,297	6.12	1.50–10.20	1	3.00	3.00– 3.00	1	$6.03	$4.20–11.30	69	3.92	.90–10.30	8,836	5.53	.70–14.00
Nelson	1,756	4.26	.20–10.40	641	13.67	1.70–17.90	1,418	8.29	2.30–15.50	142	2.90	2.00– 8.00	26,972	4.64	.20–17.90
Totals for Province	4,925	$3.82	$0.20–11.00	1,295	$7.84	$0.25–17.90	1,419	$8.28	$2.30–15.50	6,455	$2.05	$0.25–10.30	319,084	$4.81	$0.20–17.90

(67)

TIMBER CUT AND BILLED FROM TIMBER SALES, 1968

Forest District	Cubic Feet	Board-feet	Lineal Feet	Cords	Ties	Posts	Christmas Trees	Hop Poles	Stakes and Sticks	Car Stakes	Fence Rails, Palings	Anchor Blocks	Shingle Shakes	Shake Blanks
Vancouver	181,436,807	6,416,864	376,053	1,172	.....	5,947	.....	.....	.....	780	.....	.....	4,228,203	284,698
Prince Rupert (C.)	43,836,771	.....	279,930	316	.....	.....	.....	.....	.....	166	.....	.....	30,000	.....
Prince Rupert (I.)	48,737,799	.....	340,515	3,277	.....	1,000	.....	.....	.....	900	.....	.....	78,740	.....
Prince George	227,025,042	.....	228,605	35	.....	4,372	42	.....	.....	.....	.....	.....	32,068	.....
Kamloops	657,786,904	.....	1,390,779	2,184	.....	8,062	.....	.....	.....	.....	.....	.....	.....	.....
Nelson	55,561,251	.....	1,246,627	835	.....	153,261	483,461	.....	.....	1,905	.....	.....	.....	848,591
Totals, 1968	714,384,574	6,416,864	3,862,509	7,819	.....	172,642	483,503	.....	.....	3,751	.....	.....	4,369,011	1,133,289
Totals, 1967	619,335,789	6,083,295	6,107,876	8,719	.....	283,712	458,795	.....	.....	6,277	.....	.....	3,264,427	553,397
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
Ten-year average, 1959–68	655,240,268	51,041,503	7,164,054	11,654	23,999	400,419	439,722	6,785	.....	5,032	12,782	2	5,062,423	675,572

SAW AND SHINGLE MILLS OF THE PROVINCE, 1968

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	128	7,478	94	65	46	609	84	706	6	6
Prince Rupert	129	1,409	6	6	2	4	25	133	1	3
Prince George	213	5,120	33	34	1	2	131	968	2	2
Kamloops	273	5,913	40	45	4	60	26	183	---	---
Nelson	159	2,902	13	14	6	30	66	307	4	17
Totals, 1968	902	22,822	186	164	59	705	332	2,297	13	28
Totals, 1967	931	22,757	197	164	62	784	340	3,211	5	16
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
Ten-year average, 1959–68	1,445	27,312	-----	-----	57	841	481	3,247	10	44

[1] Figures not available prior to 1964.

(69) EXPORT OF LOGS (IN F.B.M.), 1968

Species	Grade No. 1	Grade No. 2	Grade No. 3	Ungraded	Fuel-logs	Total
Fir	66,875	1,354,865	7,667,371	----------	----------	9,089,111
Cedar	470,538	2,540,679	12,041,651	----------	----------	15,052,868
Spruce	17,475,877	9,505,066	38,125,661	----------	----------	65,106,604
Hemlock	2,061,190	10,551,721	48,484,973	----------	----------	61,097,884
Balsam	----------	----------	----------	15,162,220	----------	15,162,220
Yellow pine	----------	----------	----------	----------	----------	----------
Lodgepole pine	27,808	460,304	1,073,861	----------	----------	1,561,973
Cypress	514,190	1,891,568	7,816,861	----------	----------	10,222,619
Hardwood	----------	----------	----------	1,011,658	----------	1,011,658
Cottonwood	1,100,895	592,808	5,460,139	----------	----------	7,153,842
Totals, 1968	21,717,373	26,897,011	120,670,517	16,173,878	----------	185,458,779[1]
Totals, 1967	12,128,244	41,320,799	128,995,437	20,972,835	----------	203,417,315
Totals, 1966	9,751,031	27,322,739	88,001,394	15,452,806	1,478,441	142,006,411
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	101,352,198
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
Ten-year average, 1959–68	6,903,799	18,482,758	60,173,590	11,639,256	842,230	98,041,633

[1] Of this total, 97,590,782 f.b.m. were exported from Crown-granted lands carrying the export privilege; 87,867,997 f.b.m. were exported under permit from other areas.

(70) SHIPMENTS OF POLES AND OTHER MINOR PRODUCTS, 1968

Forest District and Product	Quantity Exported	Approximate Value, F.O.B.	Where Marketed		
			Canada	United States	Other Countries
Vancouver—					
Poles lin. ft.	8,857,143	$2,124,831.00	103,580	4,471,922	4,281,641
Piling ,,	3,757,797	757,123.00	108,207	19,450	3,630,140
Stakes and sticks ,,	7,344	734.00	----------	7,344	----------
Fence-posts pieces	2,053	308.00	----------	2,053	----------
Cedar shakes ,,	24,873,384	3,233,540.00	137,340	24,735,769	185
Christmas trees ,,	34,339	63,527.00	----------	33,839	500
Prince Rupert—					
Poles lin. ft.	869,565	434,790.00	347,826	521,739	----------
Prince George—					
Poles ,,	190,460	161,964.00	76,500	113,960	----------
Piling ,,	19,183	17,264.70	19,183	----------	----------
Fence-posts pieces	13,447	3,841.45	13,447	----------	----------
Cedar shakes ,,	27,375	1,642.50	4,575	22,800	----------
Kamloops—					
Poles lin. ft.	1,124,530	729,411.50	470,240	654,290	----------
Fence-posts cords	103	4,635.00	25	78	----------
Christmas trees pieces	108,292	95,946.20	108,292	28,774	----------
Nelson—					
Poles and piling lin. ft.	610,068	326,046.00	388,943	221,125	----------
Mine timbers ,,	60,132	15,033.00	60,132	----------	----------
Corral rails ,,	236,786	7,104.00	97,856	138,930	----------
Fence-posts cords	8,323	291,305.00	8,287	36	----------
Palings and pickets ,,	2,049	38,931.00	2,049	----------	----------
Shake and shingle bolts ,,	750	18,000.00	98	652	----------
Cordwood ,,	144	2,592.00	128	16	----------
Christmas trees pieces	1,311,190	1,048,952.00	131,119	1,180,071	----------
Total value, 1968	----------	$9,377,521.35	----------	----------	----------
Total value, 1967	----------	$10,719,171.98	----------	----------	----------

(71) SUMMARY OF EXPORT OF MINOR PRODUCTS FOR PROVINCE, 1968

Product		Quantity	Value	Percentage of Total Value
Poles	lin. ft.	10,851,238	$3,450,996.50	36.8007
Piling	,,	3,948,257	774,387.70	8.2579
Other poles and piling	,,	610,068	326,046.00	3.4769
Mine timbers	,,	60,132	15,033.00	0.1603
Corral rails	,,	236,786	7,104.00	0.0758
Stakes and sticks	,,	7,344	734.00	0.0078
Cedar shakes	pieces	24,900,759	3,235,182.50	34.4993
Christmas trees	,,	1,453,821	1,208,425.20	12.8864
Fence-posts	,,	15,500	4,149.45	0.0443
Fence-posts	cords	8,426	295,940.00	3.1558
Palings and pickets	,,	2,049	38,931.00	0.4152
Shake and shingle bolts	,,	750	18,000.00	0.1920
Cordwood	,,	144	2,592.00	0.0276
Total value		.....	$9,377,521.35	100.0000

(72) TIMBER MARKS ISSUED, 1959–68

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	10-year Average, 1959–68
Old Crown grants	299	315	268	300	313	356	328	341	277	328	312
Crown grants, 1887–1906	103	115	121	150	125	148	150	130	147	173	136
Crown grants, 1906–1914	125	123	121	164	161	164	172	144	163	190	153
Section 58, *Forest Act*	524	517	470	589	608	672	649	679	680	805	619
Stumpage reservations	108	116	117	109	141	149	133	63	61	48	104
Pre-emptions	.....	1	3	9	13	7	8	3	6	9	6
Timber berths	9	4	4	12	12	9	14	10	4	1	8
Indian reserves	21	15	8	20	18	27	24	27	11	24	20
Section 24, *Forest Act*	.....	.....	.....	.....	.....	.....	.....	20	214	347	58
Timber sales	1,926	2,136	2,141	1,991	2,183	2,281	1,614	1,126	1,149	1,241	1,779
Special marks and rights-of-way	85	113	91	90	97	121	153	117	95	101	106
Pulp-leases	1	1	5	5	.....	.....	3	12	4	5	4
Pulp licences	.....	.....	.....	2	.....	.....	.....	4	1	1	1
Totals	3,201	3,456	3,349	3,441	3,671	3,934	3,248	2,676	2,812	3,273	3,306
Transfers and changes of marks	669	794	691	809	725	802	740	908	593	773	750

(81) GRAZING PERMITS ISSUED, 1968

Forest District	Number of Permits Issued	Number of Stock under Permit		
		Cattle	Horses	Sheep
Kamloops	1,204	149,944	3,710	5,820
Nelson	450	23,648	1,187	818
Prince George	394	14,444	1,423	452
Vancouver	5	147	18	.....
Totals, 1968	2,053	188,183	6,338	7,090
Totals, 1967	2,114	188,126	6,837	6,272
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

(91) FOREST ROAD PROGRAMME, 1968

Project	Regulation Unit	Reconnaissance	Location	Construction
		Miles	Miles	Miles
Vancouver Forest District				
Maselpanik Creek Inv.	Yale P.S.Y.U.	7.0	.....	.....
Okeover-Theodosia Inv.	Quadra P.S.Y.U.	9.3	.....	.....
Kakweiken River F.R.	Kingcome P.S.Y.U.	.....	7.2	.....
Lillooet River F.R.	Soo P.S.Y.U.	.....	4.6	1.0
Chilliwack River F.R.	Dewdney P.S.Y.U.	.....	.....	0.6
Prince Rupert Forest District				
Talchako River Inv.	Dean P.S.Y.U.	32.0	.....	.....
Binta Lake F.R.	Burns Lake P.S.Y.U.	7.0	.....	.....
Morice River F.R.	Morice P.S.Y.U.	10.0	8.0	.....
Area study	Ootsa P.S.Y.U.	.....	.....	.....
Suskwa River F.R.	Skeena P.S.Y.U.	.....	.....	5.0
Prince George Forest District				
Route study	Wapiti P.S.Y.U.	70.0	.....	.....
Area study	Narcosli P.S.Y.U.	.....	.....	.....
Area study	West Lake P.S.Y.U.	.....	.....	.....
Area study	Nechako P.S.Y.U.	.....	.....	.....
Blackwater Creek F.R.	West Lake P.S.Y.U.	.....	12.0	.....
Bowron River F.R.	Bowron P.S.Y.U.	.....	.....	10.0
Willow River F.R.	Prince George S.S.A.	13.5	13.4	.....
Area study	Proposed Fort Nelson P.S.Y.U.	.....	.....	.....
Kamloops Forest District				
Area study	Shuswap P.S.Y.U.	.....	.....	.....
Area study	Barriere P.S.Y.U.	.....	.....	.....
Area study	Chilko P.S.Y.U.	.....	.....	.....
Area study	Stum P.S.Y.U.	.....	.....	.....
Cahilty Creek Inv.	Niskonlith P.S.Y.U.	11.0	.....	.....
Cariboo Lake Inv.	Quesnel Lake P.S.Y.U.	7.0	.....	.....
Lang-Moffit F.R.	Lac la Hache P.S.Y.U.	6.0	.....	.....
Barriere-Fennell F.R.	Barriere P.S.Y.U.	2.3	.....	.....
Craigellachie-Anstey F.R.	Shuswap P.S.Y.U.	.....	12.5	.....
Lang-Oie F.R.	Lac la Hache P.S.Y.U.	.....	1.0	.....
Gustafson Lake F.R.	Lac la Hache P.S.Y.U.	.....	1.0	.....
Chilcotin South F.R.	Stum P.S.Y.U.	.....	.....	13.7
Bone Creek F.R.	North Thompson P.S.Y.U.	.....	.....	0.6
Horsefly-Black Creek Inv.	Quesnel Lake P.S.Y.U.	.....	.....	.....
Nicoamen River F.R.	Botanie P.S.Y.U.	.....	.....	0.2
Nelson Forest District				
Hellroaring Creek Inv.	Cranbrook P.S.Y.U.	13.7	.....	.....
Glacier Creek Inv.	Lardeau P.S.Y.U.	3.0	.....	.....
Elk River F.R.	Fernie P.S.Y.U.	.....	9.2	6.0
Goat River F.R.	Creston P.S.Y.U.	.....	2.8	1.0
Wilkinson-Stirling Creek F.R.	Kettle P.S.Y.U.	.....	15.1	.....
Beaverdell-State Creek F.R.	Kettle P.S.Y.U.	.....	.....	11.7
Kettle-Rendell	Kettle P.S.Y.U.	.....	.....	0.1
Area study	Cranbrook P.S.Y.U.	.....	.....	.....
Area study	Upper Kootenay P.S.Y.U.	.....	.....	.....
Area study	Windermere P.S.Y.U.	.....	.....	.....
Totals, 1968 programme		192	86.8	49.9
Previous works		5,741	2,551.1	1,007.1
Totals, forest road programme, 1950–68		5,933	2,637.9	1,057.0

F.R.=Forest road. P.S.Y.U.=Public sustained-yield unit. S.S.A.=Special sale area.

(92) FOREST SERVICE MECHANICAL EQUIPMENT, 1968

Type	Total Units, Jan. 1, 1968	Removed from Service	New Purchases	Total Units, Jan. 1, 1969
Sedans	56	4	7	59
Station wagons and sedan deliveries	88	18	11	81
Panel deliveries	68	15	7	60
Four-wheel-drive passenger types	126	32	20	114
Four-wheel-drive pick-ups and panel deliveries	303	61	70	312
5,000–10,000 G.V.W. pick-ups, ½ and 1 ton	248	33	60	275
14,000–24,000 G.V.W. trucks, 2, 3, and 4 tons	57	6	8	59
24,000–50,000 G.V.W. heavy-duty trucks	9	1	1	9
Fire-fighting tank trucks	1	-----	2	3
Total vehicles	956	170	186	972
Trail motor-cycles	119	4	7	122
Tractors—tracked	48	9	9	48
Snow and muskeg tractors (personnel carriers)	10	2	3	11
Snow toboggans—various types	34	2	18	50
Graders	20	-----	1	21
Scrapers—self-propelled	2	-----	-----	2
Scrapers—not self-propelled	2	-----	-----	2
Shovels—power	3	-----	-----	3
Loaders—self-propelled	5	-----	1	6
Outboard motors	444	33	41	452
Fire-pumps—various	825	68	35	792
Retardant mixer pumps	15	-----	4	19
Bean fire-fighting units—high pressure	33	-----	-----	33
Fire-pumps—portable tanker	147	2	-----	145
Pumps—water supply	104	2	17	119
Chain saws	545	44	66	567
Lighting plants	107	1	-----	106
Lawn-mowers—power	58	5	32	85
Speeders—railway	10	3	-----	7
Trailers—low and high bed	9	1	2	10
Trailers—dwelling and bunkhouse	180	9	14	185
Trailers—miscellaneous	352	10	31	373
Air compressors	15	1	-----	14
Range-land drill	1	-----	-----	1
Rock drills—gas-powered	7	1	-----	6
Mechanical wheelbarrows	6	-----	-----	6
Welders	15	-----	-----	15
Cement mixers	7	-----	-----	7
Augers—power planting	1	-----	-----	1
Snow-ploughs—walking	1	-----	-----	1
Rollers—self-propelled	3	-----	-----	3
Rollers—compaction, towed	3	-----	-----	3
Fork-lift trucks	2	-----	2	4

(102) REPORTED APPROXIMATE EXPENDITURE IN FOREST PROTECTION BY OTHER AGENCIES,[1] 1968

Forest District	Expenditures				
	Patrols and Fire Prevention	Tools and Equipment	Fires	Improvements	Total
Vancouver	$242,987	$718,317	$56,777	$96,231	$1,114,312
Prince Rupert	103,200	86,900	16,950	6,500	213,550
Prince George	7,300	70,900	10,709	31,000	119,909
Kamloops	2,500	21,500	31,972	32,000	87,972
Nelson	172,096	100,081	47,448	34,946	354,571
Totals	$528,083	$997,698	$163,856	$200,677	$1,890,314
Ten-year average, 1959–68	$382,644	$676,674	$524,612	$349,097	$1,933,027

[1] Principally forest industry.

(103) FIRE OCCURRENCES BY MONTHS, 1968

Forest District	March	April	May	June	July	August	September	October	Total	Per Cent
Vancouver	.....	2	37	14	52	58	10	1	174	10.6
Prince Rupert	.....	5	32	22	28	23	4	.....	114	6.9
Prince George	.....	2	63	25	64	42	1	4	201	12.2
Kamloops	35	19	94	68	217	335	20	.....	788	47.8
Nelson	.....	29	43	7	95	183	13	.....	370	22.5
Totals	35	57	269	136	456	641	48	5	1,647	100.0
Per cent	2.1	3.5	16.3	8.3	27.7	38.9	2.9	0.3	100.0	.....
Ten-year average, 1959–68	30	84	288	317	669	603	160	21	2,172	.....
Per cent	1.4	3.8	13.3	14.6	30.8	27.8	7.4	0.9	100.0	.....

(104) NUMBER AND CAUSES OF FOREST FIRES, 1968

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	17	18	25	41	9	.....	4	28	1	24	7	174	10.6
Prince Rupert	26	20	3	7	8	3	8	20	.....	19	.....	114	6.9
Prince George	75	25	9	16	13	12	6	11	8	22	4	201	12.2
Kamloops	368	49	43	90	31	38	6	52	14	96	1	788	47.8
Nelson	222	19	41	25	4	.....	10	15	.....	32	2	370	22.5
Totals	708	131	121	179	65	53	34	126	23	193	14	1,647	100.0
Per cent	43.1	8.0	7.3	10.9	3.9	3.2	2.0	7.6	1.4	11.8	0.8	100.0	.....
Ten-year average, 1959–68	785	219	148	255	89	122	49	163	37	257	48	2,172	.....
Per cent	36.1	10.1	6.8	11.8	4.1	5.6	2.3	7.5	1.7	11.8	2.2	100.0	.....

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

Causes	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	Total
Lightning	184	1,166	1,426	615	1,144	277	1,000	374	958	708	7,852
Recreational (campers, etc.)	172	241	269	182	221	144	315	230	288	131	2,193
Railroads operating	88	245	154	41	65	51	89	170	455	121	1,479
Smokers	211	257	336	162	220	129	310	281	464	179	2,549
Brush-burning (not railway or right-of-way clearing)	75	82	86	60	82	66	89	156	128	65	889
Range-burning	190	87	179	62	95	79	193	149	138	53	1,225
Road, power-, telephone-, and pipe-line construction	30	36	36	35	24	11	89	101	93	34	489
Industrial operations (logging, etc.)	204	137	194	109	141	81	223	164	248	126	1,627
Incendiary	34	54	49	25	62	45	24	14	42	23	372
Miscellaneous known causes	253	271	290	183	250	178	309	292	348	193	2,567
Unknown causes	33	59	83	62	41	59	44	36	54	14	485
Totals	1,474	2,635	3,102	1,536	2,345	1,120	2,685	1,967	3,216	1,647	21,727
Railroad-tie fires	536	1,478	.....	.....	.....	.....	.....	.....	.....	.....	.....

FIRES CLASSIFIED BY SIZE AND DAMAGE, 1968

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	174	10.6	105	60.4	9.9	59	34.0	12.9	9	5.1	7.7	1	0.5	8.3	160	8	6
Prince Rupert	114	6.9	65	57.0	6.1	33	29.0	7.2	10	9.0	8.5	6	5.0	50.0	100	11	3
Prince George	201	12.2	99	49.3	9.3	60	30.0	13.1	39	19.3	33.4	3	1.4	25.0	170	20	11
Kamloops	788	47.8	524	66.5	49.4	212	26.9	46.4	50	6.3	42.7	2	0.3	16.7	731	42	15
Nelson	370	22.5	268	72.5	25.3	93	25.1	20.4	9	2.4	7.7	.....	.....	.....	360	7	3
Totals	1,647	100.0	1,061	.....	100.0	457	.....	100.0	117	.....	100.0	12	.....	100.0	1,521	88	38
Per cent	100.0	.....	64.4	.....	.....	27.8	.....	.....	7.1	.....	.....	0.7	.....	.....	92.3	5.3	2.4
Ten-year average, 1959–68	2,172	.....	1,332	.....	.....	603	.....	.....	195	.....	.....	42	.....	.....	1,922	152	98
Per cent	100.0	.....	61.3	.....	.....	27.8	.....	.....	9.0	.....	.....	1.9	.....	.....	88.5	7.0	4.5

(107) DAMAGE TO PROPERTY OTHER THAN FORESTS, 1968[1]

Forest District	Forest Products Cut, Logs, Lumber, Etc.	Buildings	Railway, Logging, and Sawmill Equipment	Miscellaneous	Total	Per Cent of Total
Vancouver	$61,810	$300	$130,563	.....	$192,673	86.3
Prince Rupert	118	225	.....	$5,660	6,003	2.7
Prince George	16,464	300	250	580	17,594	7.8
Kamloops	105	4,800	55	1,315	6,275	2.8
Nelson	.....	.....	.....	855	855	0.4
Totals	$78,497	$5,625	$130,868	$8,410	$223,400	100.0
Per cent	35.1	2.5	58.6	3.8	100.0	.....
Ten-year average, 1959–68	$121,030	$42,367	$215,363	$29,005	$407,765	.....
Per cent	29.7	10.4	52.8	7.1	100.0	.....

[1] Does not include intentional slash-burns (for this item *see* Table 121).

DAMAGE TO FOREST COVER CAUSED BY FOREST FIRES, 1968—PART I[1]

(108—Part I)

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	60	259	140	11,089	731	32,558
Prince Rupert	79	172	86	5,057	19	388
Prince George	1,876	3,741	62	130,160	6,170	204,089
Kamloops	685	642	465	22,879	1,441	30,185
Nelson	27	547	6	2,185	180	4,248
Totals	2,727	5,361	759	171,370[2]	8,541	271,468[2]
Per cent	8.2	100.0	14.2	37.6	25.6	59.6
Ten-year average, 1959–68	42,048	75,254	31,932	1,425,525	56,475	1,256,600
Per cent	16.6	100.0	42.4	48.0	22.4	42.3

[1] Does not include intentional slash-burns (for this item *see* Table 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, 1968—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	354	6	5	1,151	769	247	.....	.....	53	12	1,978	259	45,057
Prince Rupert	226	.....	1	2,801	899	498	2,500	125	1,006	252	4,730	172	9,121
Prince George	1,207	2	29	1,900	4,207	1,299	6,507	325	1,281	296	21,279	3,741	338,069
Kamloops	765	80	78	3,487	572	279	1,371	81	62	16	5,054	642	56,927
Nelson	40	.....	.....	249	35	14	47	2	11	.....	340	547	6,698
Totals	2,592	88	113	9,588	6,482	2,337	10,425	533	2,413	576	33,381	5,361	455,872
Per cent	7.7	0.3	0.4	2.1	19.4	0.5	31.2	0.1	7.2	0.1	100.0	100.0	100.0
Ten-year average, 1959–68	13,235	1,322	12,034	256,495	96,225	24,000	12,470	1,822	18,801	4,947	252,610	75,254	2,969,389
Per cent	5.2	0.5	4.8	8.6	38.2	0.8	4.9	0.1	7.4	0.2	100.0	100.0	100.0

[1] Does not include intentional slash-burns (for this item *see* Table 121.)

(109) FIRE CAUSES, AREA BURNED, FOREST SERVICE COST, AND TOTAL DAMAGE, 1968

Cause	Fire Causes		Area Burned		Forest Service Cost		Total Damage	
	Number	Per Cent	Acres	Per Cent	Cost	Per Cent	Damage	Per Cent
Lightning	708	43.1	5,339	16.0	$397,797	56.9	$126,759	18.7
Recreational (campers, etc.)	131	8.0	777	2.3	20,751	3.0	11,284	1.7
Railroads operating	121	7.3	174	0.5	10,686	1.5	3,351	0.5
Smokers	179	10.9	550	1.7	36,424	5.2	9,345	1.4
Brush-burning (not railway or right-of-way clearing)	65	3.9	1,351	4.0	19,326	2.8	10,501	1.5
Range-burning	53	3.2	10,684	32.0	27,572	3.9	11,425	1.7
Road, power-, telephone-, and pipe-line construction	34	2.0	47	0.1	659	0.1	831	0.1
Industrial operations (logging, etc.)	126	7.6	2,282	6.8	43,857	6.3	212,780	31.3
Incendiary	23	1.4	187	0.6	8,871	1.3	2,830	0.4
Miscellaneous known causes	193	11.8	11,922	35.8	114,565	16.4	290,105	42.7
Unknown causes	14	0.8	68	0.2	18,280	2.6	61	(1)
Totals	1,647	100.0	33,381	100.0	$698,788	100.0	$679,273	100.0

1 Negligible.

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

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	Total, 10 Years
Total number of fires	1,474	2,635	3,102	1,536	2,345	1,120	2,685	1,967	3,216	1,647	21,727
Area burned (acres)	273,631	285,820	1,227,159	45,617	46,346	7,746	307,132	54,788	244,483	33,381	2,526,103
Standing timber destroyed or damaged (M cu. ft.)	8,481	122,293	315,532	3,972	7,953	306	114,585	3,506	170,555	5,361	752,544
Amount salvable (M cu. ft.)	2,110	40,010	119,223	1,279	3,357	117	40,872	1,453	110,136	759	319,316
Damage to forests	$1,342,849	$3,725,361	$12,820,694	$311,445	$308,475	$25,793	$5,194,473	$757,017	$4,751,919	$455,872	$29,693,898
Damage to other forms of property	869,569	299,657	368,476	280,700	225,797	151,338	567,162	164,352	927,201	223,400	4,077,652
Total damage	$2,212,418	$4,025,018	$13,189,170	$592,145	$534,272	$177,131	$5,761,635	$921,369	$5,679,120	$679,272	$33,771,550

FIRES CLASSIFIED BY FOREST DISTRICT AND COST PER FIRE OF FIRE-FIGHTING, 1968

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	174	113,715	16.3	1,184	25	14.4	1.5	149	85.6	9.0	78	48	18	2	3
Prince Rupert	114	32,155	4.6	784	37	32.5	2.3	77	67.5	4.7	42	24	11	---	---
Prince George	201	149,424	21.4	803	9	4.0	0.5	192	96.0	11.6	161	20	4	4	3
Kamloops	788	323,270	46.2	715	210	26.6	12.8	578	73.4	35.1	289	243	42	2	2
Nelson	370	80,224	11.5	477	59	15.9	3.6	311	84.1	18.8	167	127	16	1	---
Totals	1,647	698,788[1]	100.0	741	340	.....	20.6	1,307	.....	79.4	737	462	91	9	8
Per cent	100.0	.....	.....	.....	20.6	.....	.....	79.4	.....	.....	44.7	28.2	5.5	0.5	0.5
Ten-year average, 1959–68	2,173	2,173,813	.....	.....	638	.....	.....	1,535	.....	.....	839	499	130	28	39
Per cent	100.0	.....	.....	.....	29.4	.....	.....	70.6	.....	.....	38.6	23.0	5.9	1.3	1.8

[1] Cost correct to date, subject to later revision.
Cost to other parties (570 cost fires), $163,856. Cost to Forest Service (943 cost fires), $698,788.
Detailed final costs are published one year in arrears in the table " Forest Protection Expenditures " in each Annual Report.

(112) PROSECUTIONS, 1968

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	Deny Access, Sec. 152 (6)	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	3	1	2	----	----	----	----	----	----	2	$200	----	----	1	----
Prince Rupert	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Prince George	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Kamloops	11	9	----	----	2	----	----	----	----	11	550	----	----	----	----
Nelson	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Total	14	10	2	----	2	----	----	----	----	13	$750	----	----	1	----
Ten-year average, 1959–68	33	11	11	5	4	----	----	----	2	27	$932	1	1	2	2

(113) ANALYSIS OF SUPPRESSION-CREW FIRE-FIGHTING ACTIVITIES, 1968

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)	209	194	4	6	4	1
Over ¼ acre and up to 1 acre	33	9	21	3	---	---
Over 1 acre and up to 5 acres	29	11	2	11	4	1
Over 5 acres and up to 50 acres	12	1	1	3	6	1
Over 50 acres	6	---	---	1	---	5
Totals	289	215	28	24	14	8

(114) CONSTRUCTION OF PROTECTION ROADS AND TRAILS, 1968

	Light	Medium	Heavy	Total
	Miles	Miles	Miles	Miles
New road construction	14	16	24	54
Road maintenance	715	461	243	1,419
Totals, road construction and maintenance	729	477	267	1,473
New trail construction	3	---	5	8
Trail maintenance	69	15	7	91
Totals, trail construction and maintenance	72	15	12	99

(115) SUMMARY OF LOGGING SLASH REPORTED IN 1968, VANCOUVER FOREST DISTRICT

	Acres	Total Acres
Area covered by full hazard reports (Class A)—		
Broadcast	57,549	
Spot	2,676	
		60,255
Reported and not recommending slash disposal (Class B)		21,544
Reported on very small operations exempted without special examinations (Class C)		424
Total area of slash reported on during 1968		82,193

(116) ANALYSIS OF PROGRESS OF SLASH DISPOSAL, 1968, VANCOUVER FOREST DISTRICT

	Acres
Slash disposal required 1968 instructions	60,225
Slash disposal required from previous seasons	36,844
Total disposal required, 1968	97,069

RESULTS OF 1968 SLASH BURNS

	Acres	Acres	Acres
Area instructed, 1968	69,381		
Area abated, 1968		53,063	
To be reviewed in 1969			16,318
Area on extension	33,225		
Area abated, 1968		24,312	
Area to be reviewed in 1969			8,913
Areas assessed for failure to burn	3,169		
Area abated, 1968		456	
Area to be reviewed in 1969			2,713
Total acres to be reviewed in 1969			27,944
Areas abated by other means		5,977	
Total acres abated		83,808	

(131) TRAINING-SCHOOL ENROLMENT AND GRADUATIONS

ENROLMENT, 1968

Basic course	24
Advanced course	*Nil*

GRADUATES, 1968

Basic course	24
Advanced course	24

TOTAL GRADUATES SINCE 1946

Basic course	148
Advanced course	319
Grand total	467

(141) FOREST REVENUE, 1964–68

	12 Months to Dec. 31, 1964	12 Months to Dec. 31, 1965	12 Months to Dec. 31, 1966	12 Months to Dec. 31, 1967	12 Months to Dec. 31, 1968
Timber-licence rentals and fees	$362,707.84	$720,919.31	$771,170.84	$825,100.86	$676,038.52
Timber-berth rentals and fees	15,639.09	15,024.33	14,368.52	13,436.63	141,074.38
Timber-lease rentals and fees	68,446.06	86,230.58	106,852.12	76,121.31	87,083.55
Timber-sale rentals and fees	510,469.54	765,651.17	948,568.96	881,812.16	899,849.28
Timber-sale stumpage	37,221,058.19	42,031,437.70	42,643,936.30	34,732,239.51	44,390,570.94
Timber-sale cruising and advertising	487,503.76	325,847.00	223,236.17	229,857.61	250,745.80
Timber royalties	2,610,292.87	2,629,476.11	3,079,058.68	3,509,720.06	4,954,555.27
Grazing permits and fees	139,313.50	151,079.95	153,507.63	310,718.84	350,351.93
Forest protection tax	522,672.70	559,007.55	570,202.65	579,928.17	947,389.12
Miscellaneous	210,330.47	273,738.16	245,350.02	394,388.82	473,324.50
Weight scaling			212,275.98	396,894.14	635,742.30
Federal Forestry Agreement			1,379,936.16	542,146.97	34,390.97
Totals	$42,148,434.02	$47,558,411.86	$50,348,464.03	$42,492,365.08	$53,841,116.56

AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, 1968

District	Royalty	Miscellaneous	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Forest Development Fund	Total
			Scaling Expenses	Scaling Fees				
Vancouver	$3,697,119.93	$31,530.27	$394,514.10	$1,764,842.96	$19,825,499.05	$628,590.23	.....	$26,342,096.54
Prince Rupert	682,932.93	7,137.49	63,358.94	195,833.39	6,409,117.56	239,391.52	.....	7,597,771.83
Prince George	251,778.66	7,655.62	.....	.....	10,260,422.96	358,744.10	.....	10,878,601.34
Kamloops	379,259.00	21,617.55	.....	.....	7,602,503.16	367,056.72	.....	8,370,436.43
Nelson	229,842.21	147,480.64	.....	.....	4,195,406.43	274,928.78	.....	4,847,658.06
Totals, 1968	$5,240,932.73	$215,421.57	$457,873.04	$1,960,676.35	$48,292,949.16	$1,868,711.35	.....	$58,036,564.20
Totals, 1967	$3,097,283.30	$155,429.93	$460,492.24	$1,654,526.83	$33,111,713.22	$1,561,397.57	.....	$40,040,843.09
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

(143) AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, FISCAL YEAR 1967/68

District	Royalty	Miscellaneous	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Forest Development Fund	Total
			Scaling Expenses	Scaling Fees				
Vancouver	$2,214,534.80	$16,845.62	$385,841.68	$1,536,615.23	$14,344,981.75	$454,098.90	.....	$18,952,917.98
Prince Rupert	415,887.16	4,215.49	76,450.76	193,542.82	3,899,449.01	191,101.00	.....	4,780,646.24
Prince George	77,679.72	7,353.30	.....	.....	6,914,301.62	307,645.52	.....	7,306,980.16
Kamloops	224,334.03	28,244.78	.....	.....	4,970,811.97	307,509.58	.....	5,530,900.36
Nelson	168,575,19	110,584.42	.....	.....	2,399,418.08	175,022.37	.....	2,853,600.06
Totals, 1967/68	$3,101,010.90	$167,243.61	$462,292.44	$1,730,158.05	$32,528,962.43	$1,435,377.37	.....	$39,425,044.80
Totals, 1966/67	$3,014,116.07	$97,618.77	$418,649.05	$1,633,282.45	$38,999,030.55	$1,614,407.62	.....	$45,777,104.51
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

(144) FOREST REVENUE, FISCAL YEAR 1967/68

Timber-licence rentals and fees	$897,696.29
Timber-berth rentals and fees	13,425.13
Timber-lease rentals and fees	88,790.77
Timber-sale rentals and fees	849,029.82
Timber-sale stumpage	33,505,020.40
Timber-sale cruising and advertising	228,076.84
Timber royalties	3,214,893.35
Grazing permits and fees	355,168.23
Forest protection tax	583,651.52
Miscellaneous	405,766.68
Weight scaling	389,636.70
Federal Forestry Agreement	66,936.96
Total	$40,598,092.69

(145) FOREST SERVICE EXPENDITURES, FISCAL YEAR 1967/68

General administration, protection, and management of forests	$14,105,891
Reforestation and forest nurseries	1,157,363
Forest research	142,558
Public information and education	61,048
Forest Service training-school	126,351
Grant to Canadian Forestry Association	17,500
Engineering services and forest-development roads	3,063,926
Fire suppression	7,148,688
Forest surveys	795,098
Silviculture	1,290,586
Grazing Range Improvement Fund[1]	78,721
Peace River community pastures	20,000
Forestry and Correction Camp Programme	13,000
Total	$28,020.730

[1] Statement provided elsewhere.

(146) SCALING FUND

Deficit, April 1, 1967	$97,395.00
Collections, fiscal year 1967/68	2,202,665.79
	$2,105,270.79
Expenditures, fiscal year 1967/68	2,246,369.38
Deficit, March 31, 1968	$141,098.59
Collections, nine months, April to December, 1968	1,807,781.30
	$1,666,682.71
Expenditures, nine months, April to December, 1968	1,774,026.06
Deficit, December 31, 1968	$107,343.35

(147) GRAZING RANGE IMPROVEMENT FUND

Surplus, April 1, 1967	$2,107.03
Government contribution (section 13, *Grazing Act*)	78,544.80
	$80,651.83
Expenditures, fiscal year 1967/68	78,721.26
Surplus, March 31, 1968	$1,930.57
Government contribution (section 13, *Grazing Act*)	177,584.11
	$179,514.68
Expenditures, nine months, April to December, 1968	126,822.52
Surplus, December 31, 1968	$52,692.16

(148) PEACE RIVER POWER TIMBER SALVAGE

Expenditures, fiscal year 1967/68	$2,332,014.54
Recovered from British Columbia Hydro and Power Authority	1,000,000.00
Balance	$1,332,014.54

(151)

DISTRIBUTION OF PERSONNEL, 1968

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	-----	-----	-----	-----	-----	8	8
Director of Grazing	-----	-----	-----	-----	-----	1	1
Forest Counsel and Personnel Officers	-----	-----	-----	-----	-----	3	3
District Foresters and Assistant District Foresters	2	2	2	2	2	-----	10
Foresters	12	10	13	15	12	101	163
Agrologists and Agrologists-in-training	-----	-----	2	6	2	-----	10
Engineers	-----	-----	-----	1	-----	28	29
Forest Protection Officers	3	2	3	1	2	2	13
Technical Forest Officers	102	87	109	126	110	39	573
Superintendent of Scaling and Assistants	18	-----	4	3	-----	-----	25
Scalers, Official	68	1	50	3	-----	-----	122
Scalers, Official, temporary	85	15	-----	36	-----	-----	136
Comptroller, Accountant, and Audit Assistants	-----	-----	-----	1	-----	6	7
Engineering, Mechanical and Radio	6	2	5	5	3	14	35
Public Information Officers	-----	-----	-----	-----	-----	3	3
Reforestation, Research, and Survey Assistants	-----	1	-----	3	-----	36	40
Nursery Superintendents	-----	-----	-----	-----	-----	8	8
Draughtsmen and Mapping Assistants	5	3	5	6	4	29	52
Clerks, Stenographers, and Messengers	92	42	35	34	25	97	325
Superintendent and Foremen, Forest Service Maintenance Depot	9	-----	-----	-----	-----	-----	9
Mechanics, Carpenters, and Technicians	42	3	9	4	3	60	121
Launch Crewmen	18	9	-----	-----	-----	2	29
Forest Assistants	36	41	43	52	32	3	207
Truck, Tractor, and Equipment Operators	6	-----	2	3	2	15	28
Foremen	3	2	-----	3	-----	23	31
Miscellaneous[3]	17	5	2	3	3	66	96
Totals, continuous personnel	524	225	284	307	200	548	2,088
Seasonally Employed							
Technical Forest Officers	5	-----	10	6	-----	8	29
Patrolmen	-----	1	-----	-----	3	-----	4
Lookoutmen	32	23	32	32	41	-----	160
Dispatchers, Radio Operators, and Clerks	3	2	3	4	7	1	20
Fire-suppression Crewmen	54	-----	20	65	44	-----	183
Reforestation—Snag-fallers, Planters, etc.	6	-----	30	-----	-----	1,362	1,398
Truck, Tractor, and Equipment Operators	6	6	6	4	5	31	58
Student and Survey Assistants and Engineering Aides	22	-----	-----	6	-----	82	110
Forest Assistants	-----	1	3	-----	-----	81	85
Foremen	3	-----	-----	-----	-----	68	71
Miscellaneous[4]	8	8	6	81	39	112	254
Totals, seasonal personnel	139	41	110	198	139	1,745	2,372
Totals, all personnel	664	266	394	505	339	2,292	4,460

[1] Includes Vancouver Scaling Office 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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