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

1967

Printed by A. SUTTON, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia.
1968

VICTORIA, B.C., February, 1968.

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

MAY IT PLEASE YOUR HONOUR:

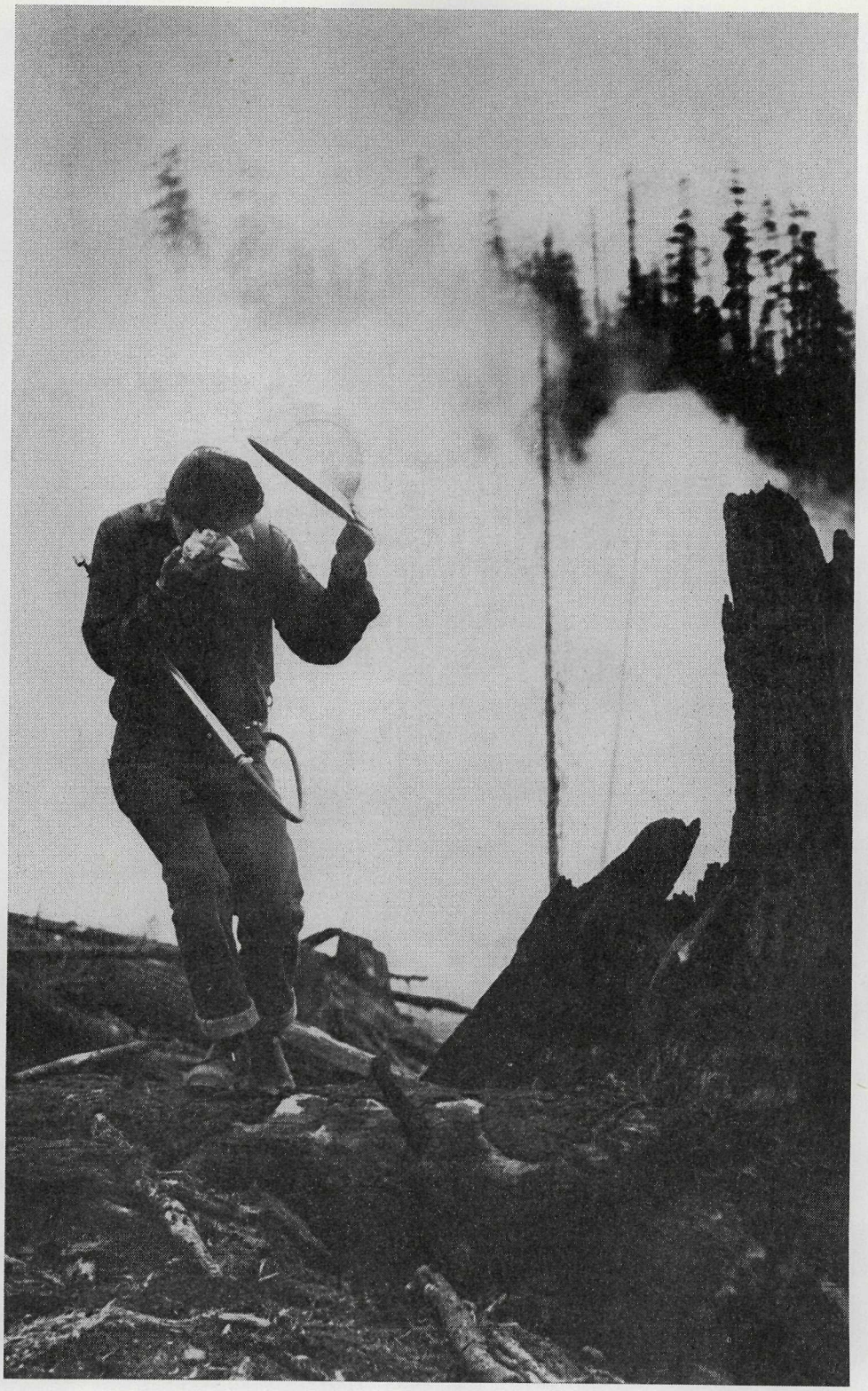
Herewith I beg respectfully to submit the Annual Report of the Forest Service of the Department of Lands, Forests, and Water Resources for the calendar year 1967.

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

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

SIR,—There is submitted herewith the Annual Report on activities of the Forest Service during the calendar year 1967.

F. S. McKINNON,
Deputy Minister of Forests.



During the prolonged and severe 1967 forest fire season, air tankers and helicopters played a major role, but the individual fire-fighter, working long hours under extremely difficult conditions, was still the key man.

CONTENTS

	PAGE
1. Chief Forester's Report	11
2. Forest Inventory Division	14
Field Programme	14
Forest Classification and Sampling	14
Growth Studies	14
Loss-factor Studies	14
Operations	15
Special Field Projects	17
Office Programme	17
Forest Mapping	17
Area and Volume Summaries and Distribution of Information	18
Development Planning	18
3. Forest Research Division	20
Cowichan Lake Experiment Station	20
Field Programme	20
Nursery Fertility Studies	20
Soil Classification	20
Thinning and Pruning	21
Planting	21
Prince Rupert Forest District	21
Prince George Forest District	21
Kamloops Forest District	21
Nelson Forest District	21
Data-processing and Statistical Analysis	21
Canada Land Inventory	22
4. Reforestation Division	23
Forest Nurseries	23
Improvements	24
Forest Tree Seed	25
Reconnaissance and Survey Work	26
Planting	26
Co-operation	27
Interdepartmental Forestry and Corrections Camp Programme	27
5. Public Information and Education Division	29
News Releases and Special Articles	29
Photography	29
Motion-picture Production	30
Film Library	30
School Lecture Programme	31
Signs	31
Library	31
Exhibits	31
Advertising	32

6. Forest Management Division 33
Market Prices and Stumpage Trends 33
Lumber Prices 33
Log Prices 34
Stumpage Prices 34
Stumpage Adjustments 35
Peace River Flood Basin 35
Columbia Flood Basin 35
Close Utilization 36
Sustained-yield Programme 36
Public Sustained-yield Units 36
Pulp Harvesting Forests 36
Tree-farms 36
Tree-farm Licences 36
Silviculture 37
Scaling 37
7. Grazing Division 38
General Conditions 38
Range 38
Hay 39
Markets and Prices 39
Range Management 39
Range Surveys 40
Range Improvements 40
Peace River Pastures 41
Co-operation 42
Administration 42
Grazing Permits 43
Hay Permits 43
Grazing Fees 43
Control and Enforcement 44
8. Engineering Services Division 45
Engineering Surveys 45
Design 45
Forest Management Engineering 45
Road Construction and Maintenance 46
Buildings and Marine Services 47
Building Construction 48
Water Supply and Irrigation 48
Marine Activities 48
Mechanical Section 49

8. Engineering Services Division—*Continued*
Forest Service Maintenance Depot 49
Marine Work 49
Prefabrication and Carpentry Shop 50
Mechanical Work 50
Transport Pool and Warehousing 50
Depot Maintenance 50
Radio Section 51

9. Forest Protection Division 53
Weather 53
Fires 53
Occurrence and Causes 53
Cost of Fire-fighting 54
Damage 54
Protection Planning and Research 54
Fire Statistics 54
Visibility Mapping and Lookout Photography 54
Fuel-moisture Indicator Sticks 54
Insect Survey and Control 55
Research Projects 55
Fire-suppression Crews 55
Aircraft 55
Roads and Trails 56
Slash and Snag Disposal 56
Vancouver Forest District 56
Prescribed Burns 57
Interior Forest Districts 57
Fire-law Enforcement 57
Forest Closures 57

10. Forest Service Training-school 59
Extra Courses and Functions 60
Acknowledgments 60
Construction 60

11. Accounting Division 61
Fiscal 61
Administration 62

12. Personnel Division 63
Communications and Training 63
Establishment, Recruitment, and Staff Turnover 63
Classification, Salaries, and Working Conditions 64

13. Personnel Directory, 1967 66

14. Appendix—Tabulated Detailed Statements to Supplement Report of the Forest Service 69

REPORT OF THE FOREST SERVICE, 1967

CHIEF FORESTER'S REPORT

Due to unsettled conditions in some sectors of the forest industry, there was a minor drop in the 1967 timber scale billed in British Columbia. At the end of the year, the scale totalled 1,572,598,592 cubic feet, compared to the 1966 scale of 1,602,437,448 cubic feet, a drop of 1.86 per cent.

On the other hand, a report from the British Columbia Bureau of Economics and Statistics showed that unduplicated selling values of forest-industry shipments in 1967 rose to $1,190,000,000, an increase of $30,000,000 over 1966 shipments and $75,000,000 over those of 1965. Of the 1967 total, pulp and paper mills accounted for $463,000,000, compared to $457,000,000 in 1966 and $430,000,000 in 1965.

However, there was a serious decline in the direct forest revenue, which decreased 15.6 per cent during the calendar year to $42,492,365. This decline mainly reflected the drop in the total amount charged to logging operations. Another significant factor was the reduction of $837,789 in payments received under the Federal-Provincial Forestry Agreement, which was not renewed by the Federal Government when it expired on March 31st. The largest decrease occurred in timber-sale stumpage, which contributes the bulk of the revenue and was off 18.5 per cent to $34,732,239.

Log export, which has become a subject of contention in the United States Pacific Northwest, continues to be a small proportion of British Columbia's total annual cut, with 1967 exports amounting to approximately 2.2 per cent of the year's timber scale. This was an increase of 0.7 per cent over the previous year and was mainly the result of a 1966 stockpiling of logs beyond industry's requirements.

There was no significant change in the sustained-yield programme during the year.

Reforestation, however, took a major step toward achievement of the Forest Service objective of producing 75,000,000 seedlings annually by 1975. The significant development was the preparation of new nursery facilities, together with improvements at existing establishments. A highlight of the reforestation programme was the official opening of new nurseries at Koksilah on Vancouver Island and Red Rock near Prince George.

By the end of the year a total of 241 acres was available for or in production, while a further 243 acres were in various stages of preparation. This is the initial step in the Service's plan to increase planting on a regular schedule. To sustain this programme, approximately 17 tons of seed is in storage. Mechanical sowing of seed-beds was introduced in the nurseries on an operational basis during the year.

Planting by all agencies totalled 17,805,800 trees on 48,579 acres, with the Forest Service planting 32 per cent of the total. Contract planting of Crown lands was instituted on a trial basis.

The co-operative Forestry and Corrections Camp Programme continues to play a significant part in all aspects of reforestation.

A prolonged and severe fire season brought Forest Service suppression costs up to approximately $7,000,000, a sum far in excess of the 10-year average of a little over $2,500,000. However, despite a total of 3,216 fires, the area burned was held

down to 244,483 acres, compared to the 10-year average of 2,314 fires and 455,814 acres burned.

Due to the extreme and protracted hazard, nine forest closures were imposed, while more than 20,000 hours were flown in the heaviest use of aircraft in the Province's history of fire suppression.

Although the number of acres on which snag-falling was completed totalled 97,580 acres, or close to the 1966 total of 99,497 acres, the area of slash-burning was down about 8,000 acres to 75,989 acres in the Vancouver Forest District. The prescribed burning programme in the Interior forest districts was down 10,000 acres to a total of 15,500 acres, due to the severity of the fire season.

The balsam woolly aphid (*Adelges piceæ*) survey to delineate the general limits of infestation in South-western British Columbia was essentially completed in 1967. No new outbreaks were found beyond the 1966 perimeter, although two positive 1966 samples had noticeably increased in size.

The variety of projects undertaken by the Engineering Services Division continued to increase during the year. The increase was notable for the investigation, design, and construction of irrigation systems and other improvements necessary for the enlargement of nursery facilities.

Modernization of the Forest Service water fleet continued with completion of the 50-foot ranger vessel " Coast Ranger."

The forest road programme continued at about the same level of activity as in 1966, with construction of 49.6 miles of new road, bringing the total completed in the programme since 1950 to 1,007.1 miles.

Work proceeded on a further 14,560 acres in preparation of navigation channels and other industrial and public use areas within the pondage of the W. A. C. Bennett Dam.

The honorary curator of the Forest Service museum had a rewarding year with the addition of some 30 donations, and completion of the film "A Change of Pace " as a Centennial project.

For some years now, the Research Division programme has been mainly directed to a wide variety of regeneration problems. The need for better seed and a better knowledge of seed form the basis for a comprehensive programme with Douglas-fir in which tree-breeding, the development of seed orchards from plus trees, and provenance tests are important parts. During 1967 somewhat similar programmes were initiated to improve the quality of lodgepole pine and white and Engelmann spruce. This work will be centred at the new Red Rock Nursery and Research Centre.

Throughout the Interior, other studies are concerned with natural factors affecting production of seed, seed dissemination, and favourable seed-beds. The use of seed for direct seeding also is receiving considerable attention. Under the right circumstances, acceptable regeneration can be achieved in this way.

In addition to regeneration research, the Division has a specialist engaged in an analysis of various routine procedures associated with management activities, with the objective of increasing efficiency through the use of computers.

Public sustained-yield unit inventories were continued by the Forest Inventory Division during the year and, inclusive of 1966 field work, unit survey information now is available for 65,000,000 acres. A further 20,000,000 acres are covered by maintenance surveys.

Also continued were the growth and yield programme and loss-factor studies to provide basic information for inventory compilation and allowable cut calcula-

tions. Regeneration plantability surveys were done in the Adams River area of the Kamloops Forest District and in nine areas in the Nelson Forest District.

The Grazing Division report shows that the extreme summer weather conditions adversely affected forage production and animal weight gains on Crown range. Water shortages, heat, and other factors related to the weather also complicated both stock and range management. However, stock came off the range in fair condition and, with the exception of recently seeded areas, there was no permanent damage to the range. Hay production was generally adequate and cattle prices averaged a little higher than in 1966.

The number of cattle on Crown range dropped slightly for the first time in many years. Use of Crown range by horses increased slightly, but use by sheep now is negligible. A regulation was passed under the *Grazing Act* providing for an upward revision in grazing fee rates. An expanded range survey and improvement planning programme was undertaken.

Changes in senior personnel in the Forest Service during 1967 involved the retirement of two division heads which resulted in appointment of an engineer in charge of the Engineering Services Division, a new head of the Reforestation Division, and a new forester in charge of the Forest Service Training-school.

The permanent Civil Service establishment of the Service remained at 884, with no new positions added.

Graduation of 24 men from the basic course at the training-school brings to 419 the number who have graduated from basic and advanced courses since the school went into operation in 1946. This includes 124 from basic courses and 295 from advanced courses. The 15th class of advanced trainees, consisting of 24 men, enrolled on September 20, 1967, and completed the first term of the course on December 19th.

There were two important amendments to the *Forest Act* during the year. One, an amendment to section 116, extended provisions requiring disposal of slash to the whole of the Province. Previously they had applied only to the Coast districts. The Forest Service has discussed implementation of the section with industry in the Interior and is moving slowly.

The other amendment was addition of subsection (18) to section 150 of the Act. This addition made provision for the Minister to declare timber left on the beaches forfeit to the Crown and to offer it for sale. Subsequently there was sale of five beach-clearing licences on the Coast and one in the Interior.

Other amendments involved only minor changes in the Act and were mainly of a housekeeping nature.

FOREST INVENTORY DIVISION

Public sustained-yield unit inventories continued. Inclusive of 1966 field work, unit survey information is now available for 65,000,000 acres. A further 20,000,000 acres are covered by maintenance surveys.

Our growth and yield programme and loss-factor studies, to provide the basic information for inventory compilation and allowable cut calculations, were continued. Studies on applications of 70-mm. photography were continued. Regeneration plantability surveys were done in the Adams River area of the Kamloops Forest District and in nine areas of the Nelson Forest District.

The continuous staff employed by the Division numbers 146, including 58 foresters, 11 technical personnel, 61 draughting and clerical staff, and 16 mechanical, warehouse, launch crew, and operations personnel. To supplement the professional and technical staff during the field season, 89 seasonal employees were engaged.

FIELD PROGRAMME

Forest Classification and Sampling

Forest inventories to unit survey standard were completed for 11 public sustained-yield units and one unregulated area in 1967. The area involved in each unit is shown in Table B, which outlines the production of interim base maps for the year.

Classification crews of the Division completed 9,527 air calls and 6,425 ground examinations. Sampling crews established 2,098 multi-plot samples. In a co-operative arrangement with the Division, tree-farm licence crews established 163 samples. Although these samples may not apply to stands in areas of current field work, they can be used to supplement information in similar forest types in public sustained-yield units.

Growth Studies

In the 1967 growth and yield programme, 95 permanent plots were established in five Interior public sustained-yield units and distributed as follows: Nakusp, 13; Spallumcheen, 36; Shuswap, 26; Barriere, 16; and Raft, 4. The types sampled were 49 Douglas-fir, 13 larch, 5 cedar-hemlock, and 28 lodgepole pine. Conditions sampled were: Ages ranging from 21 to 100 years, sites from good to poor with the majority in the medium class, and elevations ranging from 1,600 to 4,400 feet.

During the year the growth section has produced 140 local and zonal volume-over-age curves. These curves, or site-class yield tables in graphical form, supply mean annual increment at any age.

Over 35 inquiries and miscellaneous requests for growth information were processed during the year.

Loss-factor Studies

Decay studies were concentrated within the wet belt hemlock-cedar with a total of 1,625 trees felled and measured to provide local cull factors. Twenty sample plots were located in the Ross and Scotch Creek drainages of the Shuswap Public Sustained-yield Unit, while another 40 were established in the North Thompson Public Sustained-yield Unit within a 10-mile radius of the town of Blue River.

One-half of the samples in the North Thompson unit were double sampled in connection with a 70-mm. helicopter photography project. Objectives include the analysis of sampling errors of this method of sampling and the correlation of external suspect characters, such as dead tops, with internal defect within the tree. Suspect characters, such as dead tops, are easily identified on this large-scale photography.

BRITISH COLUMBIA FOREST SERVICE
INVENTORY DIVISION

MAINTENANCE SURVEYS
1958-1960

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

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

AVAILABLE INFORMATION

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

UNIT SURVEYS (1961 +)

COMPLETED (1961-66 fieldwork)

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

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

AVAILABLE INFORMATION

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

IN PROGRESS (1967 fieldwork)

34. Barriere
35. Bowron
36. Edgewood
37. Granby
*38. Kingcome
39. Nakusp
40. North Thompson
41. Purden
42. Queen Charlotte
**43. Quadra
44. Raft
45. Slocan

Mapped area includes:- *Klinaklini
**Sayward

BRITISH COLUMBIA
DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES

HONOURABLE R. G. WILLISTON, MINISTER

Scale

40 30 20 10 0 40 80 120 160 MILES

PROGRESS OF FOREST-COVER MAPPING
BASED ON MAINTENANCE SURVEYS AND UNIT SURVEYS
OF AREAS UNDER PUBLIC MANAGEMENT
AS AT DECEMBER 31, 1967

A further 1,239 lodgepole pine trees were felled and measured in the Riske Creek, Puntzi Lake, and Nimpo Lake areas of the Chilcotin Plateau. One purpose of this work was to establish local cull factors for the mature lodgepole pine timber, which comprises 67 per cent of the total wood volume in the Stum and Chilko Public Sustained-yield Units. In conjunction with these decay measurements, 82 dominant lodgepole pine trees were sectioned for stem analysis studies in order to correct the present site curves used for this species by the Forest Inventory Division. The wood sections were sanded and then photographed to provide a permanent record for other studies, such as taper analysis and growth predictions.

Data on depletion losses through fire, insect attack, and forest-land alienations is being gathered from various agencies in order to improve present predictions as they affect the allowable cut.

Operations

In conducting the field programme, six land base camps were established within the project areas. One of these, the Purden-Bowron, was located adjacent to an Engineering Services Division construction camp, enabling Inventory Division personnel to utilize the cookhouse and other facilities available. Some 70 prefabricated tent units were erected at the camp-sites, for cooking, dining, crew accommodation, washrooms, and equipment storage. The launch " Forest Surveyor " and barge " L.C. 6 " again proved to be suitable for coast projects, operating throughout much of the extensive coastline surrounding the Queen Charlotte Public Sustained-yield Unit.

Three helicopters, obtained under contract, transported sampling crews to less accessible areas and were used by forest classifiers for low-level observation flights along predetermined flight plans, to supplement ground information. Excellent flying conditions early in the season enabled most projects to make good initial progress. This was fortunate because helicopters later were frequently diverted to fire-control operations. A total of 840 hours was flown on all projects: 565 hours for forest classification, 175 hours for transporting sampling crews, and the remainder for training, ferrying, and field-work inspections.

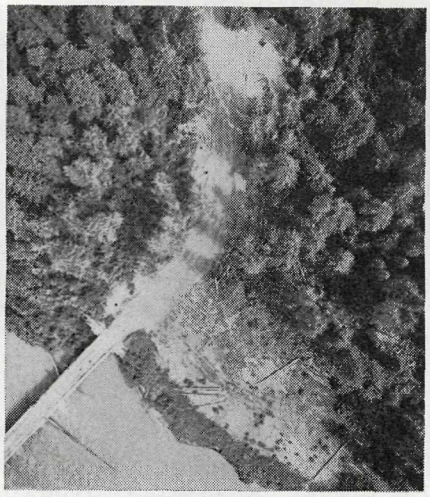
Four-wheel-drive vehicles were used extensively again for access on back roads. In view of experience gained in 1966, when a mechanic was stationed in the vicinity of three projects, two mechanics were assigned for the same purpose this year: one to service and maintain mechanical units for several projects in the North Thompson Valley, and the other in the Nakusp-Grand Forks area.

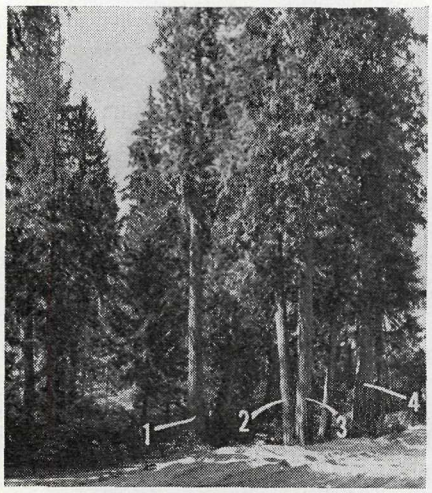
Satisfactory communications between Victoria headquarters, project bases, launches, helicopters, and personnel on remote " fly " camps are essential for effective operational control. This year the divisional network operated 84 A.C. or battery-operated A.M. sets.

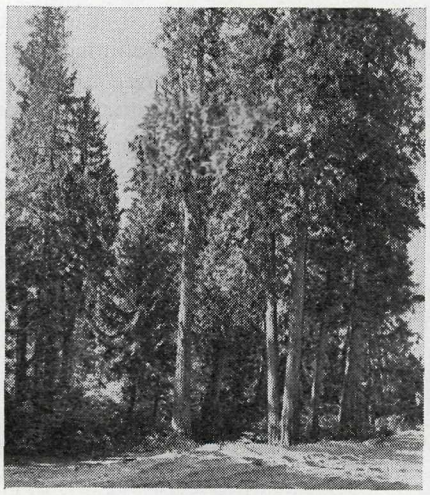
The distribution and handling of the diversity of equipment required on field projects were improved by the recent addition to the main warehouse at Green Timbers, particularly the ramp facilities for loading trucks at deck level. A truck-mounted hydraulic lift greatly facilitated equipment handling and construction at the project base camps.

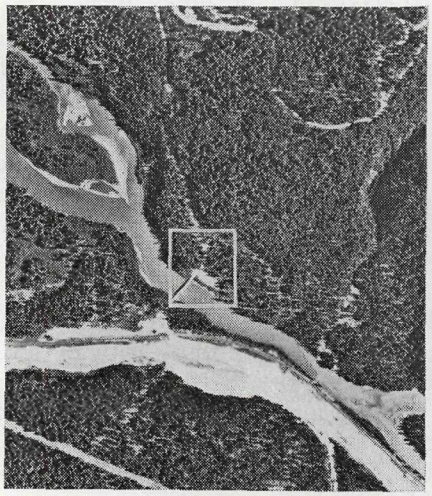
During 1967 the Air Division of the Lands Service was provided with aerial photography requirements for those public sustained-yield units without recent photographic coverage, which are scheduled for inventory in 1968 and 1969. In this regard, some 21,000 square miles were flown at a scale of 20 chains to 1 inch, and approximately 800 square miles at 40 chains to 1 inch. Photographs are now available for the Sechelt area of the Quadra, Niskonlith, Adams, and Kinbasket

3
2
1
4
H
B
C




1
2
3
4





Public Sustained-yield Units, the Kamloops Region Special Sale Area, and the proposed Fort Nelson Public Sustained-yield Unit to be inventoried in 1968. Photographs are also available for the following public sustained-yield units scheduled for 1969: Big Valley, Cottonwood, Ashnola, Similkameen, and Nootka.

Special Field Projects

Plantability studies were carried out on a number of burn areas in the Nelson and Kamloops Forest Districts. In the Nelson district, nine burnt-over areas were examined, covering approximately 24,577 acres. The areas studied include Salmo–Creston Highway, Howe Creek, McRae Creek, Bear Creek, Gander Creek, Cedar Creek, Silverton Creek, Summit Lake, and Frazer Creek. In the Kamloops district, approximately 16,000 acres were examined in the Adams River area.

A project involving the exchange of 672 acres of Crown land for 672 acres of private land was completed in the Campbell River area.

Studies in the use of fixed-base photography from helicopters continued. Two new Linhof cameras were purchased and flights made to test them. Timber types were photographed in the North Thompson area for a further study of sampling standing timber. A total of 40 samples was photographed. In co-operation with the Engineering Services Division, the Stellako River log drive was photographed, as were several nurseries, various types of clearing in the Peace pondage area, and several bridge-sites. Studies are continuing with the Forest Management and Research Divisions on the use of 70-mm. photography for measuring logging residue.

OFFICE PROGRAMME

Forest Mapping

Table A outlines the final forest-cover mapping, planimetry, and volume estimates completed during 1967, based on the 1966 field projects. Unit survey reports, maps, and map-area and map-volume statements have been issued on all but the partial inventory of the Kingcome Public Sustained-yield Unit.

Table A.—Production of Final Forest-cover Maps for 1966 Projects

Public Sustained-yield Unit	Number of Maps	Scale (Chains to Inch)	Forest and Non-forest Area in Acres			Volume in M Cu. Ft. on Mature Crown Area
			Crown	Alienated	Total	
Chilko (part)	198	20	5,128,324	63,386	5,191,710	2,860,695[1]
Monkman	69	20	1,353,615	13,951	1,367,566	2,375,165[1]
Quadra (Redonda)	121	20	1,774,004	111,546	1,885,550	2,537,783[2]
Skeena (Hazelton)	93	20	1,800,437	56,508	1,856,945	5,232,300[1]
Smithers (extension)	23	20	275,449	.....	275,449	638,564[1]
Stum (extension)	103	20	1,942,028	81,202	2,023,230	1,414,435[1]
Totals	607	.....	12,273,857	326,593	12,600,450	15,058,942

[1] Volumes, 7.1″+d.b.h. close-utilization standard less decay.
[2] Volumes, 9.1″+d.b.h. close-utilization standard less decay.

☆ ☆ ☆ ☆ ☆

The three stereograms opposite are (top) 70-mm. vertical pair of photographs taken at a flying height of 556 feet and a scale of 1:2,160, or 2.7 chains per inch; (centre) horizontal stereo pair showing in particular a clump of red cedar; and (bottom) portion of a 1:15,840, or 20 chains per inch, standard inventory pair of photographs. In the top pair, note the three species marked H, B, C, and the numbered trees. The black arrow indicates the direction of view to the horizontal 70-mm. pair (centre). The numbered trees on the top and centre photographs indicate the same trees. In the bottom pair, the white rectangle encloses the area photographed by the helicopter with a camera boom and two Linhof aero electric 70-mm. cameras. All three pairs can be viewed with a lens-stereoscope. (Note.—H denotes hemlock; C, cedar; B, balsam.)

Table B indicates the extent of base maps prepared for the 1967 field projects. These areas were base-mapped from 20-chain-to-1-inch air photos flown in 1966. Forest-cover mapping of these projects is now in progress, and maps and reports should be available by the fall of 1968.

Table B.—Production of Interim Base Maps for the 1967 Field Work

Public Sustained-yield Unit	Number of Maps	Scale (Chains to Inch)	Total Estimated Acreage
Barriere	22	20	343,590
Bowron	12	20	191,842
Bowron Lake Unregulated Area	18	20	147,604
Edgewood	20	20	315,465
Granby	33	20	696,520
Nakusp	23	20	331,837
North Thompson	54	20	1,045,580
Purden	37	20	257,990
Queen Charlotte	132	20	1,584,564
Quadra (Sayward)	19	20	247,609
Raft	36	20	603,242
Slocan	30	20	560,695
Totals	436	----	6,326,538

Area and Volume Summaries and Distribution of Information

In addition to the planimetry of 12,600,000 acres required for unit survey reports, 68 inventory summaries were completed for Forest Service management planning purposes. These requests accounted for a total area of 12,963,000 acres and a net timber volume of 11,402,000 M cubic feet.

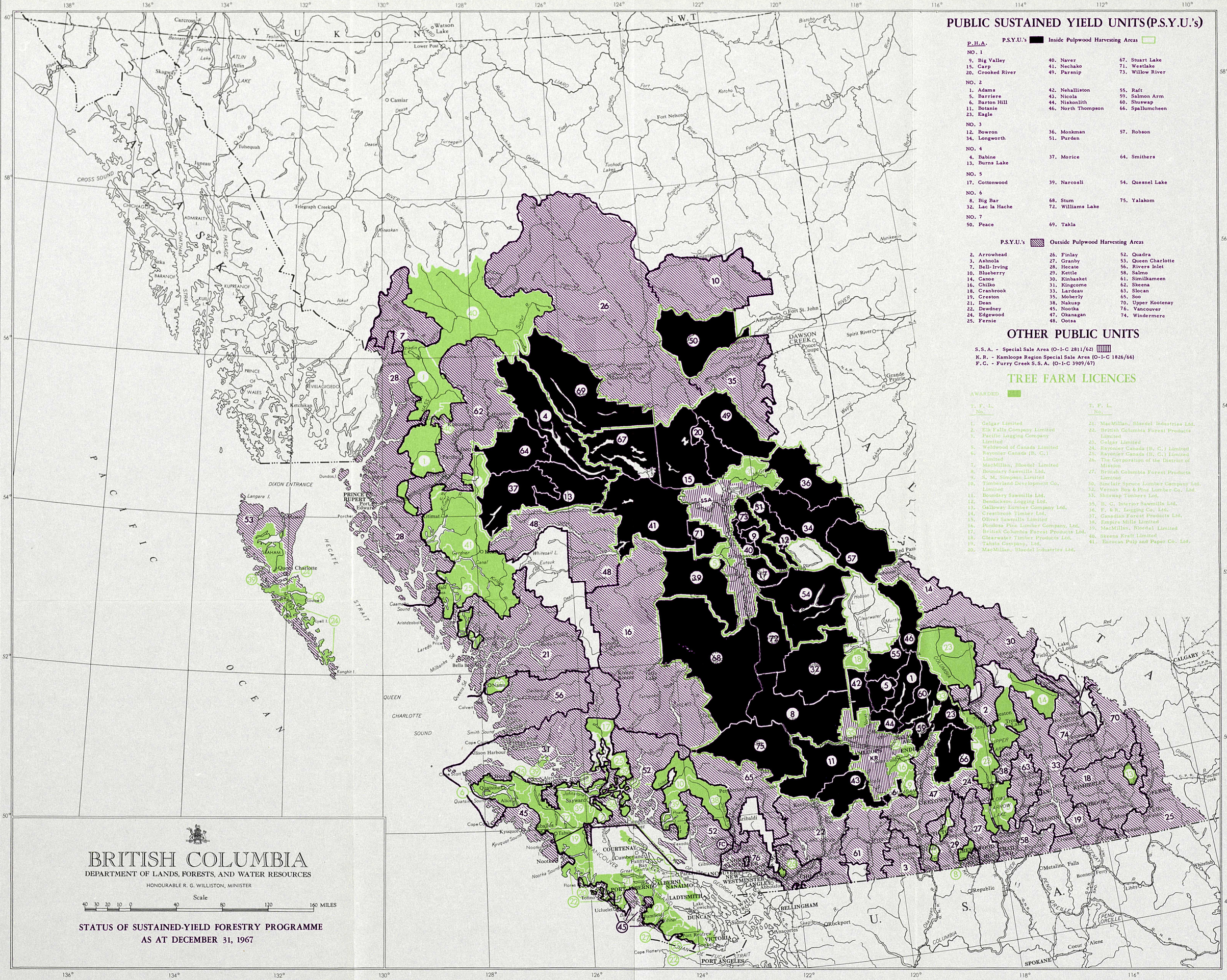
The sale and distribution of maps and other inventory information continued at a high level. The material included 26,700 maps, 310 survey reports, 440 volume-over-age curves, and over 10,000 area and sample volume statements.

All of the 2,356 Provincial samples established during the 1967 field season have been compiled on the basis of the 1962 standard cubic-foot volume tables. The Provincial sample total, 1953 to 1967, inclusive, after deletion of some reject samples, stands at 33,295, exclusive of permanent growth plots. Prints of any compiled sample statement in cubic feet per acre are available at a nominal charge.

During 1967 continued full use was made of the services of the Data Processing Division. It was the year in which third-generation computers (I.B.M. system/360, Models 30 and 40) were installed; reprogramming is now being done and it is hoped to process more data in less time in 1968.

Development Planning

Several isolated blocks of Crown land not currently under regulation were studied for possible addition to a neighbouring sustained-yield unit. As a result, the Simpson River drainage, on the Alberta border and isolated by Kootenay National Park, was added to the Windermere Public Sustained-yield Unit, and unit standard inventory is planned for it in 1968. No decision was made regarding the portion of Upper Bobbie Burns Creek isolated by Tree-farm Licence No. 14, but, for it, too, unit standard inventory is planned in 1968. Two areas isolated on the east side of Bowron Lake Park (Upper Wolverine River, and most of the drainages of Betty Wendle Creek and of Cariboo River) also have not been finalized, but they were inventoried to a unit standard during the 1967 season in conjunction with the Purden-Bowron project.


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, 1967
PUBLIC SUSTAINED YIELD UNITS (P.S.Y.U.'s)
P.S.Y.U.'s Inside Pulpwood Harvesting Areas
P.H.A.
NO. 1
9. Big Valley
15. Carp
20. Crooked River
40. Naver
41. Nechako
49. Parsnip
67. Stuart Lake
71. Westlake
73. Willow River
NO. 2
1. Adams
5. Barriere
6. Barton Hill
11. Botanie
23. Eagle
42. Nehalliston
43. Nicola
44. Niskonlith
46. North Thompson
55. Raft
59. Salmon Arm
60. Shuswap
66. Spallumcheen
NO. 3
12. Bowron
34. Longworth
36. Monkman
51. Purden
57. Robson
NO. 4
4. Babine
13. Burns Lake
37. Morice
64. Smithers
NO. 5
17. Cottonwood
39. Narcosli
54. Quesnel Lake
NO. 6
8. Big Bar
32. Lac la Hache
68. Stum
72. Williams Lake
75. Yalakom
NO. 7
50. Peace
69. Takla
P.S.Y.U.'s Outside Pulpwood Harvesting Areas
2. Arrowhead
3. Ashnola
7. Bell-Irving
10. Blueberry
14. Canoe
16. Chilko
18. Cranbrook
19. Creston
21. Dean
22. Dewdney
24. Edgewood
25. Fernie
26. Finlay
27. Granby
28. Hecate
29. Kettle
30. Kinbasket
31. Kingcome
33. Lardeau
35. Moberly
38. Nakusp
45. Nootka
47. Okanagan
48. Ootsa
52. Quadra
53. Queen Charlotte
56. Rivers Inlet
58. Salmo
61. Similkameen
62. Skeena
63. Slocan
65. Soo
70. Upper Kootenay
74. Vancouver
76. Windermere
OTHER PUBLIC UNITS
S.S.A. - Special Sale Area (O-I-C 2811/62)
K.R. - Kamloops Region Special Sale Area (O-I-C 1826/66)
F.C. - Furry Creek S.S.A. (O-I-C 3909/67)
TREE FARM LICENCES
AWARDED
T. F. L. No.
1. Celgar 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. M. Simpson Limited
10. Timberland Development Co. Limited
11. Boundary Sawmills Ltd.
12. Bendickson Logging Ltd.
13. Galloway Lumber Company Ltd.
14. Crestbrook Timber 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.
21. MacMillan, Bloedel Industries Ltd.
22. British Columbia Forest Products Limited
23. Celgar 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.
PACIFIC OCEAN
YUKON
N.W.T.
ALASKA
U.S.A.
ALBERTA
CALGARY
SPOKANE
PRINCE RUPERT
DAWSON CREEK
Fort St. John
Fort Nelson
Watson Lake
Lower Post
Cassiar
Telegraph Creek
Tulsequah
Juneau
Ketchikan
Sitka
Queen Charlotte
Port Alberni
Nanaimo
Ladysmith
Duncan
Victoria
Port Angeles
Bellingham
Rockport
Sayward
Tofino
Ucluelet
Port Hardy
Port Renfrew
Cape Flattery
Kitimat
Terrace
Prince Rupert
Port Edward
Prince of Wales I.
Queen Charlotte I.
Graham I.
Langara I.
Dixon Entrance
Hecate Strait
Queen Charlotte Sound
Cross Sound
Stephens Passage
Lynn Canal
Chatham Strait
Peace River
Fort St. John
Dawson Creek
Grande Prairie
Spirit River
Fort Nelson
Liard River
Stikine River
Skeena River
Nass River
Columbia River
Kootenay Lake
Arrow Lake
Okanagan Lake
Shuswap Lake
Pend Oreille
Spokane
Coeur d'Alene
Libby
Bonners Ferry
Metaline Falls
Whitefish
Kamloops
Vernon
Nelson
Trail
Revelstoke
Golden
Banff
Lake Louise
Field
Fernie
Cranbrook
Kimberley
Creston
Grand Forks
Penticton
Princeton
Hope
Chilliwack
Abbotsford
Vancouver
New Westminster
Langley
Burnaby
Nanaimo
Courtenay
Port Alberni
Tofino
Ucluelet
Port Hardy
Port Renfrew
Cape Flattery
Port Angeles
Bellingham
Rockport
Sayward

A field planning study was carried out in the Fort Nelson area preparatory to inventory of the proposed Fort Nelson Public Sustained-yield Unit in the coming season. Such study was desirable since never previously had the progressive forest inventory reached the stage where a survey study at unit standards could be considered for an unregulated area.

FOREST RESEARCH DIVISION

A detailed report on the research programme for 1967 will appear in the annual Forest Research Review compiled at the end of the fiscal year.

COWICHAN LAKE EXPERIMENT STATION

The Cowichan Lake Experiment Station is the centre of coastal tree improvement work. An arboretum and clone bank is being developed so that all Douglas-fir breeding material will be conveniently located at one site. For some years, scions from carefully selected plus trees have been grafted to rootstock planted out here. There are now 608 registered clones represented in the clone bank. In addition, seedlings are being grown from provenances representing the extreme southern range of the species for outplanting in the arboretum.

A second series of intraspecific crosses of Douglas-fir, raised at Cowichan, were planted out on eight test sites on Vancouver Island and the Lower Mainland. A total of 16,951 trees was planted, and the over-all survival was 91.5 per cent. Only limited pollinations were possible in 1967 owing to the sparse production of male and female strobili.

Seedlings from wind-pollinated cone collections made from plus trees in 1966 were grown at Cowichan Nursery. These will provide stock for the two proposed seedling seed orchards at Koksilah and Campbell River.

Douglas-fir seedlings, representing 88 provenances, are being grown at Cowichan Lake in preparation for field trials in different climatic zones within the coastal region. Observations and measurements of these seedlings in the nursery included assessments of time of germination and hardening-off, as well as total height at the end of the growing season. Three test sites, 25 to 30 acres each, were selected in different climatic zones for the field trials.

FIELD PROGRAMME

Nursery Fertility Studies

Work to determine suitable fertilizer application rates for coastal conifer nurseries has continued. Similar studies at the new Red Rock Nursery in the Interior were initiated with N, P, K experiments on white spruce. An investigation into the possible value of micro-nutrients for Douglas-fir nursery stock was started at Koksilah. In conjunction with the fertilizer work, study of the relationship between plant internal nutrient concentration and growth is going on. Seasonal changes in Douglas-fir frost hardiness have been followed, using electrolytic methods. Effect of temperature and day-length on frost hardiness are being examined in newly acquired growth chambers.

Soil Classification

A study of soil classification was undertaken as a pilot project to develop technique and criteria for mapping and interpretation of forested lands for Douglas-fir growth on the east coast of Vancouver Island. The project was established in the Sayward portion of the Quadra Public Sustained-yield Unit.

Geology, geomorphology, soils, and vegetation of an area of approximately 300 square miles were studied. As a result, a mapping scheme, suitable for grouping of mapping units at several levels for different management purposes, has been put forward. The system also includes the interpretation of mapping units for objectives such as productivity, species suitability, regeneration probability, logging, and slash-

burning specifications, thinning and fertilizer recommendations, trafficability, and erosion hazard.

Thinning and Pruning

A number of Douglas-fir thinning and pruning plots were remeasured and a final analysis made of a red alder thinning plot.

Planting

A western hemlock planting experiment demonstrated the advantages of a northerly aspect, shade, and a mineral-soil planting medium in obtaining increased survival.

Prince Rupert Forest District

A number of planting and seeding projects established in 1967 were re-examined and a new project initiated to study the relative suitability of different lodgepole pine planting stocks on various sites throughout the North-Central Interior. Preliminary investigations were carried out concerning silvicultural facets of a prescribed burning programme.

Prince George Forest District

Tree improvement research on two Interior species was initiated in 1967. In a study of lodgepole pine, 114 provenances have been collected, ranging from California to the Yukon, with 90 from British Columbia. Seedlings from these sources will eventually be planted out throughout the Province in a study to establish seed transfer rules. The plantations will also serve as banks of breeding material for a possible intraspecific hybridization crossing programme. A reconnaissance of white spruce stands of the North-Central Interior was also made as a preliminary step to a spruce breeding programme. Tree improvement work for the Interior will be centred at the new Red Rock nursery, where office and laboratory facilities are being constructed.

A number of direct-seeding and planting trials were established. Survival of the planted stock, in spite of a hot dry summer, averaged better than 95 per cent.

Kamloops Forest District

Direct-seeding studies continue to be an important part of the research effort in the Wet Belt of the district. Plantations were established to study the altitudinal effect on a specific provenance of spruce. Spacing trials of Engelmann spruce and western larch were also established.

Nelson Forest District

The district was without a research officer in 1966, and the new appointee was required to spend a considerable period in becoming familiar with the forest types of the area. The change in personnel resulted in the loss of certain data on cone-crop periodicity in the good cone year of 1966. The negligible cone crop this year reduced the productivity of two projects dependent on natural seed production. A spruce plantation trial involving five planting dates was established.

A cost-benefit study has been planned to investigate rehabilitation methods suitable to the decadent cedar-hemlock stands of the Interior Wet Belt.

Data Processing

The year has been spent improving the system of official scale computing and organizing further jobs for the I.B.M. 1440 system to handle.

The scalers' tally sheet and order of recording scale data has been reorganized to simplify office procedures, and, as a result, output per key-punch operator has been increased 40 to 50 per cent. The Scale and Royalty Account form has been reorganized to simplify mailing and distribution. As a result of improvements made and up-grading of staff performance, further efficiency has been achieved.

New programmes have been developed to compare check scales and rescales, adjust stumpage changes on Vancouver log market prices, and supply management with additional reports.

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. During the past year, soil surveys were conducted in the Chilcotin-Williams Lake area, the Okanagan, the East Kootenay, and the North-Central Interior. Temporary climatic stations have been established to provide supplementary information in areas not served by official records.

A start is being made toward analysing the accumulated data in terms of alternate land use. The Forest Service is contributing economic studies of the forest resource.

REFORESTATION DIVISION

FOREST NURSERIES

The year 1967 was one of considerable expansion in nursery facilities toward the objective of producing 75,000,000 trees annually by 1975. It is therefore most fitting that the Centenary of Canadian Confederation should be marked by the official opening of two major nurseries—Koksilah and Red Rock.

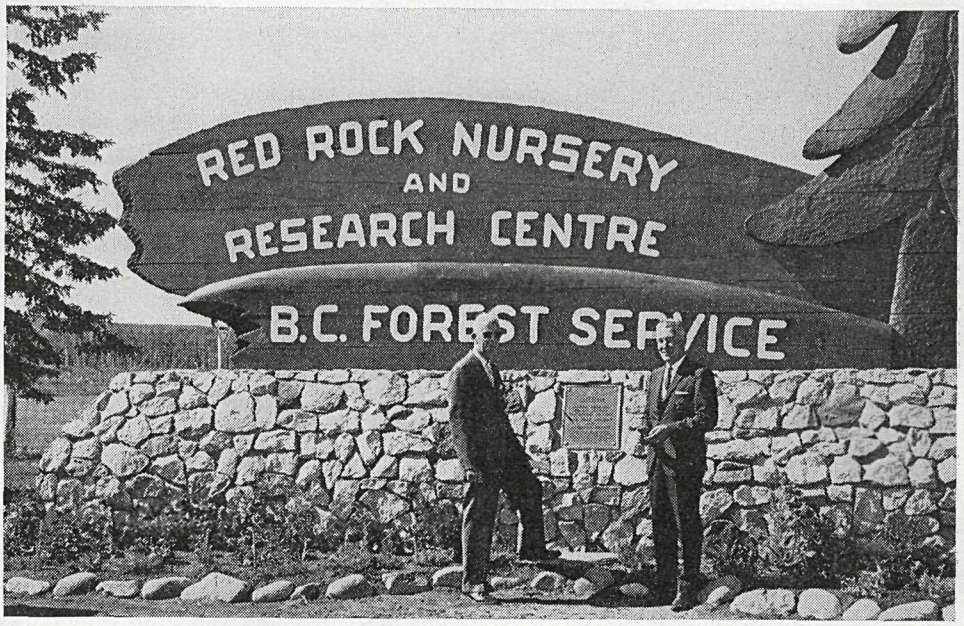
There are now eight nurseries, composed of 19 different fields. This complex, when fully developed, will provide 372 acres suitable for seedling production and an additional 84 acres suitable only for transplant production.

Production of planting stock at the East Kootenay Nursery, located on Perry Creek, was discontinued as economically impractical.

Twelve different areas, totalling 1,460 acres, were examined as to nursery suitability. This work will continue until a further 250 acres suitable for nursery are located.

In the existing nurseries, 7,729 seed-beds were sown, with a planned production of 29,300,000 seedlings. A further 1,820 beds were sown in Interior nurseries during the fall. The 1966/67 winter months were favourable for the over-wintering of 1-year-old stock, and complete coverage with irrigation kept damage from late spring frosts to a minimum in this class of stock.

The growing season was characterized by below average precipitation and above average temperatures. Heavier than normal irrigation prevented these conditions from having much adverse effect on growth, with the result that 2-year trees were, on the average, close to normal size.



A significant occasion in the reforestation programme was the official opening of new nurseries at Koksilah on Vancouver Island and Red Rock near Prince George. Here, at official opening of Red Rock Nursery, are Mr. F. S. McKinnon, Deputy Minister of Forests, left, and the Honourable Ray Williston, Minister of Lands, Forests, and Water Resources.

Germination in the newly sown seed-beds was, on the whole, close to the desired level. Some seed-lots for which there was insufficient time to complete germination tests were either overstocked or very sparse. It is hoped that drill seeding, a technique tried on a production basis in 1966, will tend to reduce uneven stocking. The apparent success of this method prompted its fairly widespread use at four nurseries during the year. Considerable modification of the original seeder developed at Duncan much improved its performance, and modifications made to the sand-spreader adapted it to drill seeding. As a result, the efficiency of the sowing operation has been much improved. Six more drill seeders were constructed by the Duncan staff.

Since drill seeding lends itself to lateral root pruning, equipment for this purpose was developed and successfully used, and a number of these units are being produced at Duncan.

Control of weeds continues to be a major item of nursery costs. The availability of sufficient developed acreage to permit a return to fallowing should materially help in reducing such costs.

For the first time, a rather extensive soil fumigation project was carried out under the guidance of the Forest Research Laboratory of the Federal Department of Forestry and Rural Development. This was undertaken to control a suspected disease-nematode situation at the Koksilah Nursery and to evaluate the effectiveness of several different materials. Results have not yet been analysed, but casual observations indicate that a small measure of weed control was achieved.

The Green Timbers Nursery reported a fairly high incidence in the first-year seed-beds of a root condition locally known as " ropey root." Losses in the two-year stock are estimated at 7 per cent. Several causal agencies are suspected. It is believed that continuous cropping has contributed to the severity of the condition, and that fallowing of the affected areas will help to alleviate it. Fallowing requires development of considerable new nursery area. Much work has been done to this end.

The new nursery-site on the Chilliwack River began production when 580 seed-beds were sown in the spring. Twelve more acres are now ready for the sowing of another 1,800 seed-beds. At the new Campbell River Nursery, 18 acres were cleared and made ready for seed-beds. Development continued at the Red Rock Nursery, where area was prepared for 2,500 seed-beds, half of which were seeded in the fall. A further 20 acres were cleared and 40 acres windrowed in preparation for burning. About 6 acres were cleared of brush on the new Langley Nursery site adjacent to Highway No. 401 in preparation for the sowing of seed-beds. This will assist in placing Green Timbers back on proper rotation.

By the end of 1967, 178 acres of nursery land were in actual production, 63 acres prepared for sowing or transplanting, a further 97 acres partially developed, and 146 acres available for future development.

IMPROVEMENTS

At the Green Timbers Nursery, 1,780 feet of drain tile was laid in a new area which was under fallow, and other drainage facilities were improved.

The service building at Koksilah was enlarged and, in connection with the official opening in August, a large rustic sign, designed and made by the Parks Branch, was erected at the entrance. At the Duncan Nursery, replacement of the original wood-stave irrigation mains and the domestic water-line with plastic pipe was completed in the fall. An irrigation system for the new Campbell River Nursery is under construction. In the Chilliwack Valley, a mile-long 4-inch plastic water

main was placed underground to bring irrigation water from Pierce Creek to the new site. Aluminum distribution mains were installed to service the prepared area. Two prefabricated buildings, declared surplus by the Inventory Division, were moved from the East Kootenay Nursery site to Rayleigh and re-erected to provide an office and an implement-shed. At Telkwa, the seedling cold-storage room was remodelled and the irrigation system improved.

The Red Rock Nursery and Research Centre was also officially opened in August. Another appropriate entrance sign was erected to mark the Centennial and the Festival of Forestry. A combined research-reforestation administration building was completed to the closed-in stage. Nursery personnel are continuing with some of the inside work. The Engineering Services Division designed and constructed an earthen dam on Vienna Creek and installed the pumphouse and mains to service the eastern half of the nursery. A 7-foot fence was erected around the major portion of the property, including the reservoir area.

FOREST TREE SEED

Cone crops throughout the Province were negligible in general. However, a collectable crop of Interior spruce occurred in a localized area centred around Babine Lake, and Prince Rupert Forest District crews collected 1,404 bushels of spruce cones, together with 882 bushels of lodgepole pine. This crop, considered to be a carry-over from the 1966 bud set, deteriorated to the east, where crews in the Prince George Forest District managed only small and scattered collections of spruce, lodgepole pine, and Douglas-fir. In the Kamloops and Nelson Forest Districts, cone crops were very poor, but a small collection of lodgepole pine was made in the Kamloops District. Altogether, 2,622 bushels of cones were collected. The prospects for a better crop in 1968 appear promising.

The extraction of the 1966 collections was completed in March. The Forest Service collection of 35,798 bushels yielded 19,649 pounds of seed, and collections by industry (14,238 bushels), which were extracted by private plants, yielded 7,952 pounds of seed. Seventy-two per cent of the seed acquired is Coast Douglas-fir. The extraction of this volume of cones taxed the extraction plant to the limit of its capacity and was of considerable value in pointing up areas in which further improvements could be made. Some of these were carried out later in 1967 and will be continued next year. Extraction of the 1967 collections was under way at the end of the year, but a full report on yields will not be available until later in 1968.

The seed yield from cones picked in 1966 from six Coast seed production areas amounted to 1,004 pounds, or an average of 36 pounds of seed per acre. Three areas produced no cones at all. The Interior spruce seed production areas produced flower buds in 1966, but only two areas in the Prince Rupert Forest District produced what may be regarded as light crops. In the Nelson Forest District, the Nakusp Seed Production Area produced 100 pounds of Douglas-fir seed from 4.5 acres.

Some progress was made in the seed-orchard programme. Normal maintenance was carried out in the clonal portion of the Campbell River Seed Orchard, and the larger clones were fertilized during the spring in hopes of stimulating a cone crop in 1968. Half " sib " seedlings (that is, seedlings from wind-pollinated plus trees) for the balance of the orchard are being grown by the Research Division, and it is expected that these will be available within two years. At the Koksilah Seed Orchard, filling and levelling was carried out with the co-operation of the Department of Highways.

Following extraction of the 1966 cone harvest, the seed laboratory carried out a total of 906 germination tests, each requiring 2.7 man-hours. Considerable time was also spent bringing the seed records up to date. In connection with regular nursery production, the seed requirements for 8,070 seed-beds was weighed out, treated, and shipped to the various nurseries. This seed, together with smaller withdrawals for research tests and miscellaneous shipments, totalled 675 kgs. (1,496 pounds). The inventory of seed on hand at the end of the year approximates 15,400 kgs. (17 tons), most of which is Coast Douglas-fir. The supply of Coast Douglas-fir seed for the Northern Mainland and spruce for the Prince George and Prince Rupert Forest Districts is seriously low.

RECONNAISSANCE AND SURVEY WORK

With the co-operation of the Forest Inventory Division, a number of " backlog " areas in the Southern Interior were examined to determine the extent of natural restocking and the condition of unstocked portions. Field crews covered nine areas in the Nelson Forest District and found that, of the 24,517 acres surveyed, 6,148 acres (25 per cent) are not satisfactorily restocked and, further, that only 2,985 acres are considered to be plantable. These crews also examined some 16,000 acres in the Adams River drainage in the Kamloops District, where 7,543 acres (47 per cent) was mapped as not satisfactorily restocked, including 6,236 acres of plantable ground. In all, 9,221 acres were classified as unplantable owing mainly to a dense cover of brush.

On Vancouver Island, Reforestation Division crews examined 12,983 acres which were slash-burned during the period 1965–67 and prepared planting prescriptions for 9,190 acres (71 per cent) of this total. On the Mainland portion of the Vancouver Forest District, ranger and district crews carried out plantability assessments on a further 41,882 acres, of which an estimated 60 per cent was classified as in plantable condition. Most of this is not expected to restock naturally.

PLANTING

The lack of rainfall in the southern portion of the Province during the spring, together with an extended period of high temperatures and negligible precipitation during the summer, is expected to have a significant effect on the plantations established in the spring. However, the relatively dry period in May did favour access to the planting areas, so that most projects were completed in good time. The effect of the summer drought was severe enough to cause cancellation of a number of Southern Interior projects in the fall. The northern portions of the Province enjoyed moderate weather during the year, and no abnormal effects in survival are anticipated.

As a result of cancelled autumn projects, the total of trees planted in 1967 is less than in the preceding year. Returns from all agencies total 17,805,800 trees planted on 48,579 acres, of which the Forest Service planted 5,836,400 trees on 12,886 acres. Despite a shortage of trained supervisory personnel and a lack of crew accommodation in some areas, the Forest Service programme on the Coast was increased to some 4,000,000 trees planted on over 9,000 acres (*see* Table No. 22, Summary of Planting).

To examine the possibilities of contract planting and to gain experience in its administration, the Forest Service entered into several trial contracts for the reforestation of Crown lands in the Vancouver Forest District. Two commercial contracts, totalling 282,000 trees, were awarded. An additional three contracts were awarded to industry for planting some 200,000 trees in areas where extra crew accommodation was unavailable.

Trials were also carried out during the summer to test the effectiveness of enclosing seedling roots in a mixture of clay and peat moss as protection against drought. Results were sufficiently encouraging to warrant further trials on a larger scale designed to improve survival and extend the planting season.

In connection with planting projects completed on Crown lands this year, 2,625 survival sample plots were established.

CO-OPERATION

Co-operation with other divisions and the forest districts continued at a high level in 1967. The Engineering Services Division, in particular, was most helpful in supervising the development work at Campbell River, Red Rock, and Chilliwack River Nurseries. It also provided the necessary transport, together with the Inventory Division, for moving equipment and supplies as requested. Reforestation Division snag-fallers felled 82,503 snags on 882 acres of Crown land in the Vancouver Forest District and cleared another 94 acres in co-operation with industry. This crew was transferred to the Vancouver District late in the year.

In preparation for an expanding planting programme over the next few years, two-day training courses were held in all forest districts for planting-crew foremen. Although the majority attending were Forest Service personnel, industry was well represented. Three men from the Chilcotin Indian School attended the Prince George class. Instruction was given to students at the Forest Service training-school and at the University of British Columbia.

Co-operation with industry continues to play an important part in the operation of the Division. Attendance to matters in connection with Tree-farm Forestry Committees, the Reforestation Board, and the Tree Improvement Board have proven mutually beneficial and will become more important as reforestation technology expands. Visits to the Mesachie Lake Experiment Station and the Duncan Nursery complex were conducted on a number of occasions, highlighted by the Festival of Forestry tour of Pacific Rim foresters in November.

Interdepartmental Forestry and Correction Camp Programme

Since its inception in 1957, the Interdepartmental Forestry and Correction Camp Programme has continually expanded, and at present involves nine camps and four institutions, which supply some 700 men for a wide variety of forestry projects. In 1967 some projects were curtailed by low inmate populations, priority of other work, and the high fire hazard during the summer. However, the fire season also provided an opportunity for both the inmate fire-fighting crews and those manning secondary lookouts to gain some experience. As in the past, Forest Service personnel gave instructions to correctional officers in fire-fighting techniques and equipment. The establishment and operation of forest nurseries continues to occupy the major portion of this programme, and co-operative nurseries now produce some 9,000,000 trees annually for field planting.

In the Chilliwack River valley, inmate crews constructed 2.5 miles of trail, cleared 1.5 miles of forest-development road right-of-way, and maintained many miles of road by slashing and burning roadside brush. The sawmill at Mount Thurston Camp produced 134,000 f.b.m. of lumber from logs salvaged out of the log jam in the Chilliwack River from right-of-way clearing, and from a nearby snag-falling project.

At the new Chilliwack Nursery site, inmate crews helped clear and stump 25 acres. At other nursery-sites in the Chilliwack Valley, 1,200,000 trees were lifted and shipped to the Tamihi headquarters, where culling and packaging was done by outside crews. During the year, inmates planted 70,000 trees on 105 acres in the

Tamihi Creek valley. In other work, crews brushed out the 12-acre spacing trial, and in conjunction with acquiring fuel-wood for the camps an additional 30 acres of heavy brush land was cleared. Pierce Creek Camp served as the control centre for all fire-fighting crews in the valley, and during the year these crews attended four fires and patrolled constantly during periods of extreme hazard.

In the Campbell River area, inmates assisted with development of the new nursery. In connection with this project, 3,500 feet of fencing was erected on posts salvaged from the clearing, and 7,700 feet of pipe-line right-of-way was cleared to a 30-foot width. At the Snowdon Nursery, 1,308,000 seedlings were transplanted in the spring and assistance was provided in lifting 496,000 trees.

A portable sawmill acquired early in the year was utilized in conjunction with the clearing of the new nursery area, and 35,000 f.b.m. of rough lumber was sawn from the second-growth logs. In the Mud Lake area, crews from Lakeview Camp recovered 390 squares of split shakes, 55 cords of shake-bolts, and 67,000 plot stakes from cedar snags during the year. Other crews maintained roadside ditches and culverts during periods of wet weather and slashed and burned 24 miles of roadside brush. Five minor fires were fought and extinguished by inmate crews, and four secondary lookouts were maintained during the high-hazard period. Two spacing trials were established in the 1948 plantation near Morton Lake in co-operation with the Research Division, and a 2-acre camp-site was prepared for the Inventory Division survey crew.

The stand treatment project at Haney was discontinued in 1967 owing to security difficulties, and these crews were diverted to the task of preparing a new 20-acre nursery-site. A total of 42,000 trees was shipped from the Haney Nursery and 363,000 seedlings were transplanted. Trainees from the Haney Correctional Institute also continued road-maintenance projects, took action on four small fires, and improved the loading-out area for the Alouette Lake salvage project. The sawmill produced 113,774 f.b.m. out of the 1,327 logs salvaged from the lake.

In the Alouette Nursery, residents of the Alouette River Unit enlarged the productive area by 7 acres and installed tile drains in the new area. Adjacent to this field, an office for the forestry supervisor was built. Maximum-security trainees produced 120,000 cedar stakes for plot work.

In the Kamloops Forest District, inmate crews from Rayleigh and Clearwater attended to eight forest fires in three ranger districts. Clearwater crews also cut 3,640 7-foot cedar posts for various projects, and a Rayleigh crew made up 50 4- by 4-foot wire-mesh cages for grazing studies. Because of expansion at the Rayleigh Nursery and the requirements of the camp farm, inmate crews were unable to cope with the weed problem in the nursery, and outside crews were employed during the latter part of the season. Lifting and shipping during the year totalled 430,000 trees, and 410,000 seedlings were transplanted in the spring. At the present time there are some 5,000,000 seedlings of various ages in this nursery.

Priority of work on the construction of the Hutda Lake Camp in the Prince George Forest District resulted in less work being achieved in the forestry programme. Nevertheless, work continued on a smaller scale on a wide variety of projects. Inmates from the main gaol planted 34,000 trees in the " Spruce " fire after slashing over 8 miles of right-of-way on the Willow River Road during the winter. These crews then continued clearing, burning, and soil-preparation work at the Red Rock Nursery. The Hutda Lake Camp managed to provide crews for road right-of-way clean-up and decking of logs in that area, and for the erection and initial operation of the portable sawmill. In addition, these crews cut 913 fence-posts and cleared some 50 acres of snags in the Clear Lake area.

PUBLIC INFORMATION AND EDUCATION DIVISION

The year 1967 will be remembered by the Public Information and Education Division as a time of unusually heavy activity, a period of diverse projects. It provided a strong contrast to those years where the Annual Report traced a normal activity pattern and brought a series of encounters and challenges that fully tested the ability of the Division to be flexible in meeting new situations.

The fact that it was Canada's Centennial Year was reflected in the heavy demand for historically oriented forestry material. Clubs and municipal bodies, news media, and private citizens all sought special assistance, requiring time-consuming research.

A summer almost completely devoid of rain brought the most dangerous and protracted fire season in the history of the Province. This had to be met with a public information campaign designed to maintain a high level of public awareness to encourage the exercise of maximum caution in the woods.

The establishment of two new Forest Service nurseries at Red Rock, near Prince George, and Koksilah, outside Duncan, provided interesting problems in planning and carrying out formal opening ceremonies.

NEWS RELEASES AND SPECIAL ARTICLES

At the peak of the forest fire season, the Division was receiving up to 35 news media requests for information each day. To assist the Division in meeting this demand, the Forest Protection Division compiled fire reports twice a day, covering the forest fire situation throughout the Province.

In addition to the verbal releases made in response to telephone inquiries from newspapers, radio, and television, regular weekly fire reports were made and a total of 24 special releases were written in connection with various closures and campfire-permit suspensions.

Other releases throughout the year covered a wide variety of subjects involving major activities of the Forest Service, including the Canadian Centennial openings of the two new forest nurseries at Red Rock and Koksilah.

Requests from trade journals and newspapers issuing special editions on forestry activity were of a general nature, with a continuing interest being shown in the development of the pulp and paper industry, although this was not as intense as that shown during the previous year.

Apart from the verbal releases and weekly fire reports, there were over 60 written releases, features, and special articles prepared in the Division during the year.

PHOTOGRAPHY

During 1967 the demand for photographs continued on the expanding scale established in 1966. The Photographic Section's ability to meet these demands without additional funds is questionable. High silver values forced a 16-per-cent price increase on all silver-bearing photo materials, this in addition to normal annual price increases. A total of 13,883 prints was produced.

Five hundred and forty-six negatives were added to the photo library, 96 less than in 1966. As in previous years, proof prints of these were sent to the five forest district headquarters. Prince George and Nelson Forest Districts are noted as the major users of these through the year.

The 35-mm. slide collection had increased use. One hundred and fifty duplicates were made for Forest Service use in exhibits and lectures, and to fill outside

requests. A total of 550 original slides was taken, the bulk of these being for use by the Forest Inventory and Research Divisions.

Special assignments included coverage of the manufacture of glulam beams and their use in construction of the Bulkley River crossing of the Suskwa Forest Development Road; " Cat " and chain clearing, and use of hydraulic shears in clearing and logging in the Findlay River section of the Peace River pondage; the Stellako River log drive, and techniques used in Douglas-fir grafting. One project alone, the photographing of volume decay study samples, required 440 separate photographs. One major assignment for the Engineering Services Division necessitated printing of a total of 3,190 8 x 10 prints from 70-mm. fixed-base air photos taken of the Stellako River log drive and Peace pondage clearing projects.

In the continuing Inventory Division 70-mm. fixed-base air photo programme, 1,897 stereo-positives were made, a big increase over the 322 made in 1966. For the Research Division, 524 X-rays were processed, compared with 110 in 1966.

The Photographic Section supplied various news media with illustrative material on a world-wide basis. Requests from within the Province leaned heavily toward historical subjects befitting the Centennial Year.

Motion-picture Production

A total of 11,100 feet of colour film was used, requiring considerable air and road travel.

The Forest Service film " Forest Highways " was completed early in the year and sounded during April. Due to lack of funds for purchase of library prints, full distribution of this film was delayed. It is now being distributed on a world-wide basis by the National Film Board.

As a Centennial project, the Division co-operated with the Forest Service museum custodian and produced a 12-minute film " Change of Pace." The basis of the film was old colour footage shot by Forest Service personnel during the 1930's and early 1940's. Additional modern footage was shot during the spring. The film was reduced on to sound striped 8-mm. for showing at the Festival of Logging exhibit at the Pacific National Exhibition.

A new film, " Up in Smoke," was completed during the 1967 fire season and sounding commenced in December. This subject was expected to be ready for showing early in 1968.

In the spring, two short safety films were shot and edited for the Inventory Division's use in its training programme. The subjects covered were safe crossing of rivers on foot, and flotation qualities of several types of life-jackets. These are silent clips, and the first two in a projected programme. During December a short sequence was filmed to show how the self-inflating life-raft used on some Forest Service vessels actually works. This is to be edited as a silent segment as soon as staff time is available.

Film Library

The use of the film library showed a marked increase over the previous year. One example was the 20-per-cent increase in the total audience over the previous year. In some cases, as with the films " Forest Highways " and " Change of Pace," demand far exceeded the ability to supply.

The major demand remained in elementary and secondary schools, and in training institutes.

Films on permanent loan to British Columbia Houses in London and San Francisco showed a definite increase in use. In 1967 their combined audience was 5,740, an increase of almost 100 per cent over the previous year.

See Table No. 31 in Appendix.

SCHOOL LECTURE PROGRAMME

The school lecture programme for 1967 saw an increase in the number of students attending the lectures.

More than 17,649 attended the 112 lectures in the 100 schools visited in the Vancouver and Kamloops Forest Districts.

There was a change in school lecturers as a result of the former lecturer leaving to join another department.

See Table No. 32 in the Appendix.

SIGNS

A comprehensive evaluation of the entire sign programme was undertaken in 1967. The goal of this investigation is to determine the feasibility of continuing the programme in view of rising production costs and lack of increase in the annual allotment to meet them. Also included is a survey considering the continued usefulness of some of the signs that have been used over the years (design, etc.).

The highway sign-painting programme ("Keep B.C. Green—Use Your Ashtray") was continued for the 14th consecutive year. Colour and layout innovations were again used to further promote public interest. One hundred and twenty signs were painted. Highway construction, urban development, and centre-line changes are making it increasingly difficult to maintain signs on the exits from populated areas.

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

LIBRARY

Interlibrary loans, researched and completed by the staff, continue to grow in number, reaching an all-time high of 265. This service requires a considerable amount of research.

The library now has grown to the point that all available shelf space is being utilized, necessitating the storage of some material in boxes. This factor is a definite handicap to the efficient operation of the library.

The librarian visited the Nelson Forest District to assist in organizing the material available to the foresters in that district.

The staff would like to express its appreciation to the library staffs of the Provincial Library, the University of Victoria, Canada Department of Forestry and Rural Development, and Canada Department of Agriculture Experimental Farm, Saanichton, for their continuing co-operation.

EXHIBITS

The Forest Service's interest in exhibitions was dominated by the extensive Government commitment to the Pacific National Exhibition "Festival of Forestry," which was initiated to familiarize the general public with the importance of the Province's forest resource A special advisory committee which guided "Festival" was comprised of representatives from industry, education, and government. This committee's main contribution was the co-sponsorship of the "Festival of Forestry"

at the Pacific National Exhibition, an event which in 1967 attracted more than a quarter-million visitors for the second consecutive year. This committee, on which the Forest Service was represented, also supported a congress of 33 forestry students from 16 Pacific Rim countries, a tree-planting programme in downtown Vancouver, and a loggers' breakfast, also in Vancouver, which was attended by thousands.

The Forest Service undertook an ambitious scheme of constructing a typical lookout tower and display complex in the exhibition's section of the Loggers' Show at the Pacific National Exhibition. The display section had as its theme "Half a Century of Progress."

A 30-foot lookout tower was constructed and manned during the three-week period of the Pacific National Exhibition. The Forest Service entry proved a top attraction, drawing good crowds each day. It was estimated that more than 40,000 persons visited the display complex, with 32,000 touring the lookout.

The Service was fortunate in obtaining the services of two ex-employees who manned the tower during peak visiting periods.

In addition to the display panels, and the lookout, the film "Change of Pace" was projected.

The Forest Service also participated in numerous teachers' conventions, fall fairs, major exhibitions, and numerous miscellaneous gatherings.

The Service's permanent exhibit in the British Columbia Building, Vancouver, was maintained, and during the year it was estimated that more than 100,000 visitors toured the building in which the exhibit is housed.

ADVERTISING

The Forest Service's paid advertising programme was restricted to a standard campaign of radio announcements over all radio stations in the Province, a series of protection slides over the Canadian Broadcasting Corporation's Provincial television network, and a limited number of display advertisements which were authorized by the Department of Industrial Development, Trade, and Commerce.

Because of its adaptability, radio continues to be the communication media most utilized by the Service for paid advertising. Fortunately the Province's radio industry, which is made up of 34 radio stations, has been extremely generous in supplementing the more than 3,000 announcements sponsored by the Forest Service. The standard radio campaign was composed of one-minute taped announcements which were scheduled for broadcast each Friday, Saturday, and Sunday during the months of July and August. Special hazard flashes were prepared and made available to each station and, because of the extreme 1967 fire season, the Ranger staff made full use of this special allotment.

In co-operation with the Canadian Broadcasting Corporation, a series of slides was prepared and broadcast in prime viewing time during the months of July and August. Unfortunately, television advertising is expensive, and the Forest Service's restricted budget makes it impossible to take advantage of this medium for broadcasting protection messages. Again it was because of the excellent public service attitude of the television industry that a good number of forest-protection announcements were televised during the summer.

FOREST MANAGEMENT DIVISION

Total production for 1967 dropped 1.8 per cent from the record high set in 1966. A breakdown of the production figures by forest districts, however, shows that while the scale was down in some districts, new records were set in others. In the Interior of the Prince Rupert Forest District, the timber scale increased 21 per cent, and production in the Prince George Forest District rose approximately 7½ per cent. At the same time, production in the Kamloops and Nelson Forest Districts fell approximately 9 per cent and 22 per cent respectively. These variations are attributed to the fact that the heavy fire season hit hardest in the southern portion of the Province, and to the I.W.A. strike, which was confined almost entirely to the Southern Interior.

Production of Douglas-fir fell off sharply, and the volumes of cedar and spruce also showed a decline. On the other hand, lodgepole pine, hemlock, and balsam continued the increase noted in 1966. The increase is largely attributed to pulp-mill demands.

It is interesting to note that the scale from Crown-granted lands, timber licences, leases, berths, etc., which carry relatively low fixed rates or no rates at all, rose by nearly 15,000,000 cubic feet. At the same time, the scale from Crown lands under timber sales, tree-farm licences, etc., which carry appraised rates, dropped 44,000,000 cubic feet.

In the spring of 1967, the logging industry was introduced to the new concept of the timber sale harvesting licence. The principal objective of this form of licence is to permit the operator to play a larger role in the management of the public sustained-yield unit and at the same time provide him with as much flexibility as possible. Basically, to obtain a timber sale harvesting licence, an operator must be prepared to make available his total allowable annual cut in a unit. The licence, which is advertised in the usual manner, with bidding protection, is for a 10-year period and provides the licensee with the right to apply for cutting permits in accordance with his allowable annual cut and with an approved development plan prepared and submitted by him.

In the Kamloops Forest District, the "Mag" fire covered some 52,000 acres and burned an estimated 45,000,000 cubic feet of Crown timber and 3,000,000 cubic feet of private timber. Of this volume, 27,000,000 cubic feet of salvage timber were sold under timber sale licences. A further 11,000,000 cubic feet of fire-damaged timber were also sold, covering most of the other fires which had salvable volumes.

MARKET PRICES AND STUMPAGE TRENDS

Lumber Prices

The demand for lumber, which had fallen off in the last quarter of 1966, firmed up early in 1967 and selling prices started to increase. By mid-year the selling prices reported to the Forest Service by the mills in the Interior had recovered from the late 1966 decline. The market remained firm throughout 1967, and selling prices continued to increase, to establish new high levels by the end of the year.

Production during the last quarter was curtailed by the strike which closed some of the mills in the Central and Southern Interior regions for periods up to three months, carrying over into the new year at some plants in the Southern Interior. The loss in lumber production resulting from this strike may possibly have contributed to the high selling prices that were being received at the end of the year. It is

unlikely, however, that that loss would have that much significance in the total market, and, at the year's end, it was anticipated prices would stabilize for a time at the present level.

1967 Uncorrected Quarterly Average Dressed-lumber Prices (Interior)

Species	Jan.–Mar.		Apr.–June		July–Sept.		Oct.–Dec.[1]	
	Basis M B.M.	Average Price	Basis M B.M.	Average Price	Basis M B.M.	Average Price	Basis M B.M.	Average Price
Fir-larch	114,695	$63.38	176,682	$67.07	190,778	$71.65	45,324	$74.86
Spruce	299,594	62.27	366,550	64.55	374,456	67.49	195,289	67.98
Cedar	19,608	63.14	20,338	67.88	17,334	69.71	3,619	69.85
Hemlock	15,887	60.45	26,888	67.32	25,146	71.63	7,104	70.68
White pine	2,047	106.45	5,249	111.07	6,390	107.08	.....	.....
Yellow pine	2,211	66.17	8,546	63.49	10,841	68.07	.....	.....

[1] The figures for the fourth quarter reflect the effect of the strike in the Southern Interior. No collections were made from this area during this period.

Log Prices

The selling prices for logs in the Howe Sound market, which had fallen sharply in the last quarter of 1966, recovered in the second quarter of 1967 and remained high for the balance of the year.

1967 Quarterly Average Log Prices per M B.M. (Howe Sound Market)

Species	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.
No. 3 GRADE				
Fir	$62.70	$64.08	$62.87	$64.08
Cedar	40.96	44.34	45.60	44.55
Hemlock	50.40	55.28	57.55	58.87
Balsam	41.47	39.45	40.67	41.87
Spruce	50.52	53.49	56.20	57.60
White pine	43.06	45.28	43.63	43.36
ALL GRADES				
Fir	$74.39	$76.00	$78.52	$78.09
Cedar	47.67	50.65	50.70	51.30
Hemlock	52.14	57.65	59.39	60.71
Balsam	51.72	56.89	58.32	59.15
Spruce	61.68	61.59	64.46	63.99
White pine	48.86	50.25	49.12	48.43

Stumpage Prices

The average stumpage price bid for Crown timber was $3.21 per 100 cubic feet. The timber included those licences that required operation to the close-utilization standard, where the price is established by pro-rating the appraised rate with a standard 55 cents rate for the close-utilization component. Also included were those sales sold at "salvage value only" rates. This price was significantly below the 1966 figure of $4.25 per 100 cubic feet. Average figures for the years 1961, 1962, 1963, 1964, and 1965 were $2.53, $3.01, $3.36, $4.09, and $4.20 respectively.

The weighted average stumpage price per 100 cubic feet bid for licences in the Interior fell from $3.72 to $2.58. The comparable average price for licences on the Coast fell from $6.76 to $6.03.

The two factors which have the greatest influence on the appraisal of the value of the timber are the estimated cost of conversion and the value of the products. The sale value of the products must cover all conversion costs; that is, the cost of extraction and processing, including stumpage, and a reasonable profit. Therefore, it follows that, after provision has been made for anticipated costs and a reasonable profit, the remaining portion of the sale value is the indicated or appraised stumpage value. With this system of appraisal, a small change in selling price, or in the estimated cost of conversion, has a substantial effect on the stumpage value.

This reduction in the bid prices during 1967 resulted from the low selling prices for logs on the Coast and dressed lumber in the Interior that were applicable for stumpage appraisals in the first half of the year. It also resulted from the effect on operating costs of the cost inflation that occurred during 1966.

The average stumpage prices per 100 cubic feet for all species, including close utilization and salvage wood, was $6.09 for the Coast, down from $6.76 in 1966; and $3.10 for the Interior, down from $4.21 in 1966.

See Table No. 67 in the Appendix.

Stumpage Adjustment

The schedule system of stumpage adjustment, which provides for a change in rate whenever the selling price changes by at least $5 from the selling price on which the last effective rate was based, which has been offered as an option to the older sliding-scale method of stumpage adjustment in November 1, 1966, was made obligatory for use with all timber sale licences sold after March 1, 1967. The sliding-scale system will be continued for the term of existing licences, along with the option to convert to the schedule method.

During 1967 there were 2,148 downward adjustments—1,747 under the sliding-scale method and 401 under the schedule method. These downward adjustments occurred during the first half of the year. Subsequently there were 4,300 upward adjustments—2,131 under the sliding-scale method and 2,169 under the schedule method.

The stumpage pricing system is now very sensitive to fluctuations in selling price and, with the provision for reassessment of operating costs every two years, which is a part of the schedule method, stumpage rates payable and, consequently, forest revenues are very vulnerable to changes in costs and prices.

PEACE RIVER FLOOD BASIN

During the year two salvage sales were issued in the Finlay River area of the flood basin, involving approximately 40,000,000 cubic feet. Good logging conditions prevailed during the year, and production showed a very considerable increase over previous years. The total volume scaled for 1967 was 26,552,000 cubic feet, compared to the 14,890,000 cubic feet scaled in 1966.

COLUMBIA FLOOD BASIN

The Duncan Dam was completed and the lake-level raised during the year, and there were no timber salvage operations conducted. British Columbia Hydro and Power Authority commenced a driftwood-disposal programme.

Timber salvage operations within the proposed High Arrow flood basin were completed for the most part in 1966, and only a relatively minor volume of clean-up was recorded in 1967. A total of 72,137 cubic feet was scaled, compared to over 1,000,000 feet in 1966. Clearing operations carried out under contracts let by

British Columbia Hydro and Power Authority progressed very well, and good burning results were obtained toward the end of the fire season.

In the Mica Dam flood area, the production figure of 6,047,246 cubic feet was less than a third of the 1966 production. This drop was largely due to the fact that the more accessible and higher-grade stands have already been logged.

CLOSE UTILIZATION

The close-utilization policy, introduced at the beginning of 1966, requires that either the round log be delivered to a pulp-mill or the sawmill processing the log be equipped with a barker and chipper so that the chips can be made available to a pulp-mill. Thus close utilization is dependent upon the demand for supplies by the pulp-mill industry. Plans for the establishment of pulp-mills in several areas of the Province have been held up temporarily for various reasons. As a result, close-utilization timber sales are almost entirely confined to the Prince George and Kamloops Forest Districts. In the Prince George District, 56 sales were issued on a close-utilization basis out of a total of 246 sales awarded during the year. In the Kamloops District, 22 new close-utilization sales were awarded and 32 existing sales were converted to close-utilization standards. In the Vancouver Forest District, 23 existing contracts were amended and five new ones were issued to close-utilization standards.

Twelve tree-farm licences are now wholly or partly operating to close-utilization standards. This is double the number for 1966.

As previously mentioned, close utilization requires the installation of barkers and chippers. This has been responsible in large part for the steady increase in the number of barkers and chippers. There are now 197 mills with chippers, and 164 with barkers.

The reported production of chips in the Prince George District during the year was approximately 500,000 bone-dry units. In the Kamloops District, production was estimated at 485,000 units.

SUSTAINED-YIELD PROGRAMME

Public Sustained-yield Units

There were no major changes in public sustained-yield units during the year. There were some minor changes in productive acreages and mature volumes, but these resulted from completion of new inventories for some units.

Pulp Harvesting Forests

The number of pulp harvesting forests remained unchanged, at a total of 21.

Tree-farms

The number of certified tree-farms dropped by one during the year to 45. Of this number, it is interesting to note that 34 are in the Vancouver Forest District and that 11 of these are included within tree-farm licences. Although the number of tree-farms decreased, the total estimated productive capacity rose 29 per cent. This increase was due primarily to several tree-farm licences, which contain tree-farms, being placed on a close-utilization basis and the allowable cuts being recalculated accordingly.

Tree-farm Licences

The amalgamation of Tree-farm Licences Nos. 28, 29, and 30 was completed on November 23, 1967.

Tree-farm Licence No. 11 was assigned to Boundary Sawmills Ltd. on May 23, 1967. Tree-farm Licence No. 17 was assigned to British Columbia Forest Products Limited on July 31, 1967.

SILVICULTURE

The stand treatment programme again played an important role in the natural regeneration of British Columbia's forests.

Stand treatment was practised by all forest districts, the principal objective being to attain natural regeneration. The cutting methods employed involved strips, groups, patches, or single seed trees.

All Interior forest districts were active in developing scarification programmes for seed-bed preparation. In the Prince George Forest District 10,854 acres were scarified, bringing the total acreage scarified to 80,362 acres. The average cost per acre was reduced to $11.39 per acre. Some of the scarification was carried out under contract to the Forest Service, and some was done under the conditions of timber-sale contracts.

A site-rehabilitation project was established in a cedar-hemlock type in the Blaeberry River watershed near Golden. A total of 455 acres was cleared before the end of the year by machine. Areas unsuited to mechanical equipment were hand-felled. Further clearing and burning will continue in 1968, with planting scheduled for 1969.

SCALING

The number of weight-scaling stations in the Interior increased from 37 to 43. The percentage of volume scaled by this method increased accordingly. The number of weigh-scales in each forest district was as follows:

Forest District	Number of Weigh-scales	Per Cent of District Scale
Prince Rupert (Interior)	3	(1)
Prince George	19	36
Kamloops	16	36
Nelson	5	(1)

1 Not compiled.

Eighty-one scaling licences were issued.

In the Coastal region, weight scaling for official purposes was confined to one company.

GRAZING DIVISION

General Conditions

The prolonged hot, dry weather which prevailed through most of the forage production period had a profound effect on ranch and range operations. However, there were some compensating factors which, together with considerable adjustment, enabled the range live-stock industry to complete the year in reasonable condition. Supervision of Crown range by the Forest Service suffered to some degree as a result of field-staff preoccupation with the difficult fire situation.

Except in the Peace River area, the winter of 1966/67 was moderate, winter feed supplies were adequate, and stock was in generally good condition on being turned out on the range. Range forage production was adversely affected by the weather, particularly at low elevations. Less than normal beef gains were general, but stock was in reasonable condition when removed from most ranges. Hay production was variable, depending on the availability of irrigation, but was of uniformly high quality.

Cattle prices averaged a little higher than the previous year. However, labour, machinery, and material costs also continued to rise, and the industry in general is definitely experiencing a cost/price squeeze. Many ranches continue to be uneconomic due to overcapitalization, lack of size, unsuitable location with adverse physical conditions, and lack of range. Suitable ranch labour was difficult to obtain. This situation was accentuated in some areas where casual labour required for haying and similar seasonal activities was engaged in fire-fighting.

For the first time in a considerable number of years, the number of cattle on Crown range failed to increase, remaining at approximately the same level as the previous year. Range sheep production again declined and remains an insignificant factor in the use of Crown range.

Range

On virtually all range types, growth was considerably delayed by low early-season temperatures throughout most of the range country. This was particularly the case in the Peace River area, where the heavy snow pack was very late in disappearing. The delay in spring growth, together with the following drought and high temperatures, seriously reduced forage production on low-elevation ranges, particularly on those in poor condition or on light soils. Some clip plots indicated forage production at only 65 per cent of that for 1966. Moderately stocked ranges in good condition, although overutilized this year, are not expected to suffer any permanent ill effects. Forest and alpine ranges at higher elevations were not so severely affected, and were less so in a northerly direction. For the second year in succession, the severe drought drastically reduced forage production on the seeded pastures in the Peace River area, particularly at Cecil Lake, where use had to be directed to the undeveloped bush areas for a major part of the grazing season.

The lack of summer precipitation, following a relatively light snow pack on many ranges, resulted in some normally reliable water sources becoming dry. This created stock distribution problems which resulted in uneven utilization of the ranges involved. Also, the water level in many swamps and ponds was so reduced that they became hazardous mud-holes. Biting insects were particularly numerous in some areas and made live-stock control difficult. Only one or two herds had to be moved as a direct result of the fire situation. However, these and other results of the hot, dry weather made the management of stock particularly difficult on many ranges, and in some cases necessitated early removal. Conversely, on other ranges the mild, open fall made final round-up difficult.

On the average, throughout the range area, losses due to toxic plants and predatory animals appeared to be less than normal. However, there were several local areas where particularly severe losses were suffered through plant poisoning. Similarly, bears caused difficulties in several localities, notably the Vernon-Lumby area and the Peace River pastures. Wolves were also a serious problem on the latter. No disease problems necessitating radical changes in range use occurred, but management was disrupted in some areas due to the need to treat animals for various infections, notably infectious pinkeye. Some stock losses through suspected theft were reported. Where rights-of-way remain unfenced, rail and highway accidents involving live stock continued to occur. Although the fencing programme being carried out by the Department of Highways and grazing permittees is improving this situation, a great deal more fencing is required to solve this problem.

Hay

Hay production was above average where irrigation was practised and water supplies were adequate. Also, many natural meadows, normally flooded during the haying season, dried up sufficiently to permit harvesting for the first time in many years. On the other hand, production on unirrigated hay land was below normal. On balance, winter feed supplies are adequate in all but a few limited areas. Hay quality is particularly high as a result of ideal harvesting conditions.

Markets and Prices

Cattle prices were variable during the year but averaged higher than in 1966. The weighted average price received by cattlemen through the British Columbia Livestock Producers' Co-operative Association was $22.01 per hundredweight, compared to $20.74 in 1966, a rise of $1.27. Reliable average price figures for sheep and lambs marketed from the range area are no longer available.

RANGE MANAGEMENT

A higher level of management is required than that now being practised on most Crown ranges. Associated land uses are increasing in intensity, making improved forage and stock management practices mandatory to avoid conflicts. Further, the demand for range land for totally incompatible uses, such as residential and industrial sites, is rising. The total area available for grazing is thus decreasing. Most Crown ranges are stocked to capacity under present levels of management, and the demand for use exceeds properly allowable limits in most areas. This situation, more than any other, is responsible for the lack of increased use this year.

The productive potential of a range is normally limited by uncontrollable factors such as soil quality and climate. However, even on range sites in their natural condition, how much of the potential can be safely harvested on a sustained-yield basis depends to a large degree on how and when the forage is utilized. Furthermore, manipulation of the plant cover by introducing superior species or by removing unproductive plants to more closely approach the forage-producing potential is possible in many situations. In some cases, even the site factors may be altered by such practices as fertilization and water-spreading—a rough form of irrigation.

The extent to which range management and development practices can be applied is, of course, limited by both economic feasibility and available technical knowledge. However, there is no doubt that, at this time, there is sufficient knowledge available which, if applied, would considerably increase forage production and utilization on an economic basis on most Crown ranges. Progress toward this goal continues to be retarded by a shortage of staff for range management and develop-

ment planning and for carrying out a programme to develop the necessary knowledge on the part of range users. Also a deterrent is the lack of long-term land-use planning, which results in range units being dismembered. Nevertheless, some progress is being made, and there is a rapidly growing interest on the part of grazing permittees.

During the year, range readiness and growth progress observations were extended to new areas and continued in others. On the basis of such studies, turnout dates were adjusted on several ranges. A two-week delay in turnout date in the southerly portion of the East Kootenay Valley was successfully implemented. This undoubtedly will result in improved forage production and ultimately make possible increased rates of stocking. Range inspections were made and management plans developed for a number of ranges and discussed with permittees. An increased number of joint field investigations with other agencies were carried out to determine the effect on other land uses, particularly wildlife and coniferous regeneration. Grazing use was modified where desirable. Numerous slide talks on range management themes were given at association meetings and other gatherings of range users.

Range Surveys

As a necessary prelude to intensified range management and improvement, a considerably expanded range survey programme was undertaken in 1967. Field work undertaken covered the West Pavilion Unit, Lillooet Stock Range; Coutlee Plateau Unit, Nicola Stock Range; and Tatton, Dingwall, and McKinley Units, Lac la Hache Stock Range. Field work was commenced but not completed on the Big Creek and Inonoaklin Stock Ranges and the Coldwater-Iron Mountain Unit of Nicola Stock Range. Maps and reports were in preparation during the latter part of the year.

Range Improvements

During 1967, $89,104.57 was spent from the Range Improvement Fund. Material to the value of $17,268.87 was on hand at the beginning of the year, and material valued at $20,912.70 remained on hand and not assigned to projects at the end of the year. Net assistance to the range improvement programme thus was $85,460.74, the highest of any year to date. During the year, emphasis was placed on field investigations and planning necessary for an intensified improvement programme.

The following projects, chargeable wholly or in part to the Fund, were constructed or extensively rehabilitated: 24 cattle-guards, 40 drift fences, 1 holding-ground, 1 mud-hole fence, 15 stock trails, 22 water developments, 1 weed control, and numerous range seedings. In addition, a number of projects of a trial nature were undertaken and are referred to later in this section.

Permittees also contributed extensively to most of the projects listed above, mainly in the form of labour. In addition, the following projects were authorized for construction entirely at permittee expense: 3 breeding-pastures, 2 cattle-guards, 10 corrals, 20 drift fences, 4 special-purpose enclosures, 1 holding-ground, 1 pasture development, 8 stock trails, and 5 water developments.

The special trial projects, referred to above, included the use of fire in an effort to control both sagebrush and bitter-brush. Trials were also carried out to determine the practicability of controlling various species of brush and weeds by chemical sprays, under range conditions. Much basic data is available on both the use of fire and chemicals, but many practical problems remain to be solved in connection with their effective and safe use under range conditions in this Province. Measures to control beaver, which are causing flooding of many valuable meadows, were also

undertaken in two areas. These show initially promising results. Fertilizer application, on a practical scale, was undertaken on one site in the East Kootenay Valley. Again initial results are promising, but the economic feasibility of this practice will depend on the carry-over effect of the fertilizer to future years. Studies on improvements to various types of range structures, such as cattle-guards and fences, were continued. In all of the above work there was close collaboration with other divisions of the Forest Service and outside agencies, notably the Fish and Wildlife Branch.

The range seeding programme involved the use of 54,465 pounds of grass and legume seed in 1967, compared to 52,080 pounds in 1966. The bulk of this seed, 41,565 pounds, was sown on denuded ground resulting from logging and other industrial activity on Crown range. The remainder, 12,900 pounds, was aerially seeded on 2,150 acres of useable Crown range which had been devastated by fire. With the exception of the aerial seeding, most seeding was undertaken by co-operating permittees with seed, equipment, and supervision being supplied by the Service. Owing to weather conditions, only a minor amount of seeding on depleted grassland was undertaken using the Rangeland drill. Observations indicated that the extreme drought conditions had a severely adverse effect on the dry range seedings undertaken in 1966. Even if not destroyed, these earlier seedings will be seriously delayed in reaching full establishment.

Peace River Pastures

Seven developed or partially developed pastures were in operation in 1967. Improved pasture, resulting from past clearing, breaking, and seeding, is confined to 4,800 acres on three pastures. Two other pastures have extensive structural improvements, such as fencing, trails, and water developments. The remaining two have only a small amount of fencing designed to hold stock on parts of them.

No further improved pasture was developed during the year. However, 17 miles of new or replacement fencing and 27 miles of trail were built. One new corral was constructed and another extended. Three new stock-watering dugouts were established. Existing improvement structures received normal maintenance. A total of $23,834.44 was spent on this work. In addition, an uneconomic farm unit in the centre of the Groundbirch Pasture was purchased under the *Agricultural Rehabilitation and Development Act,* with the Federal Government bearing half the cost of $7,500. This will simplify the management of this pasture and increase its value considerably.

As indicated earlier, extremely dry conditions greatly reduced forage production, particularly on the cultivated portion of the Cecil Lake Pasture, where stock had to be confined to the bush areas for a substantial part of the grazing season. On all other pastures, feed was more than adequate for the stock offered. For the first time, stock was confined entirely to the cultivated portion of the Beatton-Doig Pasture. Brush regeneration on the developed pastures continues to be a problem, and plans were formulated for a control programme with the co-operation of the Beaverlodge Research Station.

In 1967, 90 permittees grazed 2,129 cattle and 53 horses within pasture projects, compared to 78 permittees, 2,091 cattle, and 39 horses the previous year. The small increase, which was very much less than anticipated, is the result of a number of factors. Most permittees or potential permittees are conducting mixed-farming enterprises involving relatively small herds of cattle which, more often than not, are a minor part of their operations. They can get into and out of stock relatively easily. Two successive years of extremely severe winters and dry summers

have resulted in many of these operators going out of cattle temporarily owing to winter feeding difficulties. Also, many grain crops were so unpromising that they were grazed by stock which would otherwise have been in the pasture projects. However, a return to normal conditions, together with the continuing decrease in Crown range available outside of the pastures, undoubtedly will result in increased demand for pasture use.

Pasture managers again were employed in three pastures. Permittees paid an assessment, in addition to grazing fees, for the herding services supplied by the Forest Service.

CO-OPERATION

There now are 66 range live-stock associations recognized under the provisions of the *Grazing Act.* These organizations continue to be the best means of maintaining the necessary liaison between the Forest Service and range users. During the year, a total of 206 association or sub-group meetings were attended by Forest Officers to discuss range management and improvement problems. The boundaries of several association areas were extended to include formerly unorganized range units.

Close contact was maintained with the British Columbia Beef Cattle Growers' Association on subjects of industry-wide importance, notably in connection with the revised scale of grazing fees and broad planning for the implementation of more intensive range management and development. The association continues to actively promote improved range practices by member associations. The British Columbia Livestock Producers' Co-operative Association again supplied the live-stock price figures necessary for the sliding scale of fees. This producer-owned marketing agency sold approximately 43,200,000 pounds of beef animals from the range area during the year. The Forest Service also enjoyed excellent co-operation from, and working arrangements with, a considerable number of Provincial and Federal agencies in connection with a variety of range problems.

ADMINISTRATION

Although the use of Crown range for grazing purposes remained virtually static in 1967, the administrative load increased. This was due to a continued intensification of associated and often conflicting uses of the same land, such as for watershed, timber production, wildlife, and general recreation purposes. During the year, increased consultation and correspondence with the other responsible agencies and the public were necessary to minimize resulting conflicts. Numerous outside influences, such as heavier traffic requiring the control of stock drift on to highways, added to the complexity of administration.

Unplanned land settlement was an increasing problem. Throughout the main range area there is little Crown land suitable for a form of agriculture not dependent on the use of Crown range. However, there are many areas, such as natural meadows, which appear to prospective settlers to be suitable for development as the nuclei for new ranching operations. Almost invariably, these areas are already fully used by existing ranch operators for summer grazing and are usually only marginally suitable for cultivation and settlement owing to altitude, insufficient size, and isolation. Alienation of such areas depletes the already inadequate range at the expense of existing operators. Further, even if a new settler does manage to produce some winter feed and acquire stock, he cannot be accommodated on the reduced Crown range, which is a vital necessity for the success of his operation. Land settlement under these circumstances can only lead to bitter frustration for the settler

and financial disaster for the ranching industry. A disproportionate amount of time and effort was required during the year in gathering data to support recommendations against a large number of such land applications. A drastically revised approach to this problem is required.

The heavy fire season seriously interfered with range administration. The Ranger staff, which normally carries out supervision of improvement projects, enforcement of grazing-permit conditions, and related field duties, was often unavailable for this work for prolonged periods in some areas. In a few instances, staff initially assigned to special grazing duties had to be diverted to protection work. The relatively late onset of winter conditions permitted an extended field season, but compensated only in part.

Early in the year, the Grazing Regulations were revised to provide for a higher scale of grazing fees. Although the industry in general appreciated that an upward adjustment was required, considerable consultation and correspondence on the subject was necessary to fully explain the various factors involved. Increased range surveys and preliminary planning for an enlarged improvement programme added to the administrative load.

Grazing Permits

During 1967, 2,114 grazing permits were issued, authorizing the depasturing of 188,126 cattle, 6,837 horses, and 6,272 sheep on Crown ranges. Both the number of permits issued and cattle covered show a slight decrease from 1966 figures. The number of horses represents a 4-per-cent increase, and the number of sheep a further sharp reduction from the previous year. (*See* Table No. 81 in the Appendix.)

Expressed as animal unit months, the equivalent of one mature cow on the range for one month, total use authorized for all classes of stock amounted to 866,539 animal unit months, virtually the same as the previous year.

Hay Permits

The harvesting of hay from natural meadows on Crown range increased during 1967, the first such increase in a considerable number of years. This was due to the extremely dry weather, causing reduced water levels on many meadows normally flooded during the haying season. At the same time, some ranchers, depending on unirrigated hay lands, were short of winter feed and took advantage of the opportunity to increase supplies. During the year, 212 permits were issued, authorizing the harvesting of 2,208 tons of hay.

Grazing Fees

Except for developed pastures in the Peace River area, grazing fees per head per month were 41 cents for cattle, 51½ cents for horses, and 10¼ cents for sheep. These fees represent an increase of 24 cents for cattle, 30¼ cents for horses, and 6¾ cents for sheep. This large increase, more than double, resulted from the implementation of a new fee structure effective March 1st, and also reflected an appreciable improvement in market conditions in 1966.

Grazing fees are on a sliding scale, related to prices received by producers the previous year. Under the old structure, a base fee of 5 cents for cattle was related to a base market price of $5.12 per hundredweight for this class of stock. The fee for sheep was on a separate scale, related to sheep prices. The fee for horses was 1¼ times that for cattle. Under the new structure, a base fee of 10 cents for cattle is related to a base market price of $5 per hundredweight. The separate scale for sheep was abandoned owing to the lack of reliable market price information on this

class of stock, and the fee for sheep is now one-quarter that for cattle, as calculated annually. The fee for horses remains 1¼ that for cattle.

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

Although most range users appreciate the need for regulations and grazing-permit conditions designed to maintain the forage and associated resources of Crown range, there is still an unfortunate number who fail to comply unless a close check is maintained. To meet this situation, as many stock counts and range inspections as possible were carried out during the year. Approximately the usual number of infractions were discovered. In most cases a warning was sufficient to correct the situation. However, it was necessary to take direct action to remove 82 cattle and 145 horses grazing in trespass.

ENGINEERING SERVICES DIVISION

ENGINEERING SURVEYS

The drainage areas and their corresponding regulation units studied under the development engineering programme are listed in Table No. 91 in the Appendix. In many areas, logging and administrative road development has produced a complex of roads, and studies of these road networks to evaluate road condition and status to permit logical assignment of development priority formed a major part of this year's studies. Some 2,800 miles of existing roads were evaluated during the field season.

Engineering crews located 68 miles of forest road as a basis for the preparation of designs and estimates. In addition, these crews carried out re-establishment of some existing survey and reconnaissance lines to up-date them to present requirements, and undertook special site surveys for several bridges, forest-road junctions with highways, and railroad crossings.

In addition to the regular programme, personnel carried out detailed survey work to provide initial control and " as-built " plans for several of the new forest nurseries. During critical phases of the fire season, they assisted the staff of the Kamloops and Nelson Forest Districts by locating fire access roads.

Continuing assistance was provided to the other divisions and districts in the statusing, research, and acquisition of land and water areas for Departmental use. This has included purchase and lease or permissions under the various Acts and regulations governing this aspect of administration.

The use of air-photo interpretation for pre-field studies and for control of field work is being given continuing emphasis in order to minimize field investigations as much as practical.

DESIGN

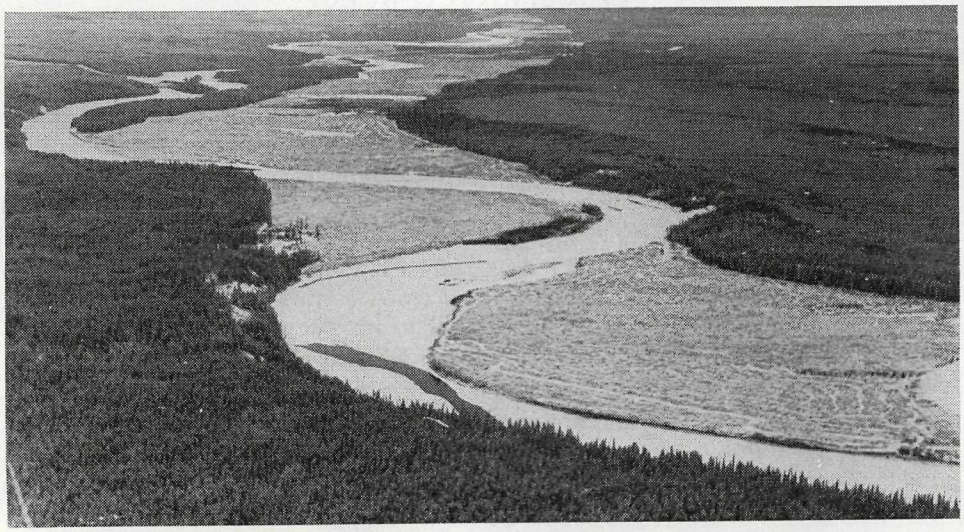
Designs, drawings, and specifications were prepared for seven pressure-creosoted timber bridges. These included two for the Chilcotin South Forest Road, one for the Suskwa Forest Road, one for the Nicoamen River in Kamloops Forest District, and three in the Prince George area. Designs were also completed for a helicopter boom for fixed-airbase aerial photography, a lookout tower for display at the Pacific National Exhibition, and an earth dam for water storage at the Red Rock Forest Nursery.

FOREST MANAGEMENT ENGINEERING

Site preparation work on navigation channels and shoreline access within the area to be flooded by the W. A. C. Bennett Dam continued and was concentrated in the Finlay River and Peace River reaches of the future lake. Some 14,560 acres were treated during the year, most of which were only accessible by river or by aircraft. The Department's own crews worked over 9,020 acres, and 5,540 acres were prepared by contract. Keen competition brought low bids on most contracts to below Departmental estimates. Favourable conditions in spring and in fall permitted burning of 3,100 acres of tree-crusher slash and 3,575 acres of windrowed non-merchantable material.

Other special assignments included the Stellako River log drive, organized and carried out by Division personnel to assist in a study of multiple use of this river, and a study of the Province-wide communications requirements of the Forest Service, with special emphasis on the place of the radio network. In addition, field

studies and inspections connected with the administration of timber sales and their access continued to increase in number and complexity.



Site preparation work on navigation channels and shoreline access within the area to be flooded by the W. A. C. Bennett Dam continued during 1967. Photograph shows the main channel looking north on the Finlay River.

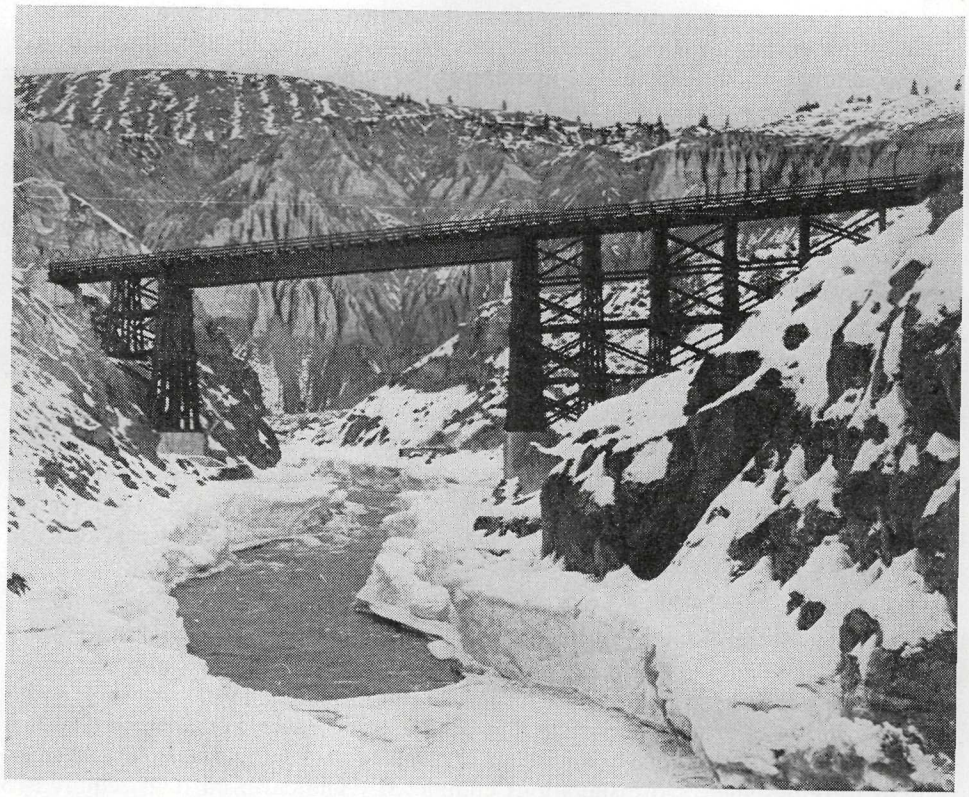
The Division is making considerable use of the computer facilities provided by the Department of Industrial Development, Trade, and Industry, and several programmes prepared by Division staff are operational. Programmes in preparation or under revision include site preparation for the rehabilitation of forest land, simulation of truck performance on forest roads, and design of forest roads.

ROAD CONSTRUCTION AND MAINTENANCE

The Bench Creek Forest Road was completed as part of the programme of the construction of 49.6 miles of road. This work, on seven projects, included the erection of six bridges and the excavation and movement of 1,262,000 cubic yards of common material and 119,000 cubic yards of solid rock. The exceptionally dry weather experienced this summer assisted crews in the Prince George area to complete 9 miles on the Bowron River Forest Road, but the work programme on the Chilliwack River Forest Road, Vancouver Forest District, was retarded because of the forest closure.

The largest permanent bridges ever designed by the Forest Service were erected during the year. The longest, 306 feet in over-all length, with a deck elevation 85 feet above normal water level, was placed across the Chilcotin River on the Chilcotin South Forest Road, south of Riske Creek. The bridge is made up of eight approach spans 22 feet long and a centre span 130 feet long. Main piers for the bridge are of reinforced concrete, 30 feet high, designed to avoid interference with existing fish ladders and fish migration. A single-span bridge was erected across the Bulkley River on the Suskwa River Forest Road, east of Hazelton. Girders for this bridge are 151 feet long, the longest fabricated for the Forest Service to date. The Lillooet River on the Harrison North Forest Road was crossed by a bridge consisting of one 24-foot approach span and one 120-foot main span. The remaining bridges have spans of 90 feet or less.

Some problems were encountered in transporting the longer girders to the work areas. A girder for the Chilcotin River bridge was damaged as the supplier was loading it on to a rail car in Vancouver, and two girders for the Bulkley River



The largest permanent bridges ever designed by the British Columbia Forest Service were erected during the year. The longest, 306 feet in over-all length, was this one, placed across the Chilcotin River on the Chilcotin South Forest Road south of Riske Creek.

bridge were damaged while being moved to the bridge-site. Although all three girders had to be replaced, completion of each bridge was delayed less than a month, and the damaged girders have been salvaged for use in other structures.

Structural maintenance was carried out on 870 miles of previously constructed road. The resurfacing programme for placing crushed rock and gravel on selected forest roads, commenced several years ago, was postponed due to other work of higher priority.

BUILDING AND MARINE SERVICES

The work load in this area of Division activity showed a continuing increase in both volume and dollar value. These increases reflected the accelerated programme of forest nursery expansion, the continuing design, acquisition, and maintenance of buildings, trailers, and marine craft, and the increasing costs of building construction and materials.

Investigation of new products and processes continued as an essential adjunct to selecting and ordering materials for Forest Service use. In conjunction with this, material and fabrication inspections were carried out on seven major bridges, six buildings, and a camera boom to be used on helicopters.

A number of books and papers dealing with technical subjects were added to the Division library.

Building Construction

The year's primary programme included contracts for new administration and residential buildings for Ranger headquarters at Mica, a combination administrative and laboratory building at the Red Rock Nursery, renovations at the Forest Service training-school to supply additional facilities, a 50-per-cent increase in the capacity of the seed extraction plant at the Duncan Nursery, and continuation of the renovation and maintenance programme at the Forest Service Maintenance Depot. Drawings and documents were completed for a new Ranger administrative and residential complex at Fauquier. The new stations at Mica and Fauquier will replace those at Arrowhead and Edgewood, which will be flooded by the lake which will form behind the High Arrow Dam.

Services to other divisions and the forest districts included consultation and preparation of preliminary designs and estimates for proposed developments and building projects, preparation of technical data, designs and ordering of materials for use by forest district crews in the erection of residences and other miscellaneous buildings.

Tenders were called for the administration buildings at Gold River, but, on the basis of the bids received, it was decided to review the proposals and to defer the project. In all, 79 contracts covering major and minor contracts were awarded during the year.

Water Supply and Irrigation

Two major projects are under way at the Campbell River and Red Rock Nurseries. The water supply and irrigation systems for these two nurseries were designed by a firm of consulting engineers so as to be capable of providing water when the nurseries reach their maximum production. Several smaller systems for the supply of domestic water to a number of establishments and five small irrigation systems were designed and installations completed. The earth-fill dam required to create the irrigation reservoir for the Red Rock Nursery was constructed.

Marine Activities

The programme of up-dating the water fleet to provide more economical, efficient, and comfortable units is continuing. Two flat-bottom craft, 26 feet and 30 feet, were constructed to commercially available design which incorporates the provision of a shelter cabin for service where the operation areas include large windswept lakes. One northern lake and five coastal Ranger stations have been equipped with fast trailer-borne, deep-vee, sea-going runabout hulls powered with twin outboard engines. The first summer's operation of this type of craft indicates they can replace slower medium-sized displacement launches, which are becoming more costly to own and operate and require marine wharfage facilities.

The new Ranger vessel "Coast Ranger," designed for service in exposed northern coastal waters, has completed sea trials and will be assigned in the new year.

To ensure that crews are familiar with the emergency raft equipment on seagoing vessels, the self-inflating life-rafts have been demonstrated to the crews on the occasion of the annual refit.

In line with continuing evaluation of vessel performance, marine stability experts were consulted about the M.V. "Forest Surveyor" and, on their recommendation, additional ballast was placed in the vessel prior to a summer's work in Queen Charlotte Islands waters.

A study is continuing on the possible merits of air-cushion vehicles as a means of marine travel for sheltered coastal water, major lakes, and rivers.

Mechanical Section

The interest in two-wheel-drive pick-up trucks, evident in 1966, has continued, and this type of unit, optionally fitted with low-profile canopies and electric winches, is replacing the more expensive station-wagon and panel types, and, in some instances, four-wheel-drive units. The change in ownership has resulted in a general increase of 20 units. In detail, four-wheel-drive units have decreased by six, ½- to ¾-ton pick-up trucks have increased by 32, total passenger- and panel-type units have decreased by nine, and the number of heavy trucks has increased by four units.

The number of trail motor-cycles has increased by nine units to 119, and ownership of snow toboggans has increased from 20 to 34 units. This latter increase indicates continuing development of their application to winter field work.

Chain saws, particularly those in the light-weight category, were in great demand during the height of the fire season, with 68 being purchased primarily for immediate use on fire-lines. This emergency situation was also reflected in purchasing of 97 fire-pumps, mainly for the Kamloops and Nelson Forest Districts.

Changes in types of heavy equipment, resulting in a net increase of two tractors, included the purchase of five new tractors, of which three were farm type for use by the Reforestation Division, and two were track-type units in the 270-horsepower range for forest road construction. In addition, three new graders were purchased, two of which were for the Engineering Division and one for the Kamloops Forest District, and an 18-yard elevating-type scraper was purchased for road construction on the Chilcotin South Forest Road.

Improvements in fabrication of fire-retardant mixers continued with the incorporation of a new type of high-shear impeller in two new mixer units. The new impeller proved very effective, but required an engine of 175 to 200 horsepower to deliver the power for quick efficient mixing. The construction of these two units brings the total of the various types of mixers in operation to 15 units.

Evaluation of new types of equipment continued with inspection of several types of light-weight "go anywhere" type vehicles which are equipped with tracks or low-pressure tires. Increasing interest in the use of such units resulted in purchasing two for field-use studies. The recently developed tractor-mounted hydraulic tree shear was used for site preparation in conjunction with the current programme on the Finlay River area of the flood-area of the W. A. C. Bennett Dam. It proved very successful in the conditions on that site.

A mechanical course for the basic class at the Forest Service training-school was again handled by Victoria and district mechanical personnel.

FOREST SERVICE MAINTENANCE DEPOT

The establishment of a common trades structure for the craftsmen within the Forest Service Maintenance Depot was finalized early in 1967. This action has ensured a flexibility of the work force with a continued improvement in efficiency and economy of production. The major portion of extensions and improvements to the various shops and facilities was finalized, thus completing much of the planned programme of over-all change.

Marine Work

New construction again highlighted the year's work with completion of the 50-foot "Coast Ranger." In addition, two smaller 30-foot craft of a new design,

known as " Texas " dories, were constructed and delivered to the northern part of the Province. Continuing overhaul of marine craft included extensive refits on several vessels for a total of 50 overhauls. In addition, repair work was completed on a further 57 units, including small boats, barges, and boat trailers.

Prefabrication and Carpentry Shop

The major portion of the year's programme concentrated on the rebuilding, repair, or reconditioning of 23 Porta-buildings and trailers. A number of items, such as crates, engine boxes, and signs, were produced, totalling 625 pieces. Other projects completed included five lookout buildings, six sets of lookout furniture, 16 truck pick-up boxes and backboards, and assistance with the erection of the display fire lookout tower at the Pacific National Exhibition.

Mechanical Work

The engine repair-shop work load continued at a high level, with a total of 567 pumps, light plants, outboards, marine engines, and chain saws being overhauled, crated, and shipped. In addition, 223 new units were tested and shipped to the forest districts. The machine-shop produced a great variety of specialized items, including hand-winches, brackets, fire-pump accessories, fire-hose couplings, nozzles, relief valves, and other assemblies, clamps, and miscellaneous items required for the repair of boats and launches. At times the emergency demands on servicing and shipping facilities, caused by the extreme fire season, disrupted the normal programme. For example, about 60 miles of fire-hose were fitted with couplings and forwarded to the forest districts.

The heavy-equipment shop provided regular maintenance for five truck tractors and 17 trailer units, and periodic maintenance for two compressor-equipped tractors, two graders, and a front-end loader. Also overhauled were 35 vehicles, eight electric power plants, two scrapers, and two grid rollers. Major fabrication included the building of components and their installation in a light-plant trailer, outfitting two fuel-service trucks, and making up three fuel-tank trailers. In addition, a variety of specialized heavy-duty welding, manufacture of specialized bridge hardware, and other similar work was completed.

Transport Pool and Warehousing

The transport pool continued to operate three diesel-powered 30-ton tractor-trailer trucks and two 5-ton gasoline units. Transportation services were provided to 23 projects and various forest districts. The total distance travelled was 150,000 miles on 325 assignments, including the hauling of 2,772 tons of materials and delivery of 43 towed units.

The warehouse activities handled a normal work load, shipping and receiving 994 shipments. To achieve an increase in ease of handling and warehousing efficiencies, storage of stock was reviewed and adjusted as required.

Depot Maintenance

The planned renovation and maintenance programme was carried out in conjunction with regular production. The major portion of this was completed by contract and included the extension to the prefabrication building, which will house the new machine-shop, the extension to the warehouse, and replacement of the main float. Depot personnel carried out general overhaul of depot equipment and facilities, including reconstruction of the centre ways in No. 1 building.

RADIO SECTION

Two hundred and nine radio transmitting units of all types were purchased during 1967, compared with 150 during the previous year. Sixty-two obsolete sets were retired, leaving a net increase for the year of 147 units. Virtually all equipment purchased was very high frequency (V.H.F.), 83 per cent of this being portable or mobile. One single sideband transmitter (S.S.B.) was added to the small total of S.S.B. sets now in use.

The Department of Transport continued to issue warnings to all radio networks concerning the imminent abondonment of medium frequency (A.M.) transmission, with the request that networks change gradually to single sideband (S.S.B.) now, rather than be forced into the new mode by regulations. While no large-scale effort has been made to date to implement the change to S.S.B., plans have been laid for conversion of at least three forest district headquarters stations to 500-watt single sideband operation, implementation to take place when the Forest Service is advised by the Department of Transport that this power is approved. General policy throughout 1967 has been to hold the line with regard to any kind of communication expansion, purchases being confined entirely to equipment for improved communication in the field.

The Vancouver Forest District headquarters station was rebuilt and modernized before the fire season, with much improved results. The district continued to pioneer the use of portable F.M. repeaters for providing fire-line to Ranger station communication. Where used, these were entirely successful, largely because the repeaters were on separate channels and therefore not subject to interference from other district circuits. A portable repeater was established on the 5,000-foot level between Squamish and Pemberton and provided good mobile communication over this route, which is probably the worst source of fire incidence in the forest district. Tests were carried out with a view to improving ship-to-shore communications by the use of F.M. on board to replace the standard A.M. installation. The lack of static pick-up from the vessel's machinery permitted use of the radio while the ship was under way and provided excellent communication when A.M. was completely inoperative.

No major projects were carried out in the Prince Rupert Forest District. Single sideband remote receiving facilities at district headquarters were extended to include all necessary channels preparatory to the expected conversion to 500 watts S.S.B. operation. During the severe fire season, communication on several simultaneous fires adjacent to each other was confused by F.M. portable sets having too long a range. To combat the condition of cross-talk between two or more fires, general radio service band portables were used in quantity for the first time, their shorter range confining signals to the fire on which they were being used.

In the Prince George Forest District, a repeater was installed on Pink Mountain, providing the connecting link between Nel X repeater at Fort Nelson and Wabi Hill repeater at Chetwynd. Fort Nelson now has F.M. contact with Fort St. John and Prince George during the fire season, the repeater being taken down during the winter. The A.M. unit at Fort Nelson was removed and replaced by a remote-controlled combination A.M.-S.S.B. set. Results were frequently unsatisfactory on A.M., indicating the need for more power over the long distances involved. Plans were made during the year for the conversion of the headquarters station to 500 watts S.S.B., 200 watts A.M.

Kamloops communications remain unchanged and gave fairly good service during a bad fire season. The need is still obvious for a completely replanned repeater system as the physical proximity of all the repeaters caused the usual overlap

problem to mobiles. This was aggravated by the continuing existence of over 50 vehicles still equipped with 1- and 2-watt portables in place of standard 15- to 30-watt mobile transmitters.

The plan to fill in radio coverage in the Kaslo-Revelstoke area of the Nelson Forest District by repeaters at Buchanan, Sproat, and Arrowhead did not materialize. Extensive tests were made at these locations, the results being somewhat less than satisfactory but adequate to show that further propagation surveys are justified. A new repeater was installed at Whatshan for the purpose of giving F.M. communication to Edgewood and mobiles in the Edgewood area. It was hoped that some coverage would be extended to Nakusp and New Denver, but, while results to Edgewood were excellent, radio coverage to the Slocan Valley was not obtained. The trunk repeater system installed in 1967 was adjusted throughout the summer to correct circuit and power deficiencies which showed up after a period of use.

A.M. communication from forest road camps to Victoria was reduced and, to a great extent, replaced by F.M. common-carrier radio-telephones and mobile radio-telephones on a temporary lease basis.

During the summer, Victoria technicians carried out a survey of the Squamish-Pemberton area, overhauled the Nelson repeater system, installed the Wabi Hill-Pink Mountain repeaters, and established new repeaters at Whatshan and at Skog Mountain for the F.M. through circuit from Victoria to the Mile 73 camp on the Parsnip River. Laboratory projects included further development on battery repeaters and different types of remote-control systems.

FOREST PROTECTION DIVISION

WEATHER

The 1967 fire season, which followed a cool spring, started with heavy precipitation along the Coast and in the Southern Interior. This picture soon changed as the absence of normal June rains throughout the Province ushered in the extended drought conditions that marked the most hazardous fire season in recent years. Although these dry conditions were eased to near normal in the northern half of the Province in June, the hot, dry weather continued in the southern portions until early October.

In view of the extended build-up and high-hazard conditions, travel restrictions and industrial closures were implemented in various areas of the Province.

The arrival of heavy rains in October broke the drought, allowing the fire season to be terminated officially on October 13, 1967.

FIRES

Occurrence and Causes

This past summer being one of the driest and hottest for such an extended period resulted in a serious increase in the number of fires experienced. The total of 3,216 fires recorded was well above the 10-year average of 2,314. Lightning was again the principal cause, accounting for 29.8 per cent of the fires. This is in marked contrast to the 1966 season, when only 19 per cent of fires were started by lightning. The 10-year average is 35.8 per cent.

See Tables Nos. 104, 105, and 109 in the Appendix.

This scene is typical of those in which more than 3,000 forest fires were caught and extinguished during the 1967 fire season before they could explode into conflagrations.

Cost of Fire-fighting

Average fire-suppression cost to the Forest Service was $4,233 per cost fire, compared with $886 the previous year. Total suppression cost for the year was $8,745,800, of which $6,934,500 was accounted for by the Forest Service and $1,811,300 by other agencies. This is an increase of $5,585,400 over the 10-year average.

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

Damage

The 244,483 acres of forest cover burned represented approximately 54 per cent of the 10-year average of 455,814 acres. The damage to forest cover was $4,751,900, compared with the 10-year average of $3,715,500. The increase in the damage is due to many of the more serious fires in logging slash spreading into the adjacent merchantable timber.

See Tables Nos. 108 and 110 in the Appendix.

PROTECTION PLANNING AND RESEARCH

Fire Statistics

A major objective of coding forest fires back to 1950, for electronic data-processing applications, was completed in 1967. These data, on a three-card-per-fire basis, after processing in Data Processing Division, will be available for fire research studies and statistical analyses.

The severe 1967 fire season greatly increased the volume of annual maintenance of the Provincial Fire Atlas and fire summary book. The fire atlas was widely utilized during the year, and has proved its worth as a useful reference medium in its present overlay form.

Visibility Mapping and Lookout Photography

One crew, consisting of two forestry students, did the combined work of visibility mapping and lookout photography during the 1967 season.

Field examination of 42 possible lookout points was completed. These points were scattered throughout the Province and brought up to date all outstanding requests for individual points to be mapped. In addition, a start was made in detection planning for the Stewart–Cassiar Road system.

The programme of taking panoramic photos for all new lookout-sites and the up-dating of old photos was continued, with 19 lookouts being completed.

Fuel-moisture Indicator Sticks

The spring field test was undertaken at Ashcroft, where weather conditions were more suitable in determining acceptable tolerances on the 100-gram fuel-moisture sticks.

Of the 1,018 sets shipped this year, 60 per cent went to industry and the remainder went to the Canada Department of Forestry and Rural Development and to the Forest Service.

The co-operation of the Federal forestry department's wood products laboratory at the University of British Columbia in making the kiln and facilities available for this project is gratefully acknowledged.

Insect Survey and Control

The balsam woolly aphid (*Adelges piceæ*) survey to delineate the general limits of infestation in South-western British Columbia was essentially completed in 1967. Sampling crews thoroughly covered the general area, ranging well beyond the established perimeter of infestation. No new outbreaks were found beyond this 1966 perimeter, although two positive 1966 samples had noticeably increased in size.

Additional sampling was done in balsam stands in the Southern Okanagan as a precautionary measure when *Adelges piceæ* was identified on ornamental balsams, one infestation being located in Oliver and one in Penticton. No infestation was found in the native stands.

Co-operation of the Director of the Forest Research Laboratory in Victoria (Canada Department of Forestry and Rural Development) is acknowledged in allotment of laboratory and office space and in the supplying of technical assistance and advice.

Research Projects

The severe fire season seriously restricted activities in the field of fire-control research.

The lookout-window-tinting programme initiated in 1964 has now been completed and has been well received. The sferics programme has been held in abeyance pending solution to calibration problems which were encountered in the field trials. A drip torch of improved design was produced in quantity and, with a few minor modifications, has been well received. A durable pocket-size fuel-moisture-stick balance has been designed and produced in test quantities, but the results of the field testing have not yet been compiled.

The Federal Department of Forestry and Rural Development continued its co-operative danger index investigations, and it is anticipated there will soon be an accurate measure of fire-hazard conditions throughout the Province.

Equipment evaluation continued, and the increasing complexities of forest fire control indicate that this field will require an increasing amount of time in the future.

FIRE-SUPPRESSION CREWS

Fourteen fire-suppression crews of 7 to 12 men each were employed in the three southern forest districts. In addition, two- or three-man crews were employed in about 30 Ranger districts throughout the Province.

The crews in all areas were put to good use in fire-control efforts, particularly during the extended drought period with its attendant high fire load and forest-closure problems.

See Table No. 115 in the Appendix.

AIRCRAFT

This was the heaviest year for the use of aircraft in the history of the Forest Service, with over 20,000 hours of air time being logged. Forty-two contract aircraft were available during the peak hazard period. In addition, over 30 aircraft were chartered for various periods.

The use of air tankers, particularly those using the long-term fire retardants, was of tremendous assistance to the field staff. The combination of air-tanker initial attack and helicopter transport on remote fires assisted a hard-working field staff to compile a remarkable record of initial attack successes this season.

The use of small patrol aircraft also proved its worth in this serious fire season. A well-integrated detection system of lookouts and aircraft is rapidly developing

throughout the Province and is contributing to a marked decrease in the number of fires reaching a difficult size before being discovered.

See Tables Nos. 113 and 114 in the Appendix.

ROADS AND TRAILS

Due to the heavy fire season, the programme of road and trail construction and maintenance was seriously curtailed, particularly in the Kamloops and Nelson Forest Districts. Prince Rupert Forest District conducted reconstruction work on the Perow and Tintagel plantations, improving access for both protection and management. Further reconstruction was carried out on the Telzato Mountain and Sunset Lake roads. In the Prince George Forest District, new construction was carried out on the boundary road, giving access to the southern portion of Dawson Creek Ranger District by a shorter route within the Province. West of the mountains the McLeod–Tselcok Road was connected from McLeod Lake to the Germansen Road.

See Table No. 116 in the Appendix.

SLASH AND SNAG DISPOSAL

Vancouver Forest District

The long hazard build-up in 1967, extending from May through September, resulted in unusual slash-burning conditions over the Vancouver Forest District. The west coast and the northern section had excellent burning weather during July and August, and many operators took advantage of this to clean up their slash areas with good results. Only two escapes occurred, but the damage was slight when compared with the total acreage prepared for planting. During this period the Forest Service successfully burned 270 acres of old slash in the Mackenzie Sound area.

Severe drought conditions persisted over the east coast of Vancouver Island from Victoria to Campbell River, the Sunshine Coast south of Lund, and the Squamish, Pemberton, and Fraser Valley areas throughout the summer until the first rains fell on September 1st. Drying conditions then returned and, with a forecast of more rain by September 8th, many operators in this general area commenced burning with good results, except on the northerly exposures. Heavy rains fell on September 8th, 9th, and 10th, ending further burning on the west coast of Vancouver Island and the northern areas.

By September 12th conditions again appeared favourable and many areas in the southern districts were ignited. By September 15th drought conditions again reached serious levels and many of the burns escaped control. On September 16th the District Forester curtailed further burning in this area, and from then until September 29th both industry and the Forest Service were involved in fire suppression.

The escapes covered 20,679 acres, including fringe areas, and caused an estimated total damage of $846,024 (*see* Table No. 121). Suppression costs were $70,770 to the Forest Service and $636,238 to industry. Factors contributing to these escapes are being given careful study with the view to decreasing this loss in future.

The total of 94,136 acres logged in 1967 was down slightly from the 100,000 acres logged the previous year, due to closures imposed during the extreme hazard of the late summer months. The need to discontinue burning in mid-September because of the extreme drought has resulted in a very large acreage of unburned slash being carried over to 1968.

PRESCRIBED BURNS

Interior Forest Districts

Although the provisions of section 116 of the *Forest Act* were amended to cover the entire Province in 1967, some time was required to set up operating procedures. Also, it was considered advisable to proceed slowly as many operators were inexperienced in burning and our staff could not provide adequate supervision. The net result was that no " Instructions to Burn " were issued in 1967 under the Act. However, a considerable number of companies were instructed under the burning clauses in their timber-sale contracts. Many of these areas had to be extended to 1968, particularly in the Kamloops Forest District, owing to lack of suitable burning weather caused by the prolonged drought of the past summer.

Following is a summary of acres burned by both industry and the Forest Service in the Interior in 1967:—

Forest District	Forest Service	Industry	Total
	Acres	Acres	Acres
Prince Rupert	1,832	3,847	5,679
Prince George	3,916	2,867	6,783
Kamloops	203	2,869	3,072
Nelson	------	------	------
Totals	5,951	9,583	15,534

FIRE-LAW ENFORCEMENT

Because of the extremely serious fire season, a sharp increase was experienced in prosecutions under Part XI of the *Forest Act*. A total of 77 informations was laid, of which 43, or 56 per cent, were for contravening a forest closure. The 10-year average for prosecutions numbered 44.

FOREST CLOSURES

Due to the extreme hazard, it was found necessary to impose six travel and recreational closures, one general closure, and one restricted industrial closure in the Vancouver, Prince George, Kamloops, and Nelson Forest Districts. It was also deemed advisable to suspend campfire permits in Vancouver, Kamloops, and Nelson districts during the height of the hazardous period. Details of closures follow:—

Forest Closures, 1967

Area	Forest District	Type of Closure	Effective Date	Termination Date
Areas 1, 2, 3, 4, 6, and portion of 5	Nelson	Recreational	Aug. 3	Sept. 11
Zones 1, 2, 7, and 9	Vancouver	General	Aug. 17	Sept. 1
Zones 3, 4, 5, and 6	Vancouver	Restricted industrial	Aug. 17	Aug. 21
Zones 8 and 10	Vancouver	Restricted industrial	Aug. 17	Sept. 1
Nelson Forest District	Nelson	Recreational	Aug. 18	Sept. 11
South-eastern portion of Kamloops Forest District	Kamloops	Recreational	Aug. 22	Sept. 9
Zones 8 and 10	Vancouver	Recreational	Aug. 22	Sept. 1
Between Fraser and North Thompson Rivers, south of Quesnel Lake	Kamloops	Recreational	Aug. 30	Sept. 9
East of Rocky Mountain divide to Alberta border and south of the Halfway and Peace Rivers	Prince George	Recreational	Aug. 31	Sept. 10

Suspension of Campfire Permits

Forest District	Effective Date	Termination Date
Vancouver	July 14	July 21
Vancouver	Aug. 4	Sept. 1
Kamloops	Aug. 4	Aug. 7
Nelson	Aug. 4	Sept. 11
Kamloops	Aug. 17	Sept. 11

FOREST SERVICE TRAINING-SCHOOL

The sixth class of basic trainees (Basic Course No. 6), consisting of 24 men, enrolled January 9, 1967, and graduated three months later, on April 7th. The total number of graduates from the basic course is now 124.

The 15th class of advanced trainees, consisting of 24 men, enrolled on September 20, 1967. They completed the first term on December 19th, and will commence the second and final term on January 8, 1968. The total number of graduates from the advanced course is 295.

Subjects covered during the year were as follows:—

Basic Course No. 6, Spring, 1967 (January 9th to April 7th)

Subject	Days Allotted
Forest Management Policies and Procedures	7
Forest Protection Policies and Procedures	4
Pre-suppression	8
Silviculture	3
Photogrammetry	3
Mathematics	2½
Fire Suppression	12½
Surveying	5½
Measurements	7
Mechanical Equipment Maintenance and Operation	10
Opening, closing	½
Total days	63

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

Advanced Course No. 15, Fall, 1967 (September 20th to December 19th)

Subject	Days Allotted
Forest Protection Policies and Procedures	8½
Botany	5
Ranger District Organization	6
Dendrology	2
Entomology	3½
Pathology	4
Mathematics	3
Silviculture	4
Research Division	3
Reforestation Division	2½
Public Speaking	4½
Surveying	6
Business English	3½
Wood Technology	2½
Grazing	3½
Slash Trip	1
Opening, spares	1½
Total days	64

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 the Vancouver Forest District Lookoutmen.—The school provided room, board, facilities, and instruction for this course. Fifteen men took the course, which was held during the period of April 24 to 27, 1967.

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 three different groups were held. A total of 75 men attended the sessions during the period May 4 to 13, 1967, inclusive.

During the summer the school assisted with instruction at fire-control courses held at Kelowna, Prince George, and Terrace.

A one-day fire-control course was held at Victoria for the Engineering Services Division.

Interviews and selection of the students for Advanced Class No. 15 were completed by July 6, 1967.

Two instructors attended a two-day introductory course on the fire simulator at the Forest Technology School, Hinton, Alta.

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

The reading course on the *Forest Act* was amended to date, and 350 copies were distributed to the districts and divisions, along with 200 copies of the mathematics reading course.

Remainder of the time was taken up with preparation of courses, administration, and maintenance.

ACKNOWLEDGMENTS

Appreciation is expressed to speakers and lecturers and for equipment provided by the following agencies: Rover Motor Company, Vancouver; Wajax Equipment Limited, Vancouver; F. J. Harper, St. John Ambulance; Inspector W. R. Morrison, Royal Canadian Mounted Police, Cloverdale; R. Grant, Queen Elizabeth High School; A. Jackson, Department of Transport, Vancouver; J. Murphy, Okanagan Helicopters; Air Division of the Surveys and Mapping Branch, Department of Lands, Forests, and Water Resources; Forest Research Laboratory, Department of Forestry and Rural Development; Fire Marshal's Office, Vancouver; University of British Columbia; Balloon Transport Limited, Vancouver; as well as lecturers from other divisions and districts of the Forest Service.

CONSTRUCTION

The parking-lots adjacent to the utility building and the dormitory building were completed.

Two outdoor volleyball courts were equipped and are now in use.

Alterations to the electrical circuits in the administration building were completed to the specifications of the *Electrical Energy Inspection Act.*

ACCOUNTING DIVISION

FISCAL

Due to a combination of unfavourable circumstances, the financial return to the Forest Service declined sharply in the calendar year 1967. Principal contributing factors were the severe fire season, the prolonged work stoppage in the Interior, termination of the Federal-Provincial Forestry Agreement, and generally lower stumpage prices on the Coast. The latter resulted from concessions granted with respect to zone selling prices on the Coast in late 1966, the slump in the Coast log market at that time, and the increasing number of licensees taking advantage of the $5 stumpage adjustment formula introduced as an alternative to the sliding-scale formula. At the year's end the market outlook for forest products was being reported as encouraging, but the Interior strike, estimated to be costing nearly $400,000 per month in direct revenue, was not settled and no termination date was predicted.

The total of amounts charged to logging operations during 1967 fell by 18.3 per cent to $40,040,843 (*see* Table No. 142 in the Appendix), although the total volume of timber cut decreased by only 1.8 per cent. The only forest district registering an increase in charges was the Prince George Forest District, with 10.3 per cent, the Vancouver Forest District being down 24.5 per cent; Nelson Forest District, 22.4 per cent; Kamloops Forest District, 19.6 per cent; and Prince Rupert Forest District, 18.9 per cent. The gain in the Prince George District reflected an increase of 8.1 per cent in timber scaled during the year, while the losses in the other districts could be attributed to the Interior strike and the factors affecting stumpage mentioned in the opening paragraph.

Forest revenue (*see* Table 141 in the Appendix) decreased by 15.6 per cent to $42,492,365. This decline mainly reflected the drop in the total of amounts charged to logging operations, but another significant factor was the reduction of $837,789 in payments received under the Federal-Provincial Forestry Agreement. The Agreement expired on March 31st, and was not renewed by the Federal Government.

Timber-sale stumpage, which contributes the bulk of the revenue, was off 18.5 per cent to $34,732,239. Timber-sale rentals and fees declined by 7.0 per cent, timber-berth rentals and fees by 6.5 per cent, and timber-lease rentals and fees by 28.7 per cent. The latter two were largely due to elimination of substantial acreage of logged-off areas, as provided by Statute. Timber-licence rentals and fees recorded an increase of 6.9 per cent, resulting from advance payments received from some licence-holders. Timber-sale cruising and advertising held fairly steady at 2.9 per cent. Timber royalties again rose substantially, by 13.9 per cent to $3,509,720, as the volume of timber cut from non-stumpage-bearing tenures continued to increase.

Forest protection tax collections of $579,928 were relatively unchanged, showing a slight gain of 1.7 per cent, and miscellaneous revenue climbed by 60.7 per cent to $394,389, mainly due to the payment of some large timber-sale bidding fees. Grazing permits and fees showed the largest increase, a rise of 102.4 per cent to $310,719, as the result of a new rate structure. This will provide additional funds to undertake extensive range improvements in the 1968/69 fiscal year.

Weight-scaling cost recovery, at $396,894, was up 86.9 per cent, reflecting the increased adoption of this form of scaling by the industry. However, Federal Forestry Agreement payments, under which the Federal Government had contributed $1,804,461 annually, amounted to only $542,147 because of the non-renewal of the Agreement. Provincial funds in the equivalent amount were made available by

Treasury Board to permit continuance of the affected programmes without interruption, and it is anticipated this situation will continue.

Financial tables, on a fiscal-year basis, for the period ended March 31, 1967, may be found in the Appendix (*see* Tables 143, 144, and 145), and detailed expenditure information appears in the Public Accounts, published annually by the Department of Finance.

ADMINISTRATION

Activity in all phases of divisional work was at a high level during the year. There were no major changes in organization or staff, but some problems were encountered from staff turnover, by resignation or transfer, and the time loss involved in obtaining replacements.

The effects of the most costly fire season on record, combined with a continuing growth in normal accounting, resulted in a heavy work load for both headquarters and district expenditure sections. On the whole, payments were made within a reasonable period, but accounting for fire costs had not been completed at the year's end.

In the area of timber-sale accounting, it was necessary to institute new procedures to administer the new " continuous deposit " provided by clause 2.05 of Regulation 99/67 under the *Forest Act* as an alternative to the 10-per-cent security deposit required on timber sales. Much more frequent and direct contact is required between district offices and the Accounting Division to ensure that deposits held are in the proper amount. In addition, fluctuations in market prices and the increasing popularity of the recently introduced " $5 stumpage adjustment formula " required numerous adjustments in both district and headquarters offices. As noted, this contributed to the decline in revenue, but on a rising market a corresponding increase will be quickly evident.

In the field of revenue collection, the condition of the accounts receivable was the best on record. By the end of the year, the accounts in each of the five districts were substantially current, although the prolonged strike in the Interior was making it difficult to maintain this situation.

Toward the latter part of the year, the general " tightening " of available funds required more intense expenditure control, and several planned projects had to be deferred. Indications were that this situation might persist for some time.

Only moderate progress was made in the continuing survey of office methods, due to concentration on other matters and the preoccupation with fire-season problems. It was hoped this work could be resumed early in the new year. Regular monthly meetings of the headquarters Forms Co-ordinating Committee were held, and a catalogue to include all forms in use was initiated. It will be kept in the Property Room, and a copy will be made available to each district office and the Forest Service Training-school as soon as practicable.

To the normal administration of beachcombing and log salvage was added beach-clearing. Legislation was passed at the 1967 Session of the Legislature providing for forfeiture of marked logs on beaches and foreshore. This resulted in the sale of five licences on the Coast and one on an Interior lake. Late delivery of equipment for a floating chipping plant has delayed an operation which could show the effect of " on site " chipping on beach-clearing on the Coast.

Log export also received adidtional attention from the Division during the year. The record volume of logs approved for export under Part X of the *Forest Act* due to excessively large log stocks in 1966 carried over into 1967 for an even greater increase. Log stocks subsequently levelled off, but pressure for export approval continues. The principles of Part X, requiring manufacture within the Province, are being adhered to as strictly as conditions permit.

PERSONNEL DIVISION

Changes in senior personnel in the Forest Service during 1967 involved the retirement of two division heads, which resulted in the appointment of an engineer in charge of Engineering Services Division, a new head of the Reforestation Division, and a new forester in charge of the Forest Service training-school. A substantial salary increase was approved for technical forest officers and forest assistants resulting from a review conducted in 1966, and the adjustment was made retroactive to October, 1966.

In the matter of employee relations, the Chief Forester and Personnel Officer met several times with a committee of the Society of Technical Foresters and the British Columbia Government Employees' Association to discuss various matters of employee welfare, and the Chief Personnel Officer of the Civil Service Commission and the Forest Service Personnel Officer met with the committee of Coast Scalers' Association to discuss an anomaly in the salary for Scaler 1. A general salary increase for all employees became effective April 1st.

COMMUNICATIONS AND TRAINING

Although there was no meeting with the District Foresters in Victoria, each District Forester and his assistant visited headquarters for a week to discuss problems with various divisions. Ranger meetings were held in the Vancouver and Nelson Forest Districts, and local zone meetings were held in the other three forest districts. The district supervising draughtsmen met in Victoria with the Management Division draughting staff to discuss mutual problems.

The Personnel Officer and Assistant Personnel Officer took part in several vocation-day programmes at secondary schools in the Victoria area and the Lower Mainland, and other forest officers took part in similar programmes in other areas throughout the Province. The Department was again represented on the annual programme of instructive interviews for graduating secondary-school students sponsored by the Victoria Chamber of Commerce and Canada Manpower Centre. Forest Inventory and Engineering Services Divisions held their annual pre-season instructional programmes for summer field staff, as well as pre-season meetings for professional staff. Four employees were selected for Class XII of the Public Administration Course under the Executive Development Training Plan and included two foresters and two engineers.

Four employees, one engineer and three foresters, graduated from Class IX and received Diplomas in Public Administration. Class IV of the correspondence course in Basic Public Administration commenced in the fall, and the Forest Service was represented by three employees, one each from Victoria, Vancouver, and Prince George. Three employees of the Forest Service graduated in the spring from Class 3 of this course. A number of field staff qualified for industrial first-aid tickets, and the St. John Ambulance course, sponsored by the Civil Defence Organization, was well attended by the staff in Victoria. 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, 121 persons received Civil Service appointments and 136 left the Service. Eleven Forest Service 25-year certificates and badges were earned. Fourteen employees were guests of the Provincial

Executive Council at a luncheon where they were awarded certificates for 25 years' continuous government service. There were 12 retirements and 44 transfers of permanent staff. Eleven graduate foresters and five engineers left the Service, while 11 graduate foresters and two engineers were hired.

Turnover of Civil Service appointed staff, including full-time casual staff, was 10.8 per cent, down from 12.4 per cent in 1966. The Prince Rupert Forest District again suffered the greatest disruption at 19.8 per cent, followed by the Vancouver Forest District at 16.7 per cent and the Prince George Forest District at 14.0 per cent. The Kamloops Forest District was 10.1 per cent; Victoria headquarters, 9.5 per cent; and the Vancouver Scaling Office, 7.0 per cent. The Nelson Forest District was again lowest at 6.3 per cent, which was an increase over 4.5 per cent in 1966.

Professional staff turnover, at 5.9 per cent, was a big improvement over the 9.1-per-cent turnover in 1966, and a big improvement was noticed in the technical staff at 3.2 per cent, as compared with 6.4 per cent in 1966. Highest turnover was again in the clerical staff, with figures of from 46.1 per cent for the Prince Rupert District down to 14.0 per cent for Victoria headquarters.

In the matter of discipline, one employee was released for cause. There were six disciplinary suspensions for minor infractions of rules and safety regulations. No annual merit increases were withheld.

There were 953 written applications for employment received and processed by the Personnel Office, in addition to those handled by the district offices and divisional staffs. Promotional examinations were held by the Civil Service Commission for draughtsmen and mapping assistants to the advantage of a number of employees. Oral examinations were held at panel interviews to fill 31 positions. The Personnel Officer and the Assistant Personnel Officer participated in the filling of 145 other positions. Two hundred and ninety-six candidates sat for the annual spring examination for Technical Forest Officer 1, with 60 qualifying for 28 vacancies. After all vacancies were filled, a comparatively small list of eligible candidates remained to be referred to any subsequent vacancies. At the same time, 111 employees sat for the annual examination for Technical Forest Officer 2, with 32 qualifying.

CLASSIFICATION, SALARIES, AND WORKING CONDITIONS

Classification reviews were requested for 120 positions. At the end of the year, 82 had been approved, eight rejected, and the rest were still under review. An organizational study and classification review of the data-processing system for computing log volumes and billing for Coast scaling was completed, and the new organization appears to be working satisfactorily. The Forest Service Maintenance Depot was also subjected to an organizational study and classification review, which resulted in a more efficient utilization of staff and space. A number of reclassifications resulted from both these studies. The review of the forest agrologist series and the mechanical supervisor series commenced late in 1967, but neither was completed by the end of the year.

Seven employees were registered as professional foresters and three as professional engineers. Working conditions were in general unchanged, but the Civil Service Commission instituted minor changes in their regulations concerning both leave and overtime. Constant effort is being made for improvement of working conditions where possible.

Although there was a total of 560 accidents to employees of the Forest Service in 1967, 283 of these were suffered by fire-fighters and 10 by temporary tree-planters and cone-collectors. This leaves a total of 267 for the regular staff, of which 76

were time loss, and 191 required medical aid only. A new system of accident-frequency statistics was commenced which separated the fire-suppression group and the tree-planters and cone-collectors from the regular staff, providing a means of assessing the efforts in the accident-prevention programme. These records showed an improvement in the time-loss frequency for the regular staff, which dropped from 22.1 time-loss accidents per million man-hours worked in 1966 to 14.6 time-loss accidents in 1967. The time-loss accidents for the regular staff were 28.5 per cent of the total accidents, as compared to 42.6 per cent in 1966. The Prince Rupert Forest District won the bronze award of merit, and the Prince George Forest District won a silver award and a second bronze award. The Forest Inventory Division also won a silver award, while the Nelson Forest District won a gold award. The achievement of the Forest Inventory Division and the Nelson District were recognized by each receiving the Prime Minister's safety trophy. There were no fatal accidents during 1967.

PERSONNEL DIRECTORY, 1967

(As of December 31st)

VICTORIA HEADQUARTERS

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

Staff Division Heads:

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

Operations Branch Division Heads:

Phillips, W. C. - - - - - - - - Forester i/c Protection Division
Hughes, W. G. - - - - - - - - Forester i/c Management Division
Pendray, W. C. - - - - - - - - - - Director, Grazing Division
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. (Chilliwack); McArthur, E. J. (Hope); Wilson, R. S. (Harrison Lake); Nelson, J. N. (Mission); Mudge, M. H. (Port Moody); Neighbor, M. N. (Squamish); Chamberlin, L. C. (Sechelt); Northrup, K. A. (Pender Harbour); Hollinshead, S. B. (Powell River); Doerksen, V. J. (Lund); Stefanac, G. (Thurston Bay East); 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:

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

NELSON FOREST DISTRICT

J. R. JOHNSTON - - - - - - - - - - - - - DISTRICT FORESTER
Isenor, M. G. - - - - - - - - - - Assistant District Forester

Forest Rangers:

Taft, L. G. (Invermere); Humphrey, J. L. (Fernie); Anderson, S. E. (Golden); Gierl, J. B. (Cranbrook East); Ross, A. I. (Creston); Allin, G. B. (Kaslo); Benwell, G. L. (Lardeau); Robinson, R. E. (Nelson); Jupp, C. C. (New Denver); Raven, J. H. (Nakusp); Wood, H. R. (Castlegar); Reid, E. W. (Grand Forks); Uphill, W. T. (Kettle Valley); Cartwright, G. M. (Canal Flats); Benwell, W. G. (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.	Tabulation of Research Projects Active in 1967	74
12.	Research Publications, 1967	75
	Reforestation Division	
22.	Summary of Planting, 1958–67	76
	Public Information and Education Division	
31.	Motion-picture Library, 1958–67	77
32.	Summary of Coverage by School Lecturers, 1958–67	78
33.	Forest Service Library, 1958–67	79
	Forest Management Division	
47.	Summary of Basic Data for Tree-farm Licences (Private Sustained-yield Units)	79
48.	Summary of Basic Data for Certified Tree-farms (Private Sustained-yield Units over Crown-granted Lands)	79
49.	Summary of Basic Data for Farm Wood-lot Licences (Private Sustained-yield Units)	80
50.	Summary of Basic Data for Public Sustained-yield Units	80
51.	Value Added by Manufacture and Estimated Net Value of Logging, 1958–67	81
52.	Water-borne Lumber Trade (in M B.M.), 1958–67	82
53.	Total Amount of Timber Scaled in British Columbia during Years 1966 and 1967: (A) in F.B.M., (B) in Cubic Feet	83
54.	Species Cut, All Products, 1967: (A) in F.B.M., (B) in Cubic Feet	84
55.	Total Scale, All Products, 1967 (Segregated by Land Status and Forest Districts): (A) in F.B.M., (B) in Cubic Feet	85
56.	Timber Scaled in British Columbia during 1967 (by Months and Forest Districts)	86
57.	Number of Acres Operating under Approved Annual Allowable Cuts, 1958–67	87
58.	Total Scale of All Products from Areas Operated under Approved Annual Allowable Cuts, 1958–67	88
59.	Logging Inspections, 1967	89
60.	Trespasses, 1967	90
61.	Areas Cruised for Timber Sales, 1967	91
62.	Timber-sale Record, 1967	91
63.	Competition for Timber Sales Awarded, 1967	92
64.	Timber Sales Awarded by Forest Districts, 1967	93

TABLE NO. PAGE

65. Average Stumpage Prices as Bid, by Species and Forest Districts, on Timber Sales during 1967, per C C.F. Log Scale 94
66. Average Stumpage Prices Received, by Species and Forest Districts, on Timber Scaled on Tree-farm Licence Cutting Permits during 1967 95
67. Timber Cut and Billed from Timber Sales, 1967 96
68. Saw and Shingle Mills of the Province, 1967 97
69. Export of Logs (in F.B.M.), 1967 98
70. Shipments of Poles and Other Minor Products, 1967 98
71. Summary of Export of Minor Products for Province, 1967 99
72. Timber Marks Issued, 1958–67 99

GRAZING DIVISION

81. Grazing Permits Issued, 1967 99

ENGINEERING SERVICES DIVISION

91. Forest Road Programme, 1967 100
92. Forest Service Mechanical Equipment, 1967 101

FOREST PROTECTION DIVISION

102. Reported Approximate Expenditure in Forest Protection by Other Agencies, 1967 102
103. Fire Occurrences by Months, 1967 102
104. Number and Causes of Forest Fires, 1967 102
105. Number and Causes of Forest Fires for the Last 10 Years 103
106. Fires Classified by Size and Damage, 1967 104
107. Damage to Property Other than Forests, 1967 105
108. Damage to Forest Cover Caused by Forest Fires, 1967—Parts I and II 105
109. Fire Causes, Area Burned, Forest Service Cost, and Total Damage, 1967 107
110. Comparison of Damage Caused by Forest Fires in Last 10 Years 107
111. Fires Classified by Forest District and Cost per Fire of Fire-fighting, 1967 108
112. Prosecutions, 1967 109
113. Contract Flying, 1967 110
114. Non-contract Flying, 1967 110
115. Analysis of Suppression-crew Fire-fighting Activities, 1967 111
116. Construction of Protection Roads and Trails, 1967 111
117. Summary of Snag-falling, 1967, Vancouver Forest District 111
118. Summary of Logging Slash Reported in 1967, Vancouver Forest District 112
119. Acreage Analysis of Slash Disposal Required, 1967, Vancouver Forest District 112
120. Analysis of Progress in Slash Disposal, 1967, Vancouver Forest District 112
121. Summary of Slash-burn Damage and Costs, 1967, Vancouver Forest District 113

FOREST SERVICE TRAINING-SCHOOL

131. Training-school Enrolment and Graduations 113

Accounting Division

Table No.		Page
141.	Forest Revenue, 1963–67	113
142.	Amounts Charged against Logging Operations, 1967	114
143.	Amounts Charged against Logging Operations, Fiscal Year 1966/67	115
144.	Forest Revenue, Fiscal Year 1966/67	116
145.	Forest Service Expenditures, Fiscal Year 1966/67	116
146.	Scaling Fund	116
147.	Grazing Range Improvement Fund	117
148.	Peace River Power Timber Salvage	117

Personnel Division

151.	Distribution of Personnel, 1967	118

(11) TABULATION OF RESEARCH PROJECTS ACTIVE IN 1967

Experimental Project No.	Title	Region
62–66	Douglas-fir Thinning Experiments	Vancouver Island.
204–5	Thinning and Pruning in Douglas-fir	Vancouver Island.
283	Douglas-fir Thinning Experiments	Vancouver Island.
343	Red Alder Thinning	Vancouver Island.
388	Commercial Thinning in Hemlock	Thurlow Island.
418	Thinning Experiments in Douglas-fir	Vancouver Island.
429	Mixed Species Spacing Trial	Vancouver Island.
474	Inbreeding Experiments with Douglas-fir	Vancouver Island.
476	Pollination Techniques for Douglas-fir	Vancouver Island.
477	A Study of Phenotypes in Douglas-fir	Vancouver Island.
479	Plus-trees Selection for Douglas-fir Seed Orchards	Vancouver Island.
492	Douglas-fir Thinning Experiment	Vancouver Island.
497	Thinning Studies in Engelmann Spruce	Kamloops.
499	Thinning and Pruning on a Farm Wood-lot	Vancouver Island.
502	Plantation Trials	Prince Rupert.
513	Intra- and Interspecific Crosses within the Genus *Pseudotsuga*	Vancouver Island.
517	Thinning Studies in Ponderosa Pine	Kamloops.
538	Seed Dissemination and the Influence of Weather Conditions	Vancouver Island.
549	Spacing Trials	Prince George.
554	Thinning Experiments in Douglas-fir	Vancouver Island.
570	Sitka Spruce Spacing Study	Prince Rupert.
571	Trials of Tree Species and Initial Spacing on the West Coast of Vancouver Island	Vancouver Island.
580	Site Preparation to Induce Restocking of Lodgepole Pine Sites in the West Kettle	Nelson.
581	Co-operative Planting Study of 2+0 Douglas-fir Culls	Vancouver Island.
589	A Study of Douglas-fir Planting Stock on High Site Lands Subject to Dense Plant Cover	Vancouver Island.
590	Compatibility of Grass and Tree Seeding	Kamloops.
591	Regeneration Study in Cut-over Lodgepole Pine Stands	Prince Rupert.
599	Problem Analysis: Approach to Provenance Experimentation in Coastal Douglas-fir	Vancouver Island.
603	Study of Some Hand-planting Methods in White Spruce	Prince Rupert.
606	Direct Seeding of Douglas-fir and Engelmann Spruce	Kamloops.
607	Ponderosa Pine Spacing Trials	Nelson.
612	A Preliminary Investigation of the Cowichan Lake Nursery	Vancouver Island.
613	Western Hemlock Spacing Study	Prince Rupert.
616	Study of Regeneration Problems in Decadent Hemlock-Cedar Stands	Kamloops.
618	Cone Crop Periodicity in Spruce, Nelson Forest District	Nelson.
625	The Survival and Initial Growth of Various Types of Douglas-fir Planting Stock	Vancouver Island.
626	Engelmann Spruce Planting Trials	Nelson.
630	Lodgepole Pine Cleaning Study	Prince Rupert.
632	Exploratory Direct Seeding Trials in the Wet Belt Type of the Southern Interior	Kamloops.
633	Western Hemlock Planting Trials	Prince Rupert.
635	Direct Seeding on a Scarified Area	Prince Rupert.
637	Seed Dispersal and Natural Regeneration in the Columbia Forest Zone	Nelson.
638	Seeding Trials	Prince George.
639	Regeneration and Reforestation Practice	Prince George.
640	Requirements of Douglas-fir Seedlings for P, K and Mg.	Vancouver Island.
641	Dry Matter Production and Growth Periodicity in Four Western Species	Vancouver Island.
642	Nursery Experiment with Different Nitrogen Sources	Vancouver Island.
643	Nutrient Analysis in Plantation Trees	Vancouver Island.
646	Effects of Altitudinal and Latitudinal Displacement of White and Engelmann Spruce Provenances	Prince George.
648	Grafting in Douglas-fir	Vancouver Island.
649	White Spruce Stock Comparison Study	Prince Rupert.
650	Direct Seeding on a Control Burn	Prince Rupert.
651	Seed Dispersal Study	Prince Rupert.
652	Measurement of 2+0 Douglas-fir Dormancy	Vancouver Island.
653	Seed Dispersal Study	Prince Rupert.
655	Determination of Fertilizer Amendments for White Spruce at Red Rock Nursery	Prince George.
656	Nursery Test of Desirability of Micro-nutrient Amendments for Douglas-fir Seedlings	Vancouver Island.
657	A Study of Variation in *Pinus contorta* with Particular Reference to British Columbia	British Columbia.
659	The Rehabilitation of Decadent Stands	Nelson.
660	Species-spacing Trials in the Montane Forest Region	Prince George.
661	Engelmann Spruce Spacing Trials	Kamloops.
662	Altitudinal Adaptability of a Low Elevation Engelmann Spruce Provenance	Kamloops.
663	Co-operative Planting Trials of Interior Spruce	Kamloops.
664	Western Hemlock Establishment Trial	Vancouver Island.
665	Aerial Seeding (1967) in the Kamloops Forest District	Kamloops.

(12) RESEARCH PUBLICATIONS, 1967

Arlidge, J. W. C. (1967): The Durability of Scarified Seedbeds for Spruce Regeneration. B.C. Forest Service, Research Note No. 42.

Clark, M. B. (1967): Survival of Plantations in the Southern Interior of British Columbia. B.C. Forest Service, Forest Topic No. 6.

Heaman, J. C. (1967): A Review of the Plus Tree Selection Programme for Douglas-fir in Coastal British Columbia. B.C. Forest Service, Research Note No. 44.

Hetherington, J. C. (1967): A Quadrat for use in Sampling the Yield of Understorey Vegetation in Forest Stands. Commonwealth Forestry Review 46(1):4–5.

Hetherington, J. C. (1967): A Simple Device for the Measurement of the Crown Diameter of Standing Trees. Commonwealth Forestry Review 46(1):5.

Orr-Ewing, A. L. (1967): A Progeny Test of Douglas-fir to Demonstrate the Importance of Selection in Forest Practice. B.C. Forest Service, Research Note No. 43.

Schmidt, R. L. (1967): B.C. Forest Service Initiates Douglas-fir Provenance Study. B.C. Lumberman, Vol. 51(3):72–74.

(22) SUMMARY OF PLANTING, 1958–67

Year	Forest Service on Crown Land		Forest Service on Crown-granted Land (Forest Act, Sec. 152)		Company on Tree-farm Licences		Other Private		Totals	
	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres
Coast										
1967[1]	4,051.1	9,139	.....	.....	7,565.0	23,113	3,674.6	10,882	15,290.7	43,134
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
1958	887.5	915	1,894.4	2,128	4,955.4	11,438	102.5	129	7,839.8	14,610
Previously planted	87,562.9	104,684	4,649.6	5,605	20,725.0	36,111	2,218.4	2,807	115,155.9	149,207
Totals to date	105,358.0	147,330	15,106.9	27,005	81,297.5	210,660	24,550.3	67,717	226,312.7	452,712
Interior										
1967[1]	1,785.3	3,747	.....	.....	634.3	1,491	95.5	207	2,515.1	5,445
1966	2,292.6	4,835	.....	.....	568.6	1,919	120.7	304	2,981.9	7,058
1965	1,755.9	5,442	.....	.....	614.9	2,735	130.4	382	2,501.3	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	15	931.0	2,225
1962	553.1	1,146	.....	.....	346.3	1,007	10.0	25	909.4	2,178
1961	408.3	1,008	.....	.....	248.0	625	1.7	3	658.0	1,636
1960	195.8	354	.....	.....	187.8	416	2.6	3	386.2	773
1959	756.8	1,289	.....	.....	81.9	114	30.7	44	869.6	1,447
1958	470.3	633	.....	.....	82.2	181	17.5	23	570.0	837
Previously planted	1,697.3	2,491	.....	.....	354.7	547	261.9	331	2,313.9	3,369
Totals to date	11,613.0	25,248	.....	.....	3,647.9	10,909	722.4	1,465	15,983.3	37,622
All planted to date	116,971.0	172,578	15,106.9	27,005	84,945.4	221,569	25,272.7	69,182	242,296.0	490,334
All planted this year	5,836.4	12,886	.....	.....	8,199.3	24,604	3,770.1	11,089	17,805.8	48,579

[1] Subject to correction due to late returns.

(31)

MOTION-PICTURE LIBRARY, 1958–67

Stock Records

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Films in library at January 1st	80	83	92	95	140[1]	144	151	148	169	174
Films withdrawn during year	1	10	2	2	1	3	9	12	4	6
New films added during year	4	19	5	3	5	10	6	33	9	26
Films in library at December 31st	83	92	95	96	144	151	148	169	174	194
Films used during year	84	83	96	96	145	150	142	164	173	191

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

Circulation Records

Number of loans made during year	604	468	374	344	473	955	483	535	578	739
Number of film loans during year (one film loaned one time)	1,253	1,454	749	776	957	1,926	990	1,070	1,320	1,516
Number of showings during year	1,775	1,622	1,217	1,085	1,490	1,146	1,115	1,535	2,164	2,369
Number of audiences—										
Adults	10,330	17,329	12,277	13,096	10,576	7,691	10,511	16,069	16,522	29,396
Children	69,316[1]	54,429[1]	90,658	57,366	76,699	64,946	64,057	80,333	100,628	108,707
Mixed	42,938	51,421	62,405	69,896	67,777	40,386	32,438	17,236	24,242	34,099
Totals	126,216[1]	123,179[1]	165,340[1]	140,358	155,052	113,023	107,006	112,638	141,392	172,202

[1] Including attendances of school lecturers.

(32)

SUMMARY OF SCHOOL LECTURE COVERAGE, 1958–67

Forest District	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	Total
Vancouver—											
Number of school visits	176	108	117	57	60	28	9	50	51	59	715
Number of lectures given	237	162	145	113	109	64	33	72	52	67	1,054
Attendance	29,606	35,082	30,380	9,644	19,493	7,325	3,450	8,644	4,911	10,994	159,529
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	176	314	206	127	96	74	22	56	118	100	1,289
Number of lectures given	237	393	263	214	167	151	75	80	132	112	2,370
Total attendance	29,606	61,209	41,497	19,194	24,822	15,240	9,600	9,859	15,717	17,649	244,393

(33) FOREST SERVICE LIBRARY, 1958–67

Classification	Items Catalogued and Indexed										10-year Average, 1958–67
	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	
Bound volumes	48	43	39	31	29	23	30	41	31	28	34
Government reports and bulletins	177	142	123	92	113	191	146	158	207	152	150
Other bulletins and reports	159	165	200	135	140	110	92	73	60	84	121
Periodicals	133	130	115	134	151	151	151	151	151	159	141
Serials	230	302	274	375	378	370	380	419	422	436	358
References indexed	1,139	1,502	999	878	911	1,165	1,263	1,371	1,476	1,482	1,213

(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]	2,443,952	1,202,270	3,646,222	6,588,983	371,050[2]
Prince Rupert	6[1]	3,384,405	178,660	3,563,065	10,745,300	83,117
Prince George	2	461,625	1,599	463,224	521,617	10,600
Kamloops	7	695,454	1,848	697,302	775,509	13,565
Nelson	6	1,270,829	47,342	1,318,171	3,335,936	38,700
Grand totals	36	8,256,265	1,431,719	9,687,984	21,967,345	517,032

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

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

WITHIN TREE-FARM LICENCES

District	Number of Tree-farms within Tree-farm Licences	Productive Area (Acres)				Total Area (Acres)	Mature Volume (M Cu. Ft.	Estimated Productive Capacity (M Cu. Ft.)
		Mature	Immature	N.S.R. and N.C.C.	Total			
Vancouver	11	89,748	189,366	28,382	307,496	345,023	734,113	31,031
Prince George	1	123	1,091	40	1,254	1,280	331	37
Nelson	2	1,207	3,114	364	4,685	4,925	3,763	187
Totals	14	91,078	193,571	28,786	313,435	351,228	738,207	31,255

NOT INCLUDED WITHIN TREE-FARM LICENCES

Vancouver	22	129,206	274,832	32,353	436,391	465,512	1,137,071	36,245
Nelson	9	126,264	141,593	10,653	278,510	472,297	177,646	4,053 (584,502)
Totals	31	255,470	416,425	43,006	714,901	937,809	1,314,717	40,298 (584,502)
Grand totals	45	346,548	609,996	71,792	1,028,336	1,289,037	2,052,924	71,553 (584,502)

Figures in parentheses are Christmas trees.

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

District	Number of Farm Wood-lot Licences	Productive Area (Acres)			Total Area (Acres)	Total Mature Volume (M Cu. Ft.)			Allowable Annual Cut (M Cu. Ft.)
		Crown	Private	Total		Crown	Private	Total	
Vancouver	14	1,983	277	2,260	3,157	3,666	145	3,811	79.6
Prince Rupert	6	1,923	415	2,338	4,053	2,508	133	2,641	41.2
Prince George	15	3,425	193	3,618	3,840	6,327	105	6,432	112.3
Kamloops	4	1,378	146	1,524	1,700	1,239	18	1,257	28.0
Nelson	7	1,795	987	2,782	2,962	1,379	309	1,688	39.6
Totals	46	10,504	2,018	12,522	15,712	15,119	710	15,829	300.7

(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	3,300,492	1,365,564	5,126,826	10,174,780	26,741,133[1]	148,837
Prince Rupert (Coast)	4	3,352,888	261,968	3,864,333	11,699,421	23,253,196[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	22	13,616,692	12,337,055	27,571,331	39,226,987	41,123,156[2]	212,445
Kamloops	23	9,094,732	11,013,252	21,424,598	28,472,697	24,897,872[2]	127,319
Nelson	14	2,573,148	4,803,369	8,491,306	14,124,656	10,157,597[2]	67,338
Totals	76	37,691,770	32,937,653	75,727,896	117,757,201	151,124,105	648,675

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

4 (51)

BRITISH COLUMBIA FOREST INDUSTRIES, VALUE ADDED BY MANUFACTURE, AND ESTIMATED NET VALUE OF LOGGING, 1958–67

(In thousands of dollars.)

BASIS: OLD STANDARD INDUSTRIAL CLASSIFICATION AND TOTAL INDUSTRY CONCEPT

Industry	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Logging industry (estimated net value)	194,749	234,895	276,289	286,705	351,522	358,267	405,036	423,000*	432,000*	430,000*
BASIS: REVISED STANDARD INDUSTRIAL CLASSIFICATION AND NEW ESTABLISHMENT CONCEPT										
Manufacturing industries (value added)—										
Wood industries—										
Saw and planing mills[1]	147,203	156,247	154,165	148,387	183,883	209,323	235,950	240,112	----------	----------
Coast[1]	89,743	88,545	96,998	86,465	95,272	111,380	113,438	116,344	----------	----------
Interior[1]	57,460	67,702	57,167	61,922	88,611	97,943	122,512	123,768	----------	----------
Shingle-mills[1]	----------	----------	7,476	7,791	8,615	13,116	10,426	10,094	----------	----------
Sash, door, and millwork[2]	23,063	26,971	21,582	24,132	27,305	27,307	16,074	16,078	----------	----------
Veneer and plywood mills	38,794	40,183	36,148	35,485	43,844	51,793	55,631	62,058	----------	----------
Other wood industries[3]	5,699	6,828	7,331	4,649	4,655	5,124	6,537	8,769	----------	----------
Totals, wood industries	214,759	230,229	226,702	220,444	268,302	306,663	324,618	337,111	345,000*	355,400*
Pulp, paper, and allied industries—										
Pulp and paper mills	106,557	144,545	153,573	167,296	177,220	191,136	217,137	227,826	----------	----------
Other paper and allied industries[4]	14,116	15,968	15,944	15,664	17,221	17,951	20,303	19,504	----------	----------
Totals, pulp, paper, and allied industries	120,673	160,531	169,517	182,960	194,441	209,087	237,440	247,330	255,000*	259,000*
Totals, manufacturing industries (value added)	335,432	390,760	396,219	403,404	462,743	515,750	562,058	584,441	600,000*	614,400*

NOTE.—Logging and manufacturing industry statistics should not be aggregated.

* Estimated.

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

2 Prior to 1964, planing-mills were included. Category changed to sash, door, and millwork and excludes wood preservation.

3 Includes wood-preservation industry, wooden-box factories, 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.

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

(52)

WATER-BORNE LUMBER TRADE (IN M B.M.), 1958–67

Destination	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	10-year Average, 1958–67
Eastern Canada	5,482	10,481	9,680	8,828	11,394	5,295	6,057	727	----	----	5,794
Africa	139,523	94,598	142,293	75,146	70,726	110,237	84,470	124,276	54,384	78,998	97,465
Australia	98,808	80,115	113,536	91,935	122,470	113,915	106,166	126,045	116,640	125,299	109,493
Belgium	10,790	4,080	21,937	31,300	22,810	34,009	37,596	30,272	34,128	40,557	26,748
Central America	5,349	----	----	----	----	----	----	----	----	----	535
China	----	----	----	----	----	----	147	----	----	----	15
Eire	1,070	----	3,684	4,773	6,465	6,013	7,223	6,179	3,953	1,938	4,130
France	3,265	3,184	9,883	11,061	21,922	26,371	38,744	61,397	47,101	37,460	26,039
Germany	22	----	1,062	6,040	10,558	15,611	14,155	13,482	11,229	18,719	9,088
Greece	----	70	----	----	10	1	1,059	129	416	----	168
Hawaiian Islands	3,166	2,133	7,755	12,887	6,813	5,433	3,483	3,946	1,778	525	4,792
Holland	6,091	4,569	6,272	13,866	21,802	19,068	20,789	21,920	20,080	25,740	16,020
Hong Kong	597	509	867	360	----	172	300	302	163	222	349
India	3,372	27,581	9,793	----	----	5	----	----	----	----	4,075
Israel	213	1,340	1,681	10,225	4,009	233	919	1,272	527	567	2,099
Italy	4,560	2,805	5,363	5,909	12,624	9,609	8,706	16,917	25,581	27,320	11,939
Japan	999	1,201	1,607	155,550	107,438	278,168	204,439	207,811	277,777	491,172	172,616
Korea	----	6,413	----	----	399	1,701	----	----	1,145	10	967
Middle East	----	----	----	----	----	----	----	3,128	387	162	368
New Zealand	8,397	5,212	6,689	8,392	6,603	5,008	6,236	6,957	7,998	3,910	6,540
Puerto Rico	46,493	62,826	67,022	73,249	77,033	59,448	87,994	61,213	85,872	76,670	69,782
Scandinavia	18	16	66	30	184	212	242	53	99	26	95
South America	8,816	10,178	7,743	1,187	119	83	100	147	----	2,630	3,100
South Sea Islands	11,841	8,068	13,414	9,970	10,477	10,042	10,794	14,697	8,804	7,099	10,521
Spain	----	----	----	----	5,373	10,156	2,517	14,095	7,283	6,267	4,569
United Kingdom	336,889	267,293	518,090	422,939	442,237	465,428	695,196	535,894	470,941	535,053	468,996
United States	602,427	595,170	714,050	838,080	876,420	963,783	932,313	1,179,632	1,157,462	1,143,843	900,318
West Indies	13,492	8,478	10,796	5,482	7,913	8,901	12,494	8,541	10,398	11,206	9,770
Foreign, unclassified	2,681	1,333	2,068	1,906	1,227	230	570	413	291	3,695	1,441
Totals	1,314,361	1,197,653	1,675,351	1,789,115	1,847,026	2,149,132	2,282,709	2,439,445	2,344,437	2,639,088	1,967,832

TOTAL AMOUNT OF TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING THE YEARS 1966 AND 1967 IN F.B.M.

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

Forest District	10-year Average, 1958–67	1966	1967	Increase	Decrease	Net Decrease
Vancouver	3,960,436,461	4,668,599,676	4,653,042,390	.....	15,557,286	.....
Prince Rupert (C.)	559,208,723	790,161,720	747,114,468	.....	43,047,252	.....
Totals, Coast	4,519,645,184	5,458,761,396	5,400,156,858	.....	58,604,538	58,604,538
Prince Rupert (I.)	343,904,236	427,750,251	544,193,121	116,442,870	.....	.....
Prince George	1,022,874,020	1,265,723,608	1,368,965,440	103,241,832	.....	.....
Kamloops	1,253,042,565	1,349,400,220	1,222,232,110	.....	127,168,110	.....
Nelson	733,282,070	939,828,243	731,900,911	.....	207,927,332	.....
Totals, Interior	3,353,102,891	3,982,702,322	3,867,291,582	219,684,702	335,095,442	115,410,740
Grand totals	7,872,748,075	9,441,463,718	9,267,448,440	.....	.....	174,015,278

TOTAL AMOUNT OF TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING THE YEARS 1966 AND 1967 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, 1958–67	1966	1967	Increase	Decrease	Net Decrease
Vancouver	660,072,743	778,099,946	775,507,065	.....	2,592,881	.....
Prince Rupert (C.)	93,201,454	131,693,620	124,519,078	.....	7,174,542	.....
Totals, Coast	753,274,197	909,793,566	900,026,143	.....	9,767,423	9,767,423
Prince Rupert (I.)	59,809,432	74,391,348	94,642,282	20,250,934	.....	.....
Prince George	177,891,134	220,125,845	238,080,946	17,955,101	.....	.....
Kamloops	217,920,446	234,678,299	212,562,106	.....	22,116,193	.....
Nelson	127,527,317	163,448,390	127,287,115	.....	36,161,275	.....
Totals, Interior	583,148,329	692,643,882	672,572,449	38,206,035	58,277,468	20,071,433
Grand totals	1,336,422,526	1,602,437,448	1,572,598,592	.....	.....	29,838,856

(54A) SPECIES CUT, ALL PRODUCTS, 1967, CONVERTED TO F.B.M.

Forest District	Fir	Cedar	Spruce	Lodgepole Pine	Hemlock	Balsam	White Pine
Vancouver	1,124,437,644	919,754,730	78,196,308	230,106	1,684,505,352	740,902,092	25,351,296
Prince Rupert (C.)	27,680,988	124,000,656	159,749,754	242,004	333,837,804	82,047,246	.....
Totals, Coast	1,152,118,632	1,043,755,386	237,946,062	472,110	2,018,343,156	822,949,338	25,351,296
Prince Rupert (I.)	20,154	42,150,662	146,969,160	100,778,445	160,819,301	76,084,799	75
Prince George	108,350,343	2,746,982	904,241,999	294,179,511	157,872	55,846,806	191,435
Kamloops	611,929,456	41,772,014	296,540,213	125,511,207	24,206,258	50,698,095	7,931,297
Nelson	138,225,578	88,341,695	238,319,100	36,006,770	91,436,747	52,197,327	17,874,927
Totals, Interior	858,525,531	175,011,353	1,586,070,472	556,475,933	276,620,178	234,827,027	25,997,734
Grand totals	2,010,644,163	1,218,766,739	1,824,016,534	556,948,043	2,294,963,334	1,057,776,365	51,349,030

Forest District	Yellow Pine	Cypress	Larch	Hardwood	Cottonwood	Unspecified	Total
Vancouver	30,288	54,137,604	.....	8,044,974	10,441,734	7,010,262	4,653,042,390
Prince Rupert (C.)	.....	4,671,066	.....	62,250	14,822,700	.....	747,114,468
Totals, Coast	30,288	58,808,670	.....	8,107,224	25,264,434	7,010,262	5,400,156,858
Prince Rupert (I.)	356	851	.....	307,056	17,062,262	.....	544,193,121
Prince George	.....	.....	.....	90,792	3,159,700	.....	1,368,965,440
Kamloops	45,972,084	.....	14,557,700	1,615,060	1,498,726	.....	1,222,232,110
Nelson	9,035,556	.....	58,005,770	280,974	2,176,467	.....	731,900,911
Totals, Interior	55,007,996	851	72,563,470	2,293,882	23,897,155	.....	3,867,291,582
Grand totals	55,038,284	58,809,521	72,563,470	10,401,106	49,161,589	7,010,262	9,267,448,440

SPECIES CUT, ALL PRODUCTS, 1967, 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	187,406,274	153,292,455	13,032,718	38,351	280,750,892	123,483,682	4,225,216
Prince Rupert (C.)	4,613,498	20,666,776	26,624,959	40,334	55,639,634	13,674,541	.....
Totals, Coast	192,019,772	173,959,231	39,657,677	78,685	336,390,526	137,158,223	4,225,216
Prince Rupert (I.)	3,505	7,330,550	25,559,854	17,526,686	27,968,574	13,232,139	13
Prince George	18,843,538	477,736	157,259,478	51,161,654	27,456	9,712,488	33,293
Kamloops	106,422,514	7,264,698	51,572,211	21,828,036	4,209,784	8,817,060	1,379,356
Nelson	24,039,231	15,363,773	41,446,800	6,262,047	15,902,043	9,077,796	3,108,683
Totals, Interior	149,308,788	30,436,757	275,838,343	96,778,423	48,107,857	40,839,483	4,521,345
Grand totals	341,328,560	204,395,988	315,496,020	96,857,108	384,498,383	177,997,706	8,746,561

Forest District	Yellow Pine	Cypress	Larch	Hardwood	Cotton-wood	Unspecified	Total
Vancouver	5,048	9,022,934	.....	1,340,829	1,740,289	1,168,377	775,507,065
Prince Rupert (C.)	.....	778,511	.....	10,375	2,470,450	.....	124,519,078
Totals, Coast	5,048	9,801,445	.....	1,351,204	4,210,739	1,168,377	900,026,143
Prince Rupert (I.)	62	148	.....	53,401	2,967,350	.....	94,642,282
Prince George	.....	.....	.....	15,790	549,513	.....	238,080,946
Kamloops	7,995,145	.....	2,531,774	280,880	260,648	.....	212,562,106
Nelson	1,571,401	.....	10,087,960	48,865	378,516	.....	127,287,115
Totals, Interior	9,566,608	148	12,619,734	398,936	4,156,027	.....	672,572,449
Grand totals	9,571,656	9,801,593	12,619,734	1,750,140	8,366,766	1,168,377	1,572,598,592

TOTAL SCALE OF ALL PRODUCTS BILLED IN 1967 IN F.B.M. (SEGREGATED BY LAND STATUS AND FOREST DISTRICTS)

(55A)

Land Status	Vancouver	Prince Rupert (Coast)	Prince Rupert (Interior)	Prince George	Kamloops	Nelson	Total
Timber licences	987,624,510	111,143,754		4,678,482	7,854,143	14,298,002	1,125,598,891
Timber berths	91,851,768				48,822,301	52,144,760	192,818,829
Timber leases	291,354,960				3,969,564		295,324,524
Pulp leases	129,746,574	46,516,134					176,262,708
Pulp licences	34,123,050	42,728,430					76,851,480
Farm wood-lots	657,306		197,208	1,142,686	96,635	47,903	2,141,738
Timber sales	1,008,275,802	268,098,414	265,606,311	1,215,606,114	790,144,151	355,308,042	3,903,038,834
Pulp timber sales				5,045,372			5,045,372
Tree-farm licences	622,562,622	226,906,980	214,437,913	49,004,778	78,016,339	178,179,580	1,369,108,212
Beachcomb, trespass	42,459,900						42,459,900
No mark visible	212,975,424						212,975,424
Miscellaneous	2,285,166	12,554,910	21,354,195	31,873,544	16,861,139	6,598,298	91,527,252
Sub-totals, Crown lands	3,423,917,082	707,948,622	501,595,627	1,307,350,976	945,764,272	606,576,585	7,493,153,164
Federal lands	18,345,750	15,273,432	4,890,749	4,279,846	32,634,430	1,211,312	76,635,519
Crown grants—							
To 1887	1,061,212,764	90,564		462,708	50,004,587	17,188,049	1,128,958,672
1887–1906	57,703,284	4,126,512	179,457	522,646	25,956,420	56,143,316	144,631,635
1906–1914	21,012,030	6,478,620	15,374,735	6,085,127	36,409,966	15,513,253	100,873,731
1914 to date	70,851,480	13,196,718	22,152,553	50,264,137	131,462,435	35,268,396	323,195,719
Totals	4,653,042,390	747,114,468	544,193,121	1,368,965,440	1,222,232,110	731,900,911	9,267,448,440

TOTAL SCALE OF ALL PRODUCTS BILLED IN 1967 IN CUBIC FEET (SEGREGATED BY LAND STATUS AND FOREST DISTRICTS)

(55B)

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

Land Status	Vancouver	Prince Rupert (Coast)	Prince Rupert (Interior)	Prince George	Kamloops	Nelson	Total
Timber licences	164,604,085	18,523,959		813,649	1,365,938	2,486,609	187,794,240
Timber berths	15,308,628				8,490,835	9,068,654	32,868,117
Timber leases	48,559,160				690,359		49,249,519
Pulp leases	21,624,429	7,752,689					29,377,118
Pulp licences	5,687,175	7,121,405					12,808,580
Farm wood-lots	109,551		34,297	198,728	16,806	8,331	367,713
Timber sales	168,045,967	44,683,069	46,192,402	211,409,759	137,416,374	61,792,703	669,540,274
Pulp timber sales				877,456			877,456
Tree-farm licences	103,760,437	37,817,830	37,293,550	8,522,570	13,568,059	30,987,753	231,950,199
Beachcomb, trespass	7,076,650						7,076,650
No mark visible	35,495,904						35,495,904
Miscellaneous	380,861	2,092,485	3,713,773	5,543,225	2,932,372	1,147,530	15,810,246
Sub-totals, Crown lands	570,652,847	117,991,437	87,234,022	227,365,387	164,480,743	105,491,580	1,273,216,016
Federal lands	3,057,625	2,545,572	850,565	744,321	5,675,553	210,663	13,084,299
Crown grants—							
To 1887	176,868,794	15,094		80,471	8,696,450	2,989,226	188,650,035
1887–1906	9,617,214	687,752	31,210	90,895	4,514,160	9,764,055	24,705,286
1906–1914	3,502,005	1,079,770	2,673,867	1,058,283	6,332,168	2,697,957	17,344,050
1914 to date	11,808,580	2,199,453	3,852,618	8,741,589	22,863,032	6,133,634	55,598,906
Totals	775,507,065	124,519,078	94,642,282	238,080,946	212,562,106	127,287,115	1,572,598,592

(56) TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING 1967, BY MONTHS AND FOREST DISTRICTS

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Vancouver—													
F.b.m.	51,159,849	69,622,383	85,367,562	95,464,436	133,504,313	130,549,401	82,238,607	98,113,873	61,072,760	80,311,314	114,894,665	68,914,212	1,071,213,375
Cubic feet	24,503,671	46,610,640	38,159,096	44,681,376	52,045,554	51,848,653	53,856,089	62,191,479	43,127,542	56,325,320	67,002,682	49,296,789	589,648,891
Lineal feet	591,560	624,026	404,545	615,585	267,070	347,651	742,854	279,585	349,777	517,673	923,654	330,673	5,994,653
Cords	1,928	3,506	3,308	1,276	2,655	1,729	5,057	3,623	1,440	2,709	1,518	2,390	31,139
All products, cu. ft.	33,664,981	58,972,329	52,995,999	61,173,542	74,753,474	74,033,918	68,552,445	79,078,225	53,694,533	70,358,404	86,992,002	61,237,213	775,507,065
Prince Rupert (C.)—													
F.b.m.	9,854,418	9,654,143	12,702,860	18,542,549	26,112,187	25,208,762	11,791,511	22,819,363	12,305,526	29,581,094	14,870,457	6,414,163	199,857,033
Cubic feet	4,744,359	5,378,422	6,382,408	5,565,388	7,924,530	8,295,230	7,181,645	11,729,661	6,451,654	8,389,954	10,770,347	7,487,363	90,300,961
Lineal feet	68,260	18,740	74,270	57,370	142,045	133,840	216,235	82,150	85,800	51,005	115,165	119,915	1,164,795
Cords	.....	60	70	11	9	15	.....	23	5	150	.....	49	392
All products, cu. ft.	6,437,957	7,007,500	8,561,203	8,699,940	12,383,995	12,598,570	9,309,073	15,596,615	8,567,429	13,370,390	13,335,130	8,651,276	124,519,078
Prince Rupert (I.)—													
F.b.m.	805,486	1,349,385	1,174,701	947,722	705,110	304,443	1,338,291	1,177,229	1,029,835	51,738	1,365,695	414,076	10,663,711
Cubic feet	7,508,108	8,277,293	7,829,816	9,289,935	8,452,929	3,752,803	7,742,427	9,293,043	6,076,232	6,705,970	10,968,277	5,407,513	91,304,346
Lineal feet	127,910	145,480	203,503	253,175	120,545	46,855	55,740	166,285	82,130	79,670	55,545	82,830	1,419,668
Cords	20	100	.....	.....	2,823	70	108	50	1,688	229	50	450	5,588
All products, cu. ft.	7,743,162	8,622,828	8,183,751	9,644,637	8,879,179	3,845,865	8,021,216	9,627,492	6,451,986	6,793,039	11,251,448	5,577,679	94,642,282
Prince George—													
F.b.m.	1,790,047	1,713,373	2,318,907	2,320,471	119,893	513,437	1,225,282	1,171,125	1,012,490	1,624,118	1,690,880	2,485,775	17,985,798
Cubic feet	30,261,459	37,194,846	41,929,164	39,659,952	5,377,750	3,541,899	10,012,762	15,498,679	16,261,807	13,164,045	10,207,281	11,092,391	234,202,035
Lineal feet	37,260	142,571	64,750	53,635	47,473	48,531	27,581	43,661	72,752	72,494	21,716	70,133	702,557
Cords	1,430	158	299	61	91	25	.....	146	28	81	79	69	2,467
All products, cu. ft.	30,724,189	37,614,185	42,409,093	40,109,781	5,443,376	3,670,097	10,246,539	15,749,825	16,495,218	13,508,969	10,525,542	11,584,132	238,080,946
Kamloops—													
F.b.m.	4,212,306	4,917,413	6,157,984	5,020,665	3,608,552	5,593,674	5,125,508	4,399,134	3,636,100	4,427,595	3,634,304	3,812,320	54,545,555
Cubic feet	15,915,963	19,842,701	23,272,729	15,570,391	6,811,796	12,080,107	15,413,061	18,259,117	16,748,272	19,023,997	25,215,523	12,578,537	200,732,194
Lineal feet	59,084	325,866	167,740	163,710	230,675	188,313	295,702	261,328	104,328	395,508	228,575	365,145	2,785,974
Cords	867	53	33	42	100	286	264	193	370	373	437	190	3,208
All products, cu. ft.	16,753,780	20,946,603	24,472,792	16,570,557	7,621,876	13,221,391	16,547,372	19,228,794	17,485,473	20,124,190	26,056,126	13,533,152	212,562,106
Nelson—													
F.b.m.	1,952,904	3,208,873	5,532,470	5,550,139	2,142,080	3,387,869	3,458,517	4,023,120	6,597,649	1,643,102	3,075,292	2,967,539	43,539,554
Cubic feet	9,695,434	11,480,827	14,983,514	12,853,890	4,534,960	5,249,852	8,062,504	10,599,992	15,075,124	9,552,738	8,237,192	6,617,009	116,943,036
Lineal feet	225,565	151,680	180,891	200,535	174,257	215,072	400,211	480,785	403,256	259,110	191,325	306,480	3,189,167
Cords	211	83	505	467	211	1,105	642	568	879	664	803	1,855	7,993
All products, cu. ft.	10,225,339	12,160,922	16,131,734	14,012,687	5,056,742	6,095,762	8,928,610	11,543,366	16,544,179	10,065,311	8,984,014	7,538,449	127,287,115
Totals—													
F.b.m.	69,775,010	90,465,570	113,254,484	127,845,982	166,192,135	165,557,586	105,177,716	131,703,844	85,654,360	117,638,961	139,531,293	85,008,085	1,397,805,026
Cubic feet	92,628,994	128,784,729	132,556,727	127,620,932	85,147,519	84,768,544	102,268,488	127,571,971	103,740,631	113,162,024	132,401,302	92,479,602	1,323,131,463
Lineal feet	1,109,639	1,408,363	1,095,699	1,344,010	982,065	980,262	1,738,323	1,313,794	1,098,043	1,375,460	1,535,980	1,275,176	15,256,814
Cords	4,456	3,960	4,215	1,857	5,889	3,230	6,071	4,603	4,410	4,206	2,887	5,003	50,787
All products, cu. ft.	105,549,408	145,324,367	152,754,572	150,211,144	114,138,642	113,465,603	121,605,255	150,824,317	119,238,818	134,220,303	157,144,262	108,121,901	1,572,598,592

(57) NUMBER OF ACRES OPERATING UNDER APPROVED ANNUAL ALLOWABLE CUTS, 1958–67

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	
1958	27	5,349,773	26	499,681	277	83,500	53	13,108	61	32,389,893	38,252,455
1959	36	5,851,979	26	503,200	279	83,210	50	12,059	64	34,606,543	40,973,781
1960	37	6,081,496	25	507,581	294	89,224	52	12,375	72	40,257,302	46,858,754
1961	39	7,017,594	22	545,164	282	96,478	50	11,993	78	46,203,742	53,778,493
1962	39	7,054,191	22	665,666	306	106,966	57	14,940	80	48,940,122	56,674,919
1963	39	7,070,774	25	672,712	346	123,538	53	14,124	82	52,530,686	60,288,296
1964	39	7,146,685	28	682,553	348	119,911	55	14,950	83	60,960,307	68,804,495
1965	40	8,796,577	31	709,452	352	120,065	51	13,978	75	69,781,944	79,301,951
1966	38	9,633,579	32	712,152	347	115,175	47	12,632	76	75,536,237	85,894,600
1967	36	9,657,984	31	714,901	351	119,421	46	12,522	76	75,727,896	86,144,823
Ten-year average, 1958–67	37	7,369,063	27	621,306	318	105,749	51	13,268	75	53,693,467	61,697,257

[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, 1958–67

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	
1958	27	144,260,543	26	27,593,000	277	408,874	2,700	53	139,396	61	254,876,246	426,869,185
1959	36	178,742,435	26	30,308,000	279	398,504	297,691	50	205,676	64	312,048,987	521,305,098
1960	37	241,410,459	25	32,683,000	294	495,697	349,513	52	92,168	72	385,200,000	659,385,627
1961	39	279,917,294	22	27,842,000	282	434,796	323,254	50	244,577	78	454,029,600	762,033,471
1962	39	337,057,599	22	35,678,000	306	552,512	153,618	57	277,701	80	527,054,000	900,067,300
1963	39	365,631,639	25	33,305,000	346	617,753	220,393	53	263,678	82	633,193,000	1,032,393,317
1964	39	350,806,403	28	34,543,000	348	511,726	395,168	55	253,552	83	607,641,611	993,244,566
1965	40	374,062,274	31	39,587,737	352	509,876	207,643	51	216,486	75	687,492,876	1,101,359,373
1966	38	405,623,421	32	45,058,717	347	494,798	239,378	47	166,963	76	640,946,702	1,091,795,803
1967	36	449,386,772	31	43,308,260	351	541,930	454,031	46	378,346	76	639,542,228	1,132,615,60[illegible]
Ten-year average, 1958–67	37	312,689,884	27	34,990,671	318	496,647	264,339	51	223,854	75	514,202,525	862,106,935

[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, 1967

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	898	1,240	2,138	2,588	2,959	5,547
Prince Rupert	678	517	1,195	2,607	1,027	3,634
Prince George	1,328	2,058	3,386	6,432	1,080	7,512
Kamloops	1,524	2,136	3,660	4,366	2,763	7,129
Nelson	690	1,480	2,170	1,670	1,659	3,329
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
Totals, 1958	5,936	4,341	10,277	(1)	(1)	23,802
Ten-year average, 1958–67	6,402	6,131	12,534	.....	.....	26,226

1 No breakdown made prior to 1961.

(60)

TRESPASSES, 1967

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	58	133	637,358	1,365	65	.....	50	49,635	.....	.....	1	$41,028.69
Prince Rupert	54	195	402,593	4,270	2,832	.....	.....	.....	176	.....	.....	27,156.27
Prince George	91	466	703,308	.....	.....	.....	.....	.....	.....	4	.....	19,075.93
Kamloops	85	563	407,489	3,730	8	.....	3,683	.....	.....	.....	.....	34,161.84
Nelson	31	367	635,163	.....	5	.....	201	.....	.....	2	.....	63,302.07
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
Totals, 1958	513	6,435	4,100,971	126,127	608	2,661	14,897	21,924	765	.....	13	$221,931.11
Ten-year average, 1958–67	491	4,226	3,625,990	85,347	1,773	833	11,623	111,287	1,778	1,383	9	$232,956.76

(61) AREAS CRUISED FOR TIMBER SALES, 1967

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	259	27,148	84,977	.....	1,735	112,650
Prince Rupert	142	39,838	83,306	27,950	7,522	26,600
Prince George	216	109,376	216,953	360,500	.....	50,100
Kamloops	189	112,150	121,271	5,482,000	2,960	100
Nelson	42	21,813	43,300	144,400	135	130,000
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
Totals, 1958	1,922	609,563	890,285	8,772,888	24,316	1,181,149
Ten-year average, 1958–67	1,690	594,023	931,378	7,033,534	21,857	901,475

(62) TIMBER-SALE RECORD, 1967

Forest District	Sales Made	Sales Closed	Total Sales Existing	Total Area (Acres)	Area Paying Forest Protection Tax (Acres)	Total Security Deposit
Vancouver	239	455	1,120	490,285	480,379	$5,727,992.72
Prince Rupert	76	254	681	310,622	286,606	1,445,066.80
Prince George	218	353	902	508,789	441,861	2,377,488.15
Kamloops	193	323	1,312	815,933	776,927	3,279,570.73
Nelson	50	134	489	529,081	503,036	2,025,963.98
Totals	776	1,519	4,504	2,654,710	2,488,809	$14,856,082.38
Cash sales	373	.....	.....	.....	.....	.....
Total sales	1,149	.....	.....	.....	.....	.....

(63)

COMPETITION FOR TIMBER SALES AWARDED, 1967

	By Number of Sales									By Volume, Sawlogs Only (M Cu. Ft.)						
	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		Total Volume
	Number	Per Cent	Number	Per Cent	Number	Per Cent				Volume	Per Cent	Volume	Per Cent	Volume	Per Cent	
Vancouver	235	98.3	4	1.7	----	----	239	1	240	67,248	98.9	773	1.1	----	----	68,021
Prince Rupert	74	97.4	1	1.3	1	1.3	76	22	98	28,564	98.4	379	1.3	78	0.3	29,021
Prince George	212	97.2	6	2.8	----	----	218	24	242	161,764	98.2	2,978	1.8	----	----	164,742
Kamloops	176	91.2	13	6.7	4	2.1	193	234	427	109,627	94.9	4,971	4.3	917	0.8	115,515
Nelson	48	96.0	----	----	2	4.0	50	92	142	44,867	97.8	----	----	1,026	2.2	45,893
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
Totals, 1958	1,720	90.5	110	5.8	70	3.7	1,900	245	2,145	552,647	81.0	93,346	13.7	36,134	5.3	682,127
Ten-year average, 1958–67	1,428	91.1	95	6.1	44	2.8	1,567	326	1,893	570,550	86.7	51,853	7.9	35,278	5.4	657,681

(64)

TIMBER SALES AWARDED BY FOREST DISTRICTS, 1967

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 Christmas Trees	No. of Car Stakes	No. of Cedar Shakes	No. of Fence Rails and Palings	Estimated Revenue
Vancouver	240	27,822	68,021,000	.....	.....	1,988	.....	.....	2,500	36,000	.....	$4,300,136.00
Prince Rupert	98	10,891	29,021,000	1,600	.....	3,778	.....	100	4,865	55,000	.....	836,502.53
Prince George	242	83,502	164,742,000	32,520	10,200	50	.....	.....	.....	7,000	.....	4,319,035.20
Kamloops	427	89,426	115,516,600	1,128,000	62,345	2,415	.....	1,650	150	.....	3,584	2,707,015.04
Nelson	142	30,370	45,892,000	1,366,320	87,995	585	.....	.....	.....	112,930	9,000	1,516,986.60
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
Totals, 1958	2,145	617,467	682,221,469	8,696,222	958,690	11,822	35,334	100	13,300	20,900	900	$20,517,298.67
Ten-year average, 1958–67	1,893	503,410	657,691,642	6,677,171	567,349	16,939	11,376	645	10,201	313,738	26,032	$23,169,866.14

(65)

AVERAGE STUMPAGE PRICES, AS BID, BY SPECIES AND FOREST DISTRICTS, ON TIMBER SALES DURING 1967, PER HUNDRED CUBIC FEET LOG SCALE

Forest District	Douglas-fir			Cedar			Spruce			Hemlock			Balsam		
	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.
Vancouver	22,303	$11.16	$3.00–18.00	11,688	$3.02	$0.30– 5.50	1,109	$4.31	$2.90– 8.70	20,127	$4.46	$1.00– 9.40	10,957	$4.08	$0.90– 9.20
Prince Rupert (C.)	1,594	10.95	3.50–11.80	998	1.95	1.70– 2.20	2,854	3.18	2.50–19.70	3,466	2.48	1.50–15.00	488	2.20	2.00– 2.40
Prince Rupert (I.)	.....	.....	.....	1,801	2.14	.55– 6.80	4,319	2.54	.85– 5.40	6,820	2.51	.80– 4.60	4,191	1.71	.55– 3.20
Prince George	8,543	4.98	2.70– 8.60	474	.87	.25– 1.60	98,471	2.88	.20– 5.00	321	1.20	1.20– 1.20	7,998	1.79	.20– 3.00
Kamloops	50,858	3.02	.25– 7.60	6,794	1.50	.25– 4.00	33,579	1.87	.25– 7.30	5,328	1.16	.25– 3.35	9,637	1.31	.25– 4.40
Nelson	5,578	4.32	.20– 7.30	3,744	3.13	.20– 5.20	19,049	3.08	.20– 6.60	5,980	2.46	.20– 4.50	5,672	1.96	.20– 3.50
Totals for Province	88,876	$5.48	$0.20–18.00	25,499	$2.49	$0.20– 6.80	159,381	$2.70	$0.20–19.70	42,042	$3.25	$0.20–15.00	38,943	$2.34	$0.20– 9.20

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	117	$5.50	$1.80–17.00	26	$2.75	$2.70– 2.80	.....	.....	.....	1,694	$2.95	$0.30– 5.30	68,021	$6.31	$0.30–18.00
Prince Rupert (C.)	.....	.....	.....	2	2.00	2.00– 2.00	.....	.....	.....	39	2.29	1.50– 3.70	9,441	4.05	1.50–15.00
Prince Rupert (I.)	.....	.....	.....	2,363	2.53	.55– 4.90	.....	.....	.....	86	2.26	.55– 4.90	19,580	2.31	.55– 6.80
Prince George	.....	.....	.....	48,085	1.84	.20– 4.50	.....	.....	.....	850	1.92	.20– 4.10	164,742	2.62	.20– 8.60
Kamloops	1,190	5.15	.25–17.20	6,376	1.51	.90– 4.80	386	$3.90	$2.70– 7.10	1,369	3.10	.25– 9.00	115,517	2.31	.25–17.20
Nelson	843	13.86	.20–16.80	3,042	2.82	.20– 5.30	1,838	4.46	.20– 8.10	146	2.55	.20– 3.20	45,892	3.25	.20–16.80
Totals for Province	2,150	$8.59	$0.20–17.20	59,894	$1.89	$0.20– 5.30	2,224	$4.36	$0.20– 8.10	4,184	$2.76	$0.20– 9.00	423,193	$3.21	$0.20–18.00

(66)

AVERAGE STUMPAGE PRICES RECEIVED, BY SPECIES AND FOREST DISTRICTS, ON TIMBER SCALED ON TREE-FARM LICENCE CUTTING PERMITS DURING 1967

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	10,187	$9.92	$2.50–15.40	22,715	$3.02	$0.25– 9.10	2,505	$5.17	$0.25–10.20	42,470	$3.80	$0.25–10.10	21,128	$3.47	$0.25– 8.80
Prince Rupert (C.)	.....	.....	.....	6,276	1.65	1.50– 2.40	8,720	2.63	2.20– 6.70	18,102	1.94	1.60– 3.10	420	2.10	2.10– 2.10
Prince Rupert (I.)	.....	.....	.....	4,816	2.25	2.00– 2.50	7,474	2.30	2.20– 2.50	15,373	2.30	2.20– 2.50	4,201	2.05	2.00– 2.10
Prince George	1,607	4.21	2.20– 4.60	.....	.....	.....	6,123	2.58	1.50– 5.70	.....	.....	.....	742	1.21	.90– 3.10
Kamloops	3,471	4.57	1.60– 9.00	189	2.25	1.50– 3.90	6,181	4.70	.90– 7.40	112	2.20	.25– 3.20	794	1.54	.60– 3.70
Nelson	2,727	3.89	.20–10.30	1,937	.78	.20– 4.30	5,229	3.39	.20– 5.20	1,408	1.44	.25– 3.40	794	1.58	.30– 3.10
Totals for Province	17,992	$7.47	$0.20–15.40	35,933	$2.55	$0.20– 9.10	36,232	$3.19	$0.20–10.20	77,465	$3.02	$0.25–10.10	28,079	$3.07	$0.25– 8.80

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	$2.30	$2.30– 6.00	358	$2.23	$0.25– 6.00	.....	.....	.....	1,348	$2.35	$0.25– 7.30	100,716	$4.18	$0.25–15.40
Prince Rupert (C.)	11	2.18	2.10– 2.20	.....	.....	.....	.....	.....	.....	1,119	2.08	.55– 3.10	34,648	2.06	.55– 6.70
Prince Rupert (I.)	1,474	2.05	2.00– 2.20	.....	.....	.....	.....	.....	.....	4,949	1.78	.55– 3.00	38,287	2.19	.55– 3.00
Prince George	61	1.75	1.40– 5.10	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,533	2.76	.90– 5.70
Kamloops	1,644	2.31	.70– 6.40	26	16.26	13.70–16.70	354	$4.97	$2.40– 5.60	134	3.42	.55– 5.20	12,905	4.13	.55– 3.60
Nelson	1,152	2.16	.20– 4.00	524	16.65	.25–17.60	885	3.93	.25– 7.20	74	3.43	.20– 5.00	14,730	3.26	.20–17.60
Totals for Province	4,347	$2.18	$0.20– 6.40	908	$10.95	$0.25–17.60	1,239	$4.22	$0.25– 7.20	7,624	$1.97	$0.20– 7.30	209,819	$3.34	$0.20–17.60

(67)

TIMBER CUT AND BILLED FROM TIMBER SALES, 1967

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	165,672,891	6,083,295	448,441	2,806	.....	7,951	.....	.....	.....	812	.....	.....	3,191,127	345,369
Prince Rupert (C.)	44,297,778	.....	489,720	150	.....	.....	400	.....	.....	.....	.....	.....	30,000	.....
Prince Rupert (I.)	2,283,756	.....	882,785	2,663	.....	.....	.....	.....	.....	4,265	.....	.....	25,000	.....
Prince George	211,027,954	.....	479,739	10	.....	15,306	.....	.....	.....	1,000	.....	.....	18,300	.....
Kamloops	135,807,131	.....	1,926,995	1,827	.....	5,966	.....	.....	.....	.....	.....	.....	.....	.....
Nelson	60,246,279	.....	1,880,196	1,263	.....	254,489	458,395	.....	.....	200	.....	.....	.....	208,028
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
Totals, 1958	441,192,089	160,011,288	7,935,015	8,641	48,419	667,907	479,657	.....	.....	2,298	.....	18	3,546,527	922,900
Ten-year average, 1958–67	627,921,019	66,400,945	7,571,304	11,736	28,841	449,945	439,338	6,785	.....	4,886	12,782	4	4,980,175	654,533

(68) SAW AND SHINGLE MILLS OF THE PROVINCE, 1967

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	163	7,661	104	71	49	708	32	89	1	2
Prince Rupert	106	1,292	8	8	5	10	42	354	----	----
Prince George	258	5,562	32	28	1	1	163	1,880	----	----
Kamloops	255	5,456	40	45	4	57	65	637	1	5
Nelson	149	2,786	13	12	3	8	38	251	3	9
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
Totals, 1958	2,010	27,694	------	------	56	1,141	586	4,007	9	37
Ten-year average, 1958–67	1,555	27,800	------	------	57	885	506	3,418	10	45

[1] Figures not available prior to 1964.

(69) EXPORT OF LOGS (IN F.B.M.), 1967

Species	Grade No. 1	Grade No. 2	Grade No. 3	Ungraded	Fuel-logs	Total
Fir	23,555	518,436	2,762,218	----------	----------	3,304,209
Cedar	4,949,387	9,865,202	24,809,725	----------	----------	39,624,314
Spruce	3,119,331	17,361,667	35,810,776	----------	----------	56,291,774
Hemlock	2,791,841	9,383,080	50,127,097	----------	----------	62,302,018
Balsam	----------	----------	----------	20,951,566	----------	20,951,566
Yellow pine	----------	----------	1,964	----------	----------	1,964
Lodgepole pine	72,638	272,360	380,873	----------	----------	725,871
Cypress	791,927	2,896,421	12,427,730	----------	----------	16,116,078
Hardwood	----------	----------	----------	21,269	----------	21,269
Cottonwood	379,565	1,023,633	2,675,054	----------	----------	4,078,252
Totals, 1967	12,128,244	41,320,799	128,995,437	20,972,835	----------	203,417,315[1]
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
Totals, 1958	734,991	3,727,452	16,164,689	3,715,124	3,762,411	28,104,667
Ten-year average, 1958–67	4,805,561	16,165,802	49,723,007	10,393,381	1,218,471	82,306,222

[1] Of this total, 68,513,476 f.b.m. were exported from Crown-granted lands carrying the export privilege; 134,903,839 f.b.m. were exported under permit from other areas.

(70) SHIPMENTS OF POLES AND OTHER MINOR PRODUCTS, 1967

Forest District and Product	Quantity Exported	Approximate Value, F.O.B.	Where Marketed		
			Canada	United States	Other Countries
Vancouver—					
Poles ... lin. ft.	7,035,287	$3,386,486.13	305,809	3,629,724	3,099,754
Piling ... ,,	2,905,162	1,752,047.44	125,364	64,585	2,715,213
Stakes and sticks ... ,,	300	90.00	----------	300	----------
Fence-posts ... pieces	4,251	1,275.30	130	4,121	----------
Cedar shakes ... ,,	17,018,579	1,531,672.11	----------	17,018,579	----------
Christmas trees ... ,,	20,374	50,935.00	----------	20,374	----------
Prince Rupert—					
Cedar poles ... lin. ft.	3,230,430	1,476,258.00	1,079,855	2,122,175	28,400
Cedar shakes ... squares	617	8,021.00	617	----------	----------
Prince George—					
Cedar poles ... lin. ft.	32,330	30,000.00	29,110	3,200	----------
Fence-posts ... pieces	19,198	5,700.00	19,198	----------	----------
Cedar shakes ... cords	4	100.00	4	----------	----------
Kamloops—					
Cedar poles ... lin. ft.	261,325	122,822.00	164,325	97,000	----------
Poles and piling ... ,,	7,105	2,131.00	7,105	----------	----------
Posts ... cords	5	225.00	5	----------	----------
Christmas trees ... pieces	344,250	240,975.00	51,637	292,612	----------
Nelson—					
Poles and piling ... lin. ft.	1,861,138	1,015,991.00	950,495	910,643	----------
Corral rails ... ,,	116,146	3,484.00	106,046	10,100	----------
Orchard props ... ,,	447,350	13,421.00	28,400	418,950	----------
Fence-posts ... cords	3,301	115,535.00	3,105	196	----------
Shake bolts ... ,,	307	7,368.00	26	281	----------
Palings and pickets ... ,,	40	640.00	40	----------	----------
Christmas trees ... pieces	1,362,850	953,995.00	140,500	1,222,350	----------
Total value, 1967	----------	$10,719,171.98	----------	----------	----------
Total value, 1966	----------	$10,305,508.71	----------	----------	----------

(71) SUMMARY OF EXPORT OF MINOR PRODUCTS FOR PROVINCE, 1967

Product		Quantity	Value	Percentage of Total Value
Poles	lin. ft.	10,599,372	$5,015,566.13	46.7905
Piling	,,	2,905,162	1,752,047.44	16.3448
Other poles and piling	,,	1,868,243	1,018,122.00	9.4981
Corral rails	,,	116,146	3,484.00	.0325
Orchard props	,,	447,350	13,421.00	.1252
Stakes and sticks	,,	300	90.00	.0008
Cedar shakes	pieces	17,018,579	1,531,672.11	14.2898
Christmas trees	,,	1,727,474	1,245,905.00	11.6231
Fence-posts	,,	23,449	6,975.30	.0650
Fence-posts	cords	3,306	115,760.00	1.0799
Shake bolts	,,	307	7,368.00	.0687
Palings and pickets	,,	40	640.00	.0059
Cedar shakes	,,	4	100.00	.0009
Cedar shakes	squares	617	8,021.00	.0748
Total-value		.....	$10,719,171.98	100.0000

(72) TIMBER MARKS ISSUED, 1958–67

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	10-year Average, 1958–67
Old Crown grants	215	299	315	268	300	313	356	328	341	277	301
Crown grants, 1887–1906	93	103	115	121	150	125	148	150	130	147	128
Crown grants, 1906–1914	93	125	123	121	164	161	164	172	144	163	143
Section 58, *Forest Act*	362	524	517	470	589	608	672	649	679	680	575
Stumpage reservations	89	108	116	117	109	141	149	133	63	61	109
Pre-emptions	.....	.....	1	3	9	13	7	8	3	6	5
Timber berths	7	9	4	4	12	12	9	14	10	4	9
Indian reserves	9	21	15	8	20	18	27	24	27	11	18
Section 24, *Forest Act*	.....	.....	.....	.....	.....	.....	.....	.....	20	214	23
Timber sales	1,900	1,926	2,136	2,141	1,991	2,183	2,281	1,614	1,126	1,149	1,844
Special marks and rights-of-way	80	85	113	91	90	97	121	153	117	95	104
Pulp-leases	7	1	1	5	5	.....	.....	3	12	4	4
Pulp licences	.....	.....	.....	.....	2	.....	.....	.....	4	1	1
Totals	2,855	3,201	3,456	3,349	3,441	3,671	3,934	3,248	2,676	2,812	3,264
Transfers and changes of marks	598	669	794	691	809	725	802	740	908	593	733

(81) GRAZING PERMITS ISSUED, 1967

Forest District	Number of Permits Issued	Number of Stock under Permit		
		Cattle	Horses	Sheep
Kamloops	1,248	146,602	4,231	4,591
Nelson	463	23,417	1,119	886
Prince George	397	17,927	1,477	795
Vancouver	6	180	10	.....
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
Totals, 1958	1,571	122,489	4,169	20,927

(91)

FOREST ROAD PROGRAMME, 1967

Project	Regulation Unit	Reconnaissance	Location	Construction
Vancouver Forest District		Miles	Miles	Miles
Chilliwack River F.R.	Dewdney P.S.Y.U.	.....	.....	9.0
Lillooet River F.R.	Soo P.S.Y.U.	.....	7.5	.....
Homathko River F.R.	Quadra P.S.Y.U.	.....	16.8	.....
Seymour River F.R.	Kingcome P.S.Y.U.	.....	3.7	.....
Camp Point–Kelsey Bay[1]	Quadra P.S.Y.U.	8.6	.....	.....
Songhees Creek[1]	Kingcome P.S.Y.U.	3.5	.....	.....
Chilliwack–Paleface Creek[1]	Dewdney P.S.Y.U.	1.9	.....	.....
Chilliwack–Depot Creek[1]	Dewdney P.S.Y.U.	2.0	.....	.....
Raza Island[1]	Quadra P.S.Y.U.	6.0	.....	.....
Harrison North F.R.	Soo P.S.Y.U.	.....	.....	0.3
Prince Rupert Forest District				
Suskwa River F.R.	Skeena P.S.Y.U.	.....	10.0	8.0
Lower Skeena Investigation[1]	Skeena P.S.Y.U.	36.0	.....	.....
Kitseguecla–Trout Creek[1]	Skeena P.S.Y.U.	27.0	.....	.....
	Smithers P.S.Y.U.	10.0	.....	.....
Kitwanga West[1]	Skeena P.S.Y.U.	18.0	.....	.....
Prince George Forest District				
Bowron River F.R.	Bowron P.S.Y.U.	.....	.....	9.0
Westlake area[1]	Westlake P.H.F.	58.0	.....	.....
	Nechako P.S.Y.U.	42.0	.....	.....
Uslika Lake–Aiken Lake[1]	Finlay P.S.Y.U.	20.0	.....	.....
Kamloops Forest District				
Chilcotin South F.R.	Stum P.S.Y.U.	.....	11.9	14.8
Bone Creek F.R.	North Thompson P.S.Y.U.	.....	0.8	.....
Lempriere Creek F.R.[1]	North Thompson P.S.Y.U.	4.0	2.0	.....
Finn Creek F.R.	North Thompson P.S.Y.U.	.....	0.5	.....
Area study[1]	Nicola P.S.Y.U.	.....	.....	.....
Area study[1]	Okanagan P.S.Y.U.	.....	.....	.....
Area study[1]	Spallumcheen P.S.Y.U.	.....	.....	.....
Nelson Forest District				
Bench Creek F.R.	Edgewood P.S.Y.U.	.....	.....	8.5
Beaverdell–State Creek F.R.	Kettle P.S.Y.U.	.....	11.5	.....
Yahk Triangle[1]	Cranbrook P.S.Y.U.	11.3	.....	.....
Winnifred Creek[1]	Edgewood P.S.Y.U.	11.7	.....	.....
Howser Creek[1]	Lardeau P.S.Y.U.	24.0	.....	.....
Wilkinson Creek[1]	Kettle P.S.Y.U.	14.0	.....	.....
Lapointe Creek	Cranbrook P.S.Y.U.	.....	2.6	.....
Totals, 1967 programme	.....	298	67.3	49.6
Previous works	.....	5,443	2,483.8	957.5
Totals, forest road programme, 1950–67	.....	5,741	2,551.1	1,007.1

[1] Areas studied under the development engineering programme.
F.R.=Forest road. P.S.Y.U.=Public sustained-yield unit. P.H.F.=Pulp harvesting forest.

(92) FOREST SERVICE MECHANICAL EQUIPMENT, 1967

Type	Total Units, Jan. 1, 1967	Removed from Service	New Purchases	Total Units, Jan. 1, 1968
Sedans	54	7	9	56
Station wagons and sedan deliveries	93	18	13	88
Panel deliveries	74	9	3	68
Four-wheel-drive passenger types	132	19	13	126
Four-wheel-drive pick-ups and panel deliveries	303	75	75	303
5,000–10,000 G.V.W. pickups, ½ an 1 ton	216	33	65	248
14,000–24,000 G.V.W. trucks, 2, 3, and 4 tons	53	4	8	57
24,000–40,000 G.V.W. heavy-duty trucks	8	2	3	9
Fire-fighting tank trucks	2	1	------	1
Total vehicles	935	168	189	956
Trail motor-cycles	110	2	11	119
Tractors—tracked	46	3	5	48
Snow and muskeg tractors (personnel carriers)	9	1	2	10
Snow toboggans—various types	20	6	20	34
Graders	20	3	3	20
Scrapers—self-propelled	1	------	1	2
Scrapers—not self-propelled	2	------	------	2
Shovels—power	3	------	------	3
Loaders—self-propelled	5	------	------	5
Outboard motors	434	21	31	444
Fire-pumps—various	764	36	97	825
Fire-pumps—portable tanker	137	------	10	147
Bean fire-fighting units—high pressure	34	1	------	33
Borate mixer pumps	13	------	2	15
Pumps—water supply	86	1	19	104
Chain saws	523	46	68	545
Lighting plants	109	2	------	107
Lawn-mowers—power	35	3	26	58
Speeders—railway	10	------	------	10
Trailers—low and high bed	9	------	------	9
Trailers—dwelling and bunkhouse	177	6	9	180
Trailers—miscellaneous	322	2	32	352
Air compressors	15	------	------	15
Range-land drill	1	------	------	1
Rock drills—gas-powered	8	1	------	7
Mechanical wheelbarrows	8	2	------	6
Welders	15	1	1	15
Cement mixers	7	------	------	7
Augers—power planting	3	2	------	1
Snow-ploughs—walking	1	------	------	1
Rollers—compaction, towed	3	------	------	3
Rollers—self-propelled	3	------	------	3
Fork-lift trucks	2	------	------	2

(102) REPORTED APPROXIMATE EXPENDITURE IN FOREST PROTECTION BY OTHER AGENCIES,[1] 1967

Forest District	Expenditures				
	Patrols and Fire Prevention	Tools and Equipment	Fires	Improvements	Total
Vancouver	$314,509	$809,670	$873,426	$257,478	$2,255,083
Prince Rupert	122,675	86,411	39,803	31,900	280,789
Prince George	21,890	46,469	75,673	33,450	177,482
Kamloops	18,780	22,400	134,113	21,200	196,493
Nelson	75,055	129,094	688,382	53,059	945,590
Totals	$552,909	$1,094,044	$1,811,397	$397,087	$3,855,437
Ten-year average, 1958–67	$367,957	$612,858	$603,712	$344,165	$1,928,692

[1] Principally forest industry.

(103) FIRE OCCURRENCES BY MONTHS, 1967

Forest District	March	April	May	June	July	August	September	October	Total	Per Cent
Vancouver	.....	7	27	97	125	152	88	.....	496	15.4
Prince Rupert	1	22	35	63	23	52	10	.....	206	6.4
Prince George	.....	3	61	83	136	116	55	1	455	14.1
Kamloops	3	24	132	209	264	383	119	16	1,150	35.8
Nelson	1	17	54	54	223	493	65	2	909	28.3
Totals	5	73	309	506	771	1,196	337	19	3,216	100.0
Per cent	0.1	2.3	9.6	15.7	24.0	37.2	10.5	0.6	100.0	.....
Ten-year average, 1958–67	32	86	323	342	719	616	171	25	2,314	.....
Per cent	1.4	3.7	13.9	14.8	31.1	26.6	7.4	1.1	100.0	.....

(104) NUMBER AND CAUSES OF FOREST FIRES, 1967

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	27	71	50	123	26	.....	8	103	9	56	23	496	15.4
Prince Rupert	41	32	9	27	22	6	18	18	.....	30	3	206	6.4
Prince George	182	52	4	45	30	27	13	37	2	56	7	455	14.1
Kamloops	388	85	88	188	34	104	24	62	15	152	10	1,150	35.8
Nelson	320	48	304	81	16	1	30	28	16	54	11	909	28.3
Totals	958	288	455	464	128	138	93	248	42	348	54	3,216	100.0
Per cent	29.8	8.9	14.1	14.4	3.9	4.3	3.0	7.8	1.3	10.8	1.7	100.0	.....
Ten-year average, 1958–67	829	236	152	285	94	130	47	175	40	269	57	2,314	.....
Per cent	35.8	10.2	6.6	12.3	4.1	5.6	2.0	7.6	1.7	11.6	2.5	100.0	.....

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

Causes	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	Total
Lightning	1,150	184	1,166	1,426	615	1,144	277	1,000	374	958	8,294
Recreational (campers, etc.)	296	172	241	269	182	221	144	315	230	288	2,358
Railroads operating	162	88	245	154	41	65	51	89	170	455	1,520
Smokers	478	211	257	336	162	220	129	310	281	464	2,848
Brush-burning (not railway or right-of-way clearing)	120	75	82	86	60	82	66	89	156	128	944
Range-burning	131	190	87	179	62	95	79	193	149	138	1,303
Road, power-, telephone-, and pipe-line construction	18	30	36	36	35	24	11	89	101	93	473
Industrial operations (logging, etc.)	246	204	137	194	109	141	81	223	164	248	1,747
Incendiary	53	34	54	49	25	62	45	24	14	42	402
Miscellaneous known causes	310	253	271	290	183	250	178	309	292	348	2,684
Unknown causes	94	33	59	83	62	41	59	44	36	54	565
Totals	3,058	1,474	2,635	3,102	1,536	2,345	1,120	2,685	1,967	3,216	23,138
Railroad-tie fires	1,062	536	1,478	------	------	------	------	------	------	------	------

(106)

FIRES CLASSIFIED BY SIZE AND DAMAGE, 1967

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	496	15.4	260	52.5	14.6	167	33.7	15.9	57	11.4	18.1	12	2.4	17.1	420	35	41
Prince Rupert	206	6.4	99	48.0	5.6	77	37.0	7.3	24	12.0	7.6	6	3.0	8.6	180	12	14
Prince George	455	14.1	253	56.0	14.2	122	27.0	11.6	68	15.0	21.7	12	2.0	17.1	399	42	14
Kamloops	1,150	35.8	540	47.0	30.3	473	41.1	45.2	113	9.8	36.0	24	2.1	34.3	994	102	54
Nelson	909	28.3	631	69.5	35.3	210	23.1	20.0	52	5.7	16.6	16	1.7	22.9	831	36	42
Totals	3,216	100.0	1,783	.....	100.0	1,049	.....	100.0	314	.....	100.0	70	.....	100.0	2,824	227	165
Per cent	100.0	.....	55.4	.....	.....	32.6	.....	.....	9.8	.....	.....	2.2	.....	.....	87.8	7.1	5.1
Ten-year average, 1958–67	2,314	.....	1,388	.....	.....	646	.....	.....	221	.....	.....	59	.....	.....	2,028	165	121
Per cent	100.0	.....	60.0	.....	.....	27.9	.....	.....	9.6	.....	.....	2.5	.....	.....	87.6	7.1	5.3

(107) DAMAGE TO PROPERTY OTHER THAN FORESTS, 1967[1]

Forest District	Forest Products Cut, Logs, Lumber, Etc.	Buildings	Railway, Logging, and Sawmill Equipment	Miscellaneous	Total	Per Cent of Total
Vancouver	$182,429	$32,450	$118,517	$24,382	$357,778	38.6
Prince Rupert	11,765	2,350	18,035	7,274	39,424	4.3
Prince George	3,008	825	.....	950	4,783	0.5
Kamloops	79,568	61,350	43,585	69,922	254,425	27.4
Nelson	23,948	8,880	227,532	10,431	270,791	29.2
Totals	$300,718	$105,855	$407,669	$112,959	$927,201	100.0
Per cent	32.4	11.4	44.0	12.2	100.0	.....
Ten-year average, 1958–67	$128,077	$45,487	$216,724	$35,955	$426,243	.....
Per cent	30.0	10.8	50.8	8.4	100.0	.....

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

(108) DAMAGE TO FOREST COVER CAUSED BY FOREST FIRES, 1967—PART I[1]

Forest District	Merchantable Timber				Immature Timber	
	Net Area Killed	Total Volume Killed	Salvable Volume of Timber Killed	Net Stumpage Loss	Net Area Killed	Present Value
	Acres	M Cu. Ft.	M Cu. Ft.	$	Acres	$
Vancouver	7,143	55,697	47,481	533,908	6,979	344,396
Prince Rupert	3,726	1,860	792	127,535	1,698	75,479
Prince George	3,895	8,085	4,119	50,727	12,124	151,250
Kamloops	39,628	80,725	50,013	1,044,524	19,463	495,081
Nelson	13,072	24,188	7,731	673,537	27,315	967,015
Totals	67,464	170,555	110,136	2,430,231[2]	67,579	2,033,221[2]
Per cent	27.6	100.0	64.6	51.1	27.6	42.7
Ten-year average, 1958–67	68,602	110,533	41,707	1,770,956	70,197	1,581,310
Per cent	15.1	100.0	37.8	47.6	15.4	42.5

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

[2] This 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.

(108)

DAMAGE TO FOREST COVER CAUSED BY FOREST FIRES, 1967—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	5,074	1,975	64	49,129	3,379	855	9	1	3,293	822	27,916	55,697	929,111
Prince Rupert	1,091	529	48	10,110	538	150	2,073	102	357	88	10,060	1,860	213,464
Prince George	1,433	1	581	15,859	7,245	2,030	2,352	317	18,452	4,740	46,083	8,085	224,923
Kamloops	7,337	3,871	787	61,122	8,104	1,962	12,884	1,482	4,721	1,160	96,795	80,725	1,605,331
Nelson	8,449	.....	595	134,927	7,411	1,859	271	13	6,516	1,739	63,629	24,188	1,779,090
Totals	23,384	6,376	2,075	271,147	26,677	6,856	17,589	1,915	33,339	8,549	244,483	170,555	4,751,919
Per cent	9.6	2.6	0.8	5.7	10.9	0.1	7.3	0.1	13.7	0.2	100.0	100.0	100.0
Ten-year average, 1958–67	14,182	1,664	20,184	294,326	213,354	53,180	12,678	1,855	54,953	13,899	455,814	110,533	3,715,526
Per cent	3.1	0.3	4.4	8.0	46.8	1.4	2.8	0.1	12.1	0.4	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, 1967

Cause	Fire Causes		Area Burned		Forest Service Cost		Total Damage	
	Number	Per Cent	Acres	Per Cent	Cost	Per Cent	Damage	Per Cent
Lightning	958	29.8	98,441	40.3	$2,800,740	40.3	$1,514,889	26.7
Recreational (campers, etc.)	288	8.9	11,691	4.8	290,278	4.2	229,626	4.0
Railroads operating	455	14.1	10,078	4.1	82,673	1.2	428,285	7.5
Smokers	464	14.4	9,205	3.8	506,858	7.3	108,874	2.0
Brush-burning (not railway or right-of-way clearing)	128	3.9	1,975	0.8	33,112	0.6	5,692	0.1
Range-burning	138	4.3	12,465	5.1	257,455	3.7	169,640	3.0
Road, power-, telephone-, and pipe-line construction	93	3.0	7,301	3.0	428,039	6.2	561,338	9.9
Industrial operations (logging, etc.)	248	7.8	33,587	13.8	564,681	8.1	1,086,285	19.1
Incendiary	42	1.3	41,820	17.1	1,167,953	16.8	964,992	17.0
Miscellaneous known causes	348	10.8	16,304	6.6	753,857	10.9	603,544	10.6
Unknown causes	54	1.7	1,616	0.6	48,834	0.7	5,955	0.1
Totals	3,216	100.0	244,483	100.0	$6,934,480	100.0	$5,679,120	100.0

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

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	Total, 10 Years
Total number of fires	3,058	1,474	2,635	3,102	1,536	2,345	1,120	2,685	1,967	3,216	23,138
Area burned (acres)	2,065,423	273,631	285,820	1,227,159	45,617	46,346	7,746	307,132	54,788	244,483	4,558,145
Standing timber destroyed or damaged (M cu. ft.)	358,149	8,481	122,293	315,532	3,972	7,953	306	114,585	3,506	170,555	1,105,332
Amount salvable (M cu. ft.)	98,517	2,110	40,010	119,223	1,279	3,357	117	40,872	1,453	110,136	417,074
Damage to forests	$7,917,235	$1,342,849	$3,725,361	$12,820,694	$311,445	$308,475	$25,793	$5,194,473	$757,017	$4,751,919	$37,155,261
Damage to other forms of property	408,183	869,569	299,657	368,476	280,700	225,797	151,338	567,162	164,352	927,201	4,262,435
Total damage	$8,325,418	$2,212,418	$4,025,018	$13,189,170	$592,145	$534,272	$177,131	$5,761,635	$921,369	$5,679,120	$41,417,696

(111) FIRES CLASSIFIED BY FOREST DISTRICT AND COST PER FIRE OF FIRE-FIGHTING, 1967

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	496	892,325	12.8	3,813	52	10.5	1.6	444	89.5	13.8	205	128	61	23	27
Prince Rupert	206	601,959	8.6	3,716	44	21.4	1.4	162	78.6	5.0	77	56	11	5	13
Prince George	455	698,499	10.1	2,305	73	16.0	2.3	382	84.0	11.8	126	182	54	8	12
Kamloops	1,150	2,913,685	42.0	5,269	259	22.5	8.1	891	77.5	27.7	421	306	111	20	33
Nelson	909	1,828,012	26.5	4,736	154	16.9	4.8	755	83.1	23.5	429	201	76	20	29
Totals	3,216	6,934,480[1]	100.0	4,233	582	------	18.2	2,634	------	81.8	1,258	873	313	76	114
Per cent	100.0	------	------	------	18.2	------	------	81.8	------	------	39.1	27.1	9.7	2.4	3.5
Ten-year average, 1958–67	2,314	2,556,748	------	------	714	------	------	1,600	------	------	864	513	143	31	49
Per cent	100.0	------	------	------	30.9	------	------	69.1	------	------	37.2	22.2	6.2	1.4	2.1

[1] Cost correct to date, subject to later revision.
Cost to other parties (1,182 cost fires), $1,811,397. Cost to Forest Service (1,638 cost fires), $6,934,480.
Detailed final costs are published one year in arrears in the table "Forest-protection Expenditures" in each Annual Report.

(112) PROSECUTIONS, 1967

Forest District	Information Laid	Burning without Permit	Refusing to Render Assistance in Fire-fighting	Contravening a Forest Closure	Failing to Maintain Proper Fire-protection Equipment	Failing to Control and Extinguish Fire	Failing to Fall Snags and Remove Debris in Accordance with Regulations	Deny Access, Sec. 152 (6)	Miscellaneous Offences	Fines		Served Sentence in Gaol	Suspended Sentence	Cases Dismissed	Cases Withdrawn
										Number	Amount				
Vancouver	19	3	1	14	1	—	—	—	—	13	$375	—	4	1	1
Prince Rupert	2	—	2	—	—	—	—	—	—	—	—	1	—	1	—
Prince George	8	4	4	—	—	—	—	—	—	8	450	—	—	—	—
Kamloops	23	4	12	4	1	—	—	1	1	16	575	1	—	4	2
Nelson	25	—	—	25	—	—	—	—	—	24	850	—	1	—	—
Total	77	11	19	43	2	—	—	1	1	61	$2,250	2	5	6	3
Ten-year average, 1958–67	44	14	15	8	4	1	—	—	2	39	$1,193	1	1	2	1

(113)

CONTRACT FLYING, 1967

Fixed-wing Aircraft

Forest District	Base	Type of Aeroplane	Hours Flown
Vancouver	Vancouver	Cessna 185, Beaver	785
Prince Rupert	Smithers	Various and Super Cub	1,254
Prince George	Prince George and Dawson Creek	Cessna, Otter, Super Cubs	781
Kamloops	Kelowna and Williams Lake	Beaver, Cessna, Super Cubs	2,002
Nelson	Nelson	Cessna	358
Total			5,180

Helicopters

Forest District	Base	Type of Helicopter	Hours Flown
Vancouver	Vancouver and Campbell River	Hillers 12E and 12J	500
Prince Rupert	Smithers	Various and Hiller	745
Prince George	Prince George and Fort St. John	Hiller 12E	1,290
Kamloops	Kamloops	Bell G3B and G3B1	783
Nelson	Nelson and Cranbrook	Hiller 12E and Bell G3B	278
Total			3,596

Air Tankers

Forest District	Base	Type of Aeroplane	Hours Flown
Vancouver	Victoria	Canso	63
Prince Rupert	Prince George and Smithers	Canso and Avenger	182
Prince George	Prince George	Canso	63
Kamloops	Kamloops and Kelowna	Canso and Avengers	243
Nelson	Castlegar and Cranbrook	Canso and Avenger	172
Total			723

(114)

NON-CONTRACT FLYING, 1967

Fixed-wing Aircraft

Forest District	Reconnaissance		Transportation of Men and Supplies		Water Bombing		Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Vancouver	111	$6,157	4	$188	307	$267,983	422	$274,328
Prince Rupert	25	1,575	370	25,480	70	11,200	465	38,255
Prince George	844	34,708	366	30,980	151	60,410	1,361	126,098
Kamloops	1,070	31,911	200	14,730	1,625	350,393	2,895	397,034
Nelson	601	39,503	13	195	899	208,871	1,513	248,569
Totals	2,651	$113,854	953	$71,573	3,052	$898,857	6,656	$1,084,284

Helicopters

Vancouver	120	$16,200	303	$41,220	.....	.....	423	$57,420
Prince Rupert	36	4,150	283	39,285	48	$7,065	367	50,500
Prince George	21	2,903	944	114,584	.....	.....	965	117,487
Kamloops	73	7,923	1,414	206,115	.....	.....	1,487	214,038
Nelson	11	1,397	1,569	183,496	6	638	1,586	185,531
Totals	261	$32,573	4,513	$584,700	54	$7,703	4,828	$624,976

(115) ANALYSIS OF SUPPRESSION-CREW FIRE-FIGHTING ACTIVITIES, 1967

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)	296	283	7	5	1	-----
Over ¼ acre and up to 1 acre	115	53	53	5	-----	4
Over 1 acre and up to 5 acres	74	22	25	19	7	1
Over 5 acres and up to 50 acres	47	10	1	14	17	5
Over 50 acres	4	-----	-----	-----	-----	4
Totals	536	368	86	43	25	14

(116) CONSTRUCTION OF PROTECTION ROADS AND TRAILS, 1967

	Light	Medium	Heavy	Total
	Miles	Miles	Miles	Miles
New road construction	11	64	20	95
Road maintenance	299	538	134	971
Totals, road construction and maintenance	310	602	154	1,066
New trail construction	4	2	2	8
Trail maintenance	36	6	2	44
Totals, trail construction and maintenance	40	8	4	52

(117) SUMMARY OF SNAG-FALLING, 1967, VANCOUVER FOREST DISTRICT

		Acres
Total area logged, 1967		94,136
Logged in small exempted operations[1]	58	
Assessed for non-compliance, less 66 acres subsequently felled	24	
		82
Balance logged acres snagged, 1967		94,054
Snags felled, 1967, by Forest Service Protection Division	1,867	
Snags felled, 1967, by Forest Service Reforestation Division	1,659	
		3,526
Total area snagged, 1967		97,580

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

SUMMARY OF LOGGING SLASH REPORTED IN 1967, VANCOUVER FOREST DISTRICT

(118)

		Acres
Total area logged, 1967		94,136
Area covered by full hazard reports	66,482	
Covered by snag reports but exempted from slash disposal	9,449	
Covered by acreage reports only (exempted from slash and snag disposal) [1]	58	
		75,989
Slash created and not reported in 1967		18,147

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

ACREAGE ANALYSIS OF SLASH DISPOSAL REQUIRED, 1967, VANCOUVER FOREST DISTRICT

(119)

Type of Disposal	Acres of Slash Prior to 1967	Acres of Slash 1967[1]	Total Acres
Broadcast burning	31,107	29,774	60,881
Spot burning	2,879	2,722	5,601
Totals	33,986	32,496	66,482
1967 reports not recommending slash disposal		9,449	
1967 slash on very small operations exempted without special examination		58	
			9,507
Total area of slash dealt with, 1967			75,989

[1] Does not include the estimated 18,147 acres (*see* Table 118) created too late to be dealt with in 1967.

ANALYSIS OF PROGRESS IN SLASH DISPOSAL, 1967, VANCOUVER FOREST DISTRICT

(120)

			Acres
Total disposal required (*see* Table No. 119)			66,482

Type of Disposal	Acres of Slash Prior to 1967	Acres of Slash 1967	Total Acres
Spring broadcast burning	600	186	786
Spring spot burning	53	21	74
Fall broadcast burning	38,773	20,154	58,927
Fall spot burning	1,339	1,172	2,511
Total burning completed	40,765	21,533	62,298
Burning by accidental fires			5,074
Lopping, scattering, land-clearing, etc.			163
Total			67,535
Balance reported slash not yet abated			------
Slash created, 1967, acres assessed			18
Plus slash created too late to be dealt with, 1967			18,147
Total area of slash carried over to 1968 for disposition			18,165

Actual area burned in spring spot burning, 14 acres.

Actual area burned in fall spot burning, 623 acres.

The above figures do not include 1966 slash-burn reports received too late for inclusion in 1966 Annual Report, 2,052 acres.

(121) SUMMARY OF SLASH-BURN DAMAGE AND COSTS, 1967, VANCOUVER FOREST DISTRICT

Total acres of forest cover in slash fires, 1967	20,679
Net damage to forest cover	$558,545.80
Net damage to cut products	174,801.00
Net damage to equipment and property	112,678.00
Total damage	$846,024.80

(131) TRAINING-SCHOOL ENROLMENT AND GRADUATIONS

Enrolment, 1967

Basic course	24
Advanced course	24

Graduates, 1967

Basic course	24
Advanced course	*Nil*

Total Graduates since 1946

Basic course	124
Advanced course	295
Grand total	419

(141) FOREST REVENUE, 1963–67

	12 Months to Dec. 31, 1963	12 Months to Dec. 31, 1964	12 Months to Dec. 31, 1965	12 Months to Dec. 31, 1966	12 Months to Dec. 31, 1967
Timber-licence rentals and fees	$357,175.79	$362,707.84	$720,919.31	$771,170.84	$825,100.86
Timber-berth rentals and fees	17,361.70	15,639.09	15,024.33	14,368.52	13,436.63
Timber-lease rentals and fees	63,629.77	68,446.06	86,230.58	106,852.12	76,121.31
Timber-sale rentals and fees	502,317.68	510,469.54	765,651.17	948,568.96	881,812.16
Timber-sale stumpage	30,199,623.94	37,221,058.19	42,031,437.70	42,643,936.30	34,732,239.51
Timber-sale cruising and advertising	386,735.44	487,503.76	325,847.00	223,236.17	229,857.61
Timber royalties	2,499,842.31	2,610,292.87	2,629,476.11	3,079,058.68	3,509,720.06
Grazing permits and fees	152,200.70	139,313.50	151,079.95	153,507.63	310,718.84
Forest protection tax	523,598.00	522,672.70	559,007.55	570,202.65	579,928.17
Miscellaneous	173,192.07	210,330.47	273,738.16	245,350.02	394,388.82
Weight scaling	.....	.....	.....	212,275.98	396,894.14
Federal Forestry Agreement	.....	.....	.....	1,379,936.16	542,146.97
Totals	$34,875,677.40	$42,148,434.02	$47,558,411.86	$50,348,464.03	$42,492,365.08

(142)

AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, 1967

District	Royalty	Miscellaneous	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Forest Development Fund	Total
			Scaling Expenses	Scaling Fees				
Vancouver	$2,176,233.48	$62,612.49	$387,622.80	$1,465,148.56	$13,951,701.47	$470,595.20	.....	$18,513,914.00
Prince Rupert	431,328.43	4,121.25	72,869.44	189,378.27	$3,869,961.61	208,199.37	.....	4,775,858.37
Prince George	71,447.15	6,613.84	.....	.....	6,684,063.73	324,175.45	.....	7,086,300.17
Kamloops	252,515.12	15,097.17	.....	.....	5,539,112.73	353,656.31	.....	6,160,381.33
Nelson	165,759.12	66,985.18	.....	.....	3,066,873.68	204,771.24	.....	3,504,389.22
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
Totals, 1958	$1,656,522.86	$13,720.12	$169,517.28	$788,929.53	$20,385,679.74	$970,108.77	$139,091.73	$24,123.570.03

(143) AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, FISCAL YEAR 1966/67

District	Royalty	Miscellaneous	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Forest Development Fund	Total
			Scaling Expenses	Scaling Fees				
Vancouver	$2,090,074.07	$73,721.13	$360,037.54	$1,461,150.91	$18,015,359.13	$450,994.33	.....	$22,451,337.11
Prince Rupert	399,169.47	11,926.69	58,611.51	172,131.54	4,617,029.66	210,361.52	.....	5,469,230.39
Prince George	105,289.39	1,515.19	.....	.....	5,510,727.13	337,973.18	.....	5,955,504.89
Kamloops	252,493.35	4,039.60	.....	.....	6,945,559.49	357,642.27	.....	7,559,734.71
Nelson	167,089.79	6,416.16	.....	.....	3,910,355.14	257,436.32	.....	4,341,297.41
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
Totals, 1957/58	$1,876,624.77	$18,418.04	$200,348.04	$890,547.82	$24,860,333.41	$930,780.33	$137,679.66	$28,914,732.07

(144) FOREST REVENUE, FISCAL YEAR 1966/67

Timber-licence rentals and fees	$658,404.29
Timber-berth rentals and fees	14,377.02
Timber-lease rentals and fees	76,466.69
Timber-sale rentals and fees	924,546.04
Timber-sale stumpage	39,932,312.11
Timber-sale cruising and advertising	234,829.49
Timber royalties	3,394.958.33
Grazing permits and fees	157,089.60
Forest protection tax	582,756.32
Miscellaneous	290,201.23
Weight scaling	358,789.16
Federal Forestry Agreement	1,889,537.14
Total	$48,514,267.42

(145) FOREST SERVICE EXPENDITURES, FISCAL YEAR 1966/67

General administration, protection, and management of forests	$13,481,948
Reforestation and forest nurseries	1,007,138
Forest research	84,305
Public information and education	60,914
Forest Service training-school	159,990
Grant to Canadian Forestry Association	17,500
Engineering services and forest-development roads	4,114,000
Fire suppression	858,600
Forest surveys	972,609
Silviculture	1,191,697
Grazing Range Improvement Fund[1]	81,714
Peace River community pastures	10,000
Forestry and Correction Camp Programme	13,000
Total	$22,053,415

[1] Statement provided elsewhere.

(146) SCALING FUND

Deficit, April 1, 1966	$48,840.74
Collections, fiscal year 1966/67	2,062,566.69
	$2,013,725.95
Expenditures, fiscal year 1966/67	2,111,120.95
Deficit, March 31, 1967	$97,395.00
Collections, nine months, April to December, 1967	1,597,477.43
	$1,500,082.43
Expenditures, nine months, April to December, 1967	1,637,651.00
Deficit, December 31, 1967	$137,568.57

(147) GRAZING RANGE IMPROVEMENT FUND

Surplus, April 1, 1966	$12,450.69
Government contribution (section 13, *Grazing Act*)	71,370.34
	$83,821.03
Expenditures, fiscal year 1966/67	81,714.00
Surplus, March 31, 1967	$2,107.03
Government contribution (section 13, *Grazing Act*)	78,544.80
	$80,651.83
Expenditures, nine months, April to December, 1967	59,957.34
Surplus, December 31, 1967	$20,694.49

(148) PEACE RIVER POWER TIMBER SALVAGE

Expenditures, fiscal year 1966/67	$2,064,210.19
Recovered from British Columbia Hydro and Power Authority	2,036,574.67
Balance	$27,635.52

(151) DISTRIBUTION OF PERSONNEL, 1967

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	-----	-----	-----	-----	-----	6	6
Directors of Grazing and Public Information	-----	-----	-----	-----	-----	2	2
Forest Counsel and Personnel Officers	-----	-----	-----	-----	-----	3	3
District Foresters and Assistant District Foresters	2	2	2	2	2	-----	10
Foresters	13	10	13	15	12	99	162
Agrologists and Agrologists-in-training	-----	-----	2	6	2	-----	10
Engineers	-----	-----	-----	1	-----	27	28
Forest Protection Officers	3	2	3	1	2	5	16
Technical Forest Officers	96	85	100	125	115	35	556
Superintendent of Scaling and Assistants	15	-----	4	3	-----	-----	22
Scalers, Official	73	1	-----	3	-----	-----	77
Scalers, Official, temporary	87	8	36	30	-----	-----	161
Comptroller, Accountant, and Audit Assistants	-----	-----	-----	1	-----	5	6
Engineering, Mechanical and Radio	6	5	5	5	2	14	37
Public Information Officers	-----	-----	-----	-----	-----	2	2
Public Information Assistants	-----	-----	-----	-----	-----	1	1
Reforestation, Research, and Survey Assistants	-----	1	-----	2	-----	36	39
Nursery Superintendents	-----	-----	1	-----	-----	-----	1
Draughtsmen and Mapping Assistants	5	4	5	5	4	31	54
Clerks, Stenographers, and Messengers	92	41	35	36	25	97	326
Superintendent and Foremen, Forest Service Maintenance Depot	6	-----	-----	-----	-----	-----	6
Mechanics, Carpenters, and Technicians	31	3	8	1	3	69	115
Launch Crewmen	18	8	-----	-----	-----	1	27
Forest Assistants	34	39	51	51	32	10	217
Truck, Tractor, and Equipment Operators	9	5	2	3	2	13	34
Foremen	2	1	-----	1	-----	24	28
Miscellaneous[3]	28	3	2	2	3	61	99
Totals, continuous personnel	520	218	269	293	204	545	2,049
Seasonally Employed							
Technical Forest Officers	8	-----	9	6	5	3	31
Patrolmen	-----	1	-----	-----	-----	-----	1
Lookoutmen	38	21	32	32	41	-----	164
Dispatchers, Radio Operators, and Clerks	7	2	3	4	7	1	24
Fire-suppression Crewmen	57	16	20	63	45	1	202
Reforestation—Snag-fallers, Planters, etc.	1	-----	35	-----	90	1,252	1,378
Truck, Tractor, and Equipment Operators	-----	1	6	3	5	18	33
Student and Survey Assistants and Engineering Aides	-----	-----	-----	-----	-----	42	42
Forest Assistants	-----	1	3	-----	5	112	121
Foremen	5	1	-----	12	-----	55	73
Miscellaneous[4]	11	6	6	2	38	59	122
Totals, seasonal personnel	127	49	114	122	236	1,543	2,191
Totals, all personnel	647	267	383	415	440	2,088	4,240

[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.

Printed by A. SUTTON, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia.
1968

2,230-168-1140