PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES

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

REPORT

of the

FOREST SERVICE

YEAR ENDED DECEMBER 31

1964

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in right of the Province of British Columbia.
1965

VICTORIA, B.C., February, 1964.

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

MAY IT PLEASE YOUR HONOUR:

Herewith I beg respectfully to submit the Annual Report of the Forest Service of the Department of Lands, Forests, and Water Resources for the calendar year 1964.

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 1964.

R. G. McKEE,
Deputy Minister of Forests.

The Assistant Ranger station at Mile 73 on the Parsnip Forest Development Road, established in 1964 for administration and fire protection in the area.

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REPORT OF THE FOREST SERVICE, 1964

CHIEF FORESTER'S REPORT

Implementation of the firmly established policy of full wood utilization was the chief concern of the British Columbia Forest Service in 1964. The success of our endeavours was manifested in the fact that adequate wood supplies were made available for six new pulp-mills stretching roughly along a line from Prince Rupert to the Rocky Mountain Trench without impairing the perpetual sawlog yield.

This miracle—for miracle it was in terms of the wood that was once left to waste in the forests—came about because of increased use of barkers and chippers, the creation of two more pulpwood harvesting areas, and the establishment of a new type of timber sale based on close utilization down to a 7-inch top in areas where pulpable material too small for sawlogs is in preponderance. The new pulpwood tenures are described elsewhere in this Report. It is only necessary to mention here that these accomplishments and others on which we were making progress as the year ended are very largely responsible for the so-called explosion which is making the pulp and paper industry so important to the burgeoning economy of this Province. Among the others referred to are the fact that last year re-logging, an operation still in its infancy, produced 4.3 million cubic feet of wood in the Vancouver Forest District alone; that studies proved that if a typical Coast hemlock-cedar stand is logged to a 1-foot stump and a 4-inch top instead of a 2-foot stump and a 12-inch top as is generally the case now, the wood harvested would increase by 60 per cent; and that by using poor-site Coast trees down to a 9-inch d.b.h. instead of the present 13, scale volumes would be increased by 5 per cent. These auger well for the future.

The timber rights required for the six authorized pulp-mills were granted after a series of six public hearings held by the Honourable the Minister of Lands, Forests, and Water Resources. These placed a considerable additional burden on the Working Plans Division of the Forest Service, which in each case had to use basic data available to check the feasibility of the proposed plans, advertise the hearings, acknowledge and summarize all briefs and letters, and prepare key and display maps. After the hearings the Division played a valuable part in the difficult task of formulating recommendations to the Minister—difficult because there is not always enough wood to go around.

The actual 1964 scale again surpassed that of any previous year, reaching a total of 1,514,595,176 cubic feet, and again there was a slight increase, to 45.3 per cent, in the proportion of the total that was harvested in the Interior of the Province. The total was an increase of 2.8 per cent over that for 1963. The value of all forestry production rose some 6 per cent to $900,000,000, a figure that reflects the strong demand for raw material.

This demand is illustrated by the drop in the volume of logs exported, to 52.9 million board-feet, and by log and stumpage prices. Using No. 3 grade hemlock logs as an index, the average price quoted in the last quarter of 1963 was $48 per thousand board-feet, which compares with an average of $60 for the last quarter of 1964. The average stumpage price bid for Crown timber increased over the year by 22 per cent, to $4.09 per 100 cubic feet, and there were some 8,700 upward adjustments to the rates payable under existing timber-sale contracts.

In 1964 the *Forest Act* was again amended. Section 17 of the Act was altered to impose a bidding fee, and this had a measurable effect in reducing excessive competition and nuisance bids. Seventeen sales were disallowed under authority of the new legislation. Under the same section, provision was made for the carrying-out of silvicultural treatment under the terms of timber-sale contracts, with payment provided for by an offset against stumpage.

Section 118 of the Act was amended to require persons establishing a wood-conversion plant on private as well as on Crown land to obtain a permit, one of the terms of which provides for adequate fireproofing of the area. Section 132 was amended to allow the outstanding forest-protection tax to be added to the Provincial Collector's taxation rolls. Other changes were made in the *Forest Act* to facilitate administration.

All divisions of the Forest Service accomplished important, if not always spectacular, forward strides. The year saw 14,293,100 seedlings planted in the ever-growing reforestation programme. There is still a need for increased nursery capacity and, with it, a great deal of site preparation to make unplanted areas plantable.

The fire season was benign, and the costs of suppression were only $121,645, just 7.6 per cent of the 10-year average. Encouraging progress was made with a device called—temporarily, it is to be hoped—sferics, used for lightning detection. It is still experimental, but there is some reason to believe that in future years it will help to reduce the loss through fires caused by this greatest of all arsonists.

In conclusion I would like to express my thanks to those members of the Forest Service whose ability, hard work, and devotion made 1964 another year of memorable achievement.

F. S. McKinnon,
Chief Forester.

FOREST SURVEYS AND INVENTORY DIVISION

During 1964 the Forest Surveys and Inventory Division continued the programme of intensive unit surveys in public sustained-yield units. Between 1958 and 1963, field work was completed in 48 managed units, and maps and reports have been published for this work. Maintenance surveys were carried out in 25 of these units, with an area of approximately 21,000,000 acres, and unit surveys in the remaining 23, encompassing an area of approximately 23,000,000 acres. In 1963 a unit survey was also conducted in the Prince George Special Sale Area comprising approximately 1,400,000 acres. Maps and the report have been completed.

Financial assistance for the inventory programme was again received from the Federal Government through the agreement for forest inventory implemented under the *Department of Forestry Act.*

Growth, loss-factor, and volume studies continued, as did investigation of the application of 70-mm. helicopter photography to forest sampling. In addition to continuation of these programmes, a regeneration survey was undertaken and further cruising was done for the Taxation Branch of the Department of Finance.

FIELD PROGRAMME

Forest Classification and Sampling

Forest inventories were completed for five public sustained-yield units in 1964 —the Soo, Okanagan, Cranbrook, Blueberry, and Burns Lake. Inventories were also completed for two large sections of the southern half of the Hecate. This programme added approximately 12,700,000 acres to the area covered by unit inventory surveys.

Growth Studies

A continued growth-study programme in 1964 resulted in the establishment of 97 permanent growth plots in three Interior public sustained-yield units, distributed as follows: Salmon Arm, 20; Shuswap, 29; and Spallumcheen, 48. By forest types, 50 were located in Douglas fir-larch, 41 in pure Douglas fir, and 6 in Douglas fir-birch. Conditions sampled were as follows: Ages from 41 to 120 years, sites ranging from good to poor with the majority in the good and medium class, and elevations from 1,100 to 3,500 feet.

Other field work included the final remeasurement of two experimental plots, each of 1 acre size, in the Fernie and Okanagan Public Sustained-yield Units.

Following the publication in 1960 of Forest Survey Note No. 6, there has been an increasing demand for growth and yield information on a net-less-decay basis, and a growing emphasis on the importance of site in relation to productive capacity. With some 10,000 additional inventory samples available, it is now possible to draw volume-over-age curves by site class for major growth types in the seven Provincial zones and in public sustained-yield units which have been adequately sampled.

During the year the growth section has produced volume-over-age curves for all zones, based on sampling from the years 1953 to 1963, and for 30 of a possible 37 Crown units for which enough sample information is currently available. For Coast units and zones, curves are drawn at 9.1 inches plus and 13.1 inches plus d.b.h., while for Interior units and zones they are drawn at 7.1 inches plus and 11.1 inches plus d.b.h. Volumes are net for decay only, and based on a close utilization. Curves for the two diameter limits, Coast and Interior, are drawn on one graph from which prints may be obtained, and age of culmination of mean annual increment is indicated (tangent method). Since mean annual increment may

be obtained at any age by simply dividing volume by age, the curves are actually site-class yield tables in graphical form.

Loss-factor Studies

The loss-factor programme continued for the purpose of providing more accurate loss factors for application to inventory field data. The second successive summer of decay studies in the Soo Public Sustained-yield Unit saw this Division fall and measure 1,903 trees on 58 sample plots, a total for the two-year programme of 2,787 trees on 90 sample plots.

In conjunction with 70-mm. low-elevation photography research, seven photo plots were felled and measured for volume and decay in the Okanagan Public Sustained-yield Unit.

Special Field Projects

At the request of the Department of Finance, 3,200 acres of privately held forest properties in the vicinity of Squamish were cruised for the purpose of real-property assessment.

In conjunction with the Cranbrook forest inventory project, a regeneration survey of 80,000 acres of logged and burned areas was completed to ascertain the progress of natural restocking on yellow pine-fir association sites in the Rocky Mountain Trench and in adjacent spruce-balsam associations at higher elevations. A report is being prepared for the Reforestation Division.

An investigation into the application of 70-mm. helicopter photography to forest sampling continued in 1964. Twenty-three multi-plot samples were established in the Okanagan Public Sustained-yield Unit. Following ground measurement the samples were photographed from approximately 200 feet, and seven of these samples were felled and measured for volume and decay. An analysis of 394 tree heights measured on the ground, standing and on the photographs, indicates that tree heights measured on the photographs are more reliable than conventional ground height measurements of standing trees. Further analysis is being carried out to develop photo volume tables for six species and to determine the reliability of predicting tree diameters from the photo measurements.

Operations

In addition to the continuously employed field staff, some 80 student assistants and other seasonal field staff were employed.

Helicopters again proved to be an invaluable aid in obtaining forest classification information and in transporting sampling and loss-factor crews to remote areas. Through their use, the intensity of information collected for inaccessible areas can be greatly improved with little increase in field staff. Despite generally poor flying conditions, schedules were maintained for a Bell G3-B and a Bell G2, which were chartered for three months and flew a total of 725 hours. In addition, 150 hours were expended on other local charters.

Both Division launches, the " B.C. Forester " and the " Forest Surveyor," were used on the Hecate project. Once more the 60-foot barge " L.C. 6," towed by the " Forest Surveyor," proved very successful as a floating helicopter base on remote coastal inlets.

OFFICE PROGRAMME

Forest Mapping

Map production in 1964 resulted in the completion of 567 interim base maps covering over 12,000,000 acres, of which 88 per cent were at 20-chains-to-1-inch

BRITISH COLUMBIA FOREST SERVICE
FOREST SURVEYS
AND INVENTORY DIVISION

MAINTENANCE SURVEYS 1958-1960

1. Babine
2. Barkley
3. Big Valley
4. Bowron
5. Cape Scott
6. Carp
7. Cottonwood
8. Creston
9. Crooked
10. Kyuquot
11. Lac la Hache
12. Longworth
13. Morice
14. Naver
15. Niskonlith
16. Purden
17. Quesnel Lake
18. Redonda
19. Robson
20. Sayward
21. Sechelt
22. Spallumcheen
23. Stuart
24. Williams Lake
25. Willow River

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 (1961-63 fieldwork)

1. Arrowhead
2. Big Bar
3. Chilliwack
4. Dean
5. Fernie
6. Harrison
7. Kettle
8. Kitwanga (now in Skeena)
9. Narcosli
10. Nechako
11. Nicola
12. Salmo
13. Salmon Arm
14. Seymour
15. Shuswap
16. Smithers
17. Special Sale Area
18. Stum
19. Terrace (now in Skeena)
20. Texada
21. Westlake
22. Windermere
23. Yale

AVAILABLE INFORMATION

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

* IN PROGRESS (1964 fieldwork)

24. Blueberry
25. Burns Lake
26. Cranbrook
27. Hecate (part in Kitimat T.F.L. Reserve)
28. Hecate
29. Okanagan
30. Soo

*Mapping and Compilation in progress.

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 31 DECEMBER 1964

scale. In addition, 542 final forest-cover maps, based on the 1963 field work, were completed. Mapping of all the 1964 field projects is in progress, and maps and reports should be available by the fall of 1965.

In response to requests received from various public and private agencies, 18,200 maps, 260 survey reports, 700 volume-over-age curves, and over 2,000 sample volume statements were distributed during 1964.

Area and Volume Summaries

Nine unit survey reports were issued for those areas completely surveyed the previous year. They included the Chilliwack, Dean (Block 1), Fernie, Harrison, Kettle, Stum, Terrace, and Shuswap Public Sustained-yield Units, plus the Prince George Special Sale Area.

Planimetry of unit survey maps exceeded 10,000,000 acres. In addition, 542 map-area and map-volume statements were printed, completing the inventory figures for the above survey reports. Work is now in progress on the 1964 project areas.

There was a marked increase in the demand for detailed inventory summaries in 1964. Twenty-nine were completed for Forest Service management planning and access-road development purposes, and 70 were completed for the Lands Service which involved applications to lease or to purchase within the special sale area. These requests accounted for a total area of 33,000,000 acres and a net timber volume of 37,000,000,000 cubic feet. Further to this, more than 30 pulp investigations, involving much of the timbered area of the Province, were completed by consulting and company foresters using the information available from the Division.

All of the 1,986 Provincial samples established during the 1964 field season have been compiled on the basis of the 1962 Standard Cubic Foot Volume Tables. The Provincial total, 1953 to 1964, inclusive, stands at 28,229, exclusive of permanent growth plots, and prints of any compiled sample statement in cubic feet per acre are available upon request.

In addition to these sample statements, 70 per cent have now been presented separately on a stand-table basis in a new compressed format which includes the following: Tree species, d.b.h. in tenths of inches, compilation height in feet, tree class by pathological condition, and quality class. Also included are sample-per-acre factors, the basal area per acre, average diameter, and number of stems per acre at several diameter limits. Copies of this information, by sample, are available upon request.

Increased use was made of the I.B.M. 1620 electronic computer and the 1401 data-processing card system.

Mensuration Studies

Mensuration studies continued and, though most of these are continuing projects, results of some are being applied. It is hoped that funds will be available to carry out field checks during 1965, to determine efficiency of various sample designs.

FOREST RESEARCH DIVISION

Details of the research programme for 1964 will appear in the annual Forest Research Review, compiled at the end of the fiscal year.

EXPERIMENT STATION

The development of a research nursery and related facilities at the Cowichan Lake Experiment Station are proceeding satisfactorily. The site was improved by the installation of sub-surface drains, a pump and mains to supply water for irrigation, and by construction of cold-frames for seed-beds and completion of a soil-storage shed. A transplant area was stoned and top-dressed with suitable soil. An additional 40 acres of forest are being cleared for use in progeny testing and clone banks. These improvements will greatly enhance the usefulness of the experiment station for tree-breeding work and for a variety of research on nursery soil-fertility problems.

DATA-PROCESSING

A data-processing study was completed for the Vancouver Forest District leading to a decision to install an I.B.M. 1440 system for scale-computing and billing tasks.

Five general computer programmes were developed, and several I.B.M. library programmes were adapted dealing with basic computations and tests commonly met in simple experimental designs. These programmes were used in over 400 individual analyses of 11 projects.

FIELD PROGRAMME

Tree Breeding and Genetics

In the spring, scion material from all Douglas fir plus trees selected in 1963 was collected and grafted into Forest Service clone banks. The search for plus trees was continued throughout the summer, mainly on the Coastal Mainland. Thirty-six trees were registered. The sixth Plus Tree Week, organized as a co-operative effort with the forest industry, took place in the Mission area with 30 foresters taking part. Sixteen trees were registered. Cruising by individual co-operating companies continued to provide additional trees for registration.

The first intra-specific crosses of Douglas fir were made in 1963. These were continued in 1964 on a larger scale, the pollen parents being selected from the Interior of British Columbia, Washington, Oregon, and California.

The Douglas fir provenance study was delayed by an inadequate seed crop, although some seed was collected from the Pemberton area on the Mainland and on Southern Vancouver Island.

In connection with Interior spruce provenance studies, the immediate objective was to provide data which will allow the breakdown of the complex spruce population into broad categories homogeneous for certain characteristics and thus provide a basis for more intensive provenance research. The ultimate objective is to delimit the pattern of variation in spruce so that criteria will be provided for the establishment of seed transfer rules and the initiation of a programme of selection and breeding. To this end, a mass collection of foliage and cones was made throughout the range of white and Engelmann spruce for morphological study. Also, studies of germination and growth of numerous spruce-seed lots were made in

Forest Service nurseries and in a growth chamber in co-operation with the Faculty of Forestry, University of British Columbia.

Land Classification

In co-operation with Provincial and Federal Soil Survey and Forest Research Divisions of the Departments of Agriculture and Forestry and the University of British Columbia, studies on land classification are continuing, based upon the soil, landform, and vegetation. Projects were carried out in the Southern Interior and the Prince George region.

Seeding and Planting

In a study to establish realistic culling standards for nursery use, it was found that spindly seedlings (diameter less than 2.5 mm.) and those with weak multiple tops did not survive well, but those with slightly damaged root systems or with forked tops survived and grew as well as the control. This was confirmed in another study on the effect of seedling density in nursery beds in which spindly seedlings resulting from dense sowing failed to survive transplanting as well as those grown at lower density.

The results from direct-seeding studies in the Kamloops District were very encouraging, though much of the success this year may be attributed to favourable climatic conditions. Although spot seeding produced similar results to last year, broadcast seeding was greatly improved. Further trials were conducted in the mixed wet-belt type this year and will be assessed in 1965.

The unusually cool summer was also favourable to survival of seeding and planting experiments in the Nelson District. Trials to determine the optimum season for spot seeding were continued at Trout Lake, Zincton, and Cedar Creek. With the exception of white pine, spring sowings gave better germination and first-season survival than fall sowings. Douglas fir sown late in July was particularly successful, with as many as 92 per cent seed spots stocked. Germination and survival of spot-sown Douglas fir under birch and aspen on an old burn at Zincton was good and confirmed results of a 1962 seeding under similar conditions at Mars Creek.

Spacing and Thinning

A new project was initiated in the Prince Rupert District, concerned with cleaning treatments (spacing) in overstocked juvenile stands of lodgepole pine. The objective is to determine if the stagnation of potential crop trees can be avoided, and any related effects of different spacing regimes on the growth habit of selected trees. It is hoped this study may lead to practical techniques for producing merchantable crops from such overstocked stands.

For details of research projects active in 1963, and of publications and unpublished reports, *see* Tables Nos. 11 and 12 in the Appendix.

REFORESTATION DIVISION

FOREST NURSERIES

Cool, cloudy weather similar to that enjoyed for the past few years favoured growth in all nurseries. Although late spring frosts caused minor losses in most nurseries, generally dull skies with near-normal precipitation later in the season enabled trees to overcome this setback. Growing stock at Duncan, however, was damaged severely, and inventories there are much lower than expected. The dull weather also favoured crops of weeds, and weeding costs at most locations were higher than in the previous year. A series of December storms brought a heavy snowfall to the Coastal area, and this cover should provide a measure of protection against over-wintering losses.

A new record of 4,448 seed-beds was sown in the spring. Germination was generally good and initial growth has been satisfactory. Sowings carried out on new ground at both Duncan and Green Timbers germinated well, but the first year's growth at Duncan has been patchy and uneven. This condition is probably due largely to previous cultural practices on this area. Soil analysis prior to sowing indicated that the phosphorus level was adequate, and a routine fertilizer application was made to supply the approximate amount that the seedling crop would remove. However, through the co-operation of the Research Branch of the Federal Department of Forestry and the Experimental Farm at Saanichton, it has been fairly well established by tissue analysis and a new technique of soil phosphorus determination that the deficiency of this element could have caused the poor growth. While this condition can be corrected in the coming growing season, the need for further research to select soil analysis methods more closely correlated with the nutrient requirements of forest tree seedlings is indicated. Although inclement weather prevented a full schedule of autumn sowing, nurserymen managed to sow a total of 659 beds.

Continued expansion of co-operative nurseries and favourable weather enabled the transplanting programme to reach a new high of 2,083,000 trees. The existing area at the Brannan Lake Boys' School was doubled, and an additional 4.5 acres at Snowdon Camp, near Campbell River, was developed to receive transplant trees next year. At Haney Correctional Institution, improvement of the original area is now complete and further development is planned at another site. A transplant nursery has also been approved for the Rayleigh Gaol near Kamloops.

Forest Service nurseries are likewise being developed to keep pace with the growing demand for planting stock. Twenty acres of new ground were brought into production at Duncan and Green Timbers, and final ground improvements have now been completed at Telkwa. During recent years more attention has been paid to the maintenance of soil structure and fertility at all nurseries. This year the organic content of the fallow ground at the main Duncan Nursery was improved with the addition of 750 cubic yards of bog peat, and peat will also be applied to remaining areas when current tree crops are removed. At the Cranbrook Nursery, 100 cubic yards of alfalfa compost were prepared for application to the soil next year. This soil-improvement programme, combined with better irrigation and increased mechanization, has resulted in higher production per acre of better-quality planting stock.

Distribution of stock for field planting this year totalled 14,370,000 trees slightly above the previous record established in 1963 (*see* Table No. 21 in the Appendix).

Douglas fir nursery beds at Green Timbers.

FOREST TREE SEED

A fairly extensive flower crop appeared at lower elevations throughout the Province in the spring, but the potential cone crop was destroyed by unusually late spring frosts and heavy insect infestations. Consequently, at lower elevations, the seed crop was sporadically light to medium and crops at higher elevations were negligible.

Forest Service collections for the Province consisted of 89 seed-lots, amounting to 2,318 bushels of cones, of which more than half (1,258 bushels) came from the Nelson Forest District. Collections from Prince George and Kamloops Forest Districts totalled 1,060 bushels. No collections were made in the Prince Rupert Forest District.

The extraction of seed from the cones collected in 1963 (655 bushels) was completed early in the year and yielded 66.307 kilograms of seed, mainly lodgepole pine from the Prince George Forest District. Extraction of the 1964 collections is presently under way.

At the Duncan Seed Centre, 127 germination tests were carried out and some 166 kilograms of seed prepared for sowing a total of 5,647 seed-beds at the various nurseries. Co-operative seed exchanges involved the handling of 192 seed-lots for 41 requests. The present stock of Forest Service and company seed on hand is 1,346.6 kilograms, of which 70 per cent is Coast Douglas fir. There is, however, a critical shortage of high-elevation fir seed for the Mainland.

Co-operation with the Research Division continued on Project E.P. 623, an investigation of growth behaviour of 40 white spruce provenances.

Coast seed production areas produced 175 bushels of cones from 18 acres following nitrogen fertilization in 1963. This was the third crop stimulated by the

application of fertilizer. On one experimental area, fertilized plots produced exceptionally higher yields than did control plots. The reason for this unusual response is not yet understood.

For the first time, pollen was artificially applied to a seed-production area by means of a mist-blower. The results of this trial are now being analysed.

There are now nine seed production areas (all Douglas fir) in the Vancouver Forest District and 14 in the Interior (nine spruce, four fir, one larch). These areas total 77.6 acres. Fertilization of the Interior plots failed to bring on substantial cone crops, but 56 bushels were collected from two of the production areas in the Kamloops Forest District.

At the Campbell River seed orchard, 855 grafts were made in co-operation with the Research Division. There are now 1,272 established ramets in the seed orchard. The goal is 3,372. Survival of grafts has been very good, and current growth on grafts made last year varies from 20 to 40 inches. This vigorous growth is resulting in little vegetative area being created for cone production, and various trimming and pruning techniques are being tried on a limited scale to keep this growth under control. To improve drainage in the orchard, some 2,500 feet of drain-tile was laid.

A 4-acre holding area for scion material (a clone bank) was developed at the new Duncan nursery, and 350 rootstock trees are now ready to receive grafts next year.

RECONNAISSANCE AND SURVEY WORK

In conjunction with the Surveys and Inventory Division regular inventory of the Cranbrook Public Sustained-yield Unit, supplementary surveys were carried out to determine the progress of natural regeneration during the past 10 years on areas denuded during the 1930's. Special studies were also made on the large areas burned in 1960.

On the Coast, Reforestation Division survey crews examined 70,457 acres in the Sechelt (begun in 1961) and Redonda Public Sustained-yield Units and the Southgate River drainage. Of this, 54,045 acres were found to be fully restocked or likely to restock, 2,065 acres are inaccessible and of low site, and 2,336 acres have been previously planted. It is important to note that of the 12,011 acres remaining, 8,147 acres (about 68 per cent) will require some form of site preparation before planting is possible. A total of 3,864 acres is presently plantable.

PLANTING

The Province again had a cool, cloudy summer, which had a favourable influence in newly established plantations. Late spring storms on the Coast brought snow to higher elevations and delayed planting in some areas. However, the cool moist weather which persisted until early summer enabled all projects to be completed well before drier weather arrived. In the Interior, spring planting commenced two weeks later than last year. The fall planting season was shortened by early snow in some locations.

Of particular interest are the spacing trials which were established in the Chilliwack Valley and the Sayward Forest with the co-operation of the Research Division and the Department of the Attorney-General. These plots will supplement information on growth behaviour and stand development from similar plots established previously. In the Kamloops Forest District, the second stage of planting trials with Douglas fir was carried out. The purpose of these plots is to assess survival and initial growth as influenced by season of planting, age of stock, ground conditions, and exposure.

During the past few years increasing interest has been given to hiring native Indians for planting. These men are extremely adaptable to adverse weather conditions, and their cheerfulness and steady rate of production is ideally suited to this work. In 1964 special arrangements were made with the Indian Affairs Branch to obtain crews, with the result that 40 per cent of the planting work force was made up of Indians.

Planting of 14,293,100 trees by all agencies established a new record this year. Of this total, 16 per cent was planted by the Forest Service on Crown lands (*see* Table No. 22 in the Appendix). In the Interior the number of trees planted on Crown lands was almost double that of 1963, and for the first time this total approached the comparable figure for the Coast.

PERMANENT IMPROVEMENTS

In conjunction with the rotation schedule at Green Timbers 13,000 feet of 4-inch drain-tile was laid in Field No. 4 following removal of planting stock in the spring. The tree-storage facilities here were doubled with the addition of a new wing to the original storage building.

At the Duncan " B " Nursery, acquired in 1963, the irrigation reservoir was deepened, and a 25-horsepower electric pump and 1,500 feet of water-main have been installed to service new fields. Further clearing was carried out, and 2,000 cubic yards of soil were hauled in for levelling.

At the East Kootenay Nursery, improvement work continued on the upper field. The irrigation system was enlarged by the installation of 800 feet of " Skinner " irrigation-line and 250 feet of 3-inch underground water-main. Seven hundred yards of sandy loam were hauled and spread to improve the texture of the soil.

A new portable cold-storage unit was completed in March and transported to Prince George. This unit will facilitate the handling and movement of planting stock in that forest district.

CO-OPERATION

The Reforestation Division continued to take an active part in co-operative forestry programmes. In August, the Division assisted in hosting a two-day symposium sponsored by the Tree Improvement Board, at which an assessment was made of progress in tree-improvement work in the Pacific Northwest. Five Reforestation Division men took part in the Plus Tree Week cruising activities in June. During a very successful workshop held under the auspices of the Tree-farm Forestry Committee, many of the older plantations in the Sayward Forest were examined and assessed by foresters from Government and industry.

In the Interior, staff members assisted in organizing the fall reforestation workshop of the Inland Empire Reforestation Council and arranged for planting and site-preparation equipment to be exhibited at the workshop in October. Earlier in the year the Division was represented at a conference on animal damage in plantations, sponsored by this Council.

Combined Grazing and Reforestation Division crews continued stand-improvement thinning in the East Kootenay. The 59 acres treated this year brings the total area thinned to 855 acres. Reforestation Division crews felled snags on 1,418 acres, of which 895 acres were cleared in co-operation with industry.

Interdepartmental Rehabilitation and Forestry Programme

The co-operative programme, conducted by the Forest Service and the Department of the Attorney-General, continued to make favourable progress. With renovations completed at Rayleigh Gaol (Kamloops Forest District), inmates com-

menced stand-improvement work in the autumn. Clearing of the Hutda Lake camp-site (Prince George Forest District) has prepared the way for camp construction scheduled for 1965. The Chilliwack Camps are being gradually improved, and one new camp is being built to replace an older one. Forestry training was continued in all camps, and 20 Correctional Officers attended a three-day course at the Forest Service training-school.

In addition to routine road maintenance, Chilliwack crews improved 5 miles of old grade and built one-quarter of a mile of graded trail. The Mount Thurston camp sawmill produced 182,000 f.b.m. of lumber for camp projects and 3,500 stakes and posts. Tree shipments from the Chilliwack nurseries totalled 410,000 trees of which 36,100 were planted by inmates, and a further 52,000 trees were transplanted in the nurseries. The seed production area established last year on Larsen's Bench produced 28 bushels of cones in 1964. Salvage operations from rights-of-way and from blow-down areas continue to provide fuel-wood and raw material for the sawmill.

The transplant nursery at Haney Correctional Institution this year lifted and shipped 60,000 2–1 trees, and 400,000 seedlings were transplanted in the area prepared last year. Institution trainees planted 5,500 trees on 8 acres in the Blue Mountain Forest. Other crews carried out routine road improvements and thinned, pruned, and weeded 210 acres on a stand-improvement project.

In the Sayward Forest, inmates from the Snowdon and Lakeview Camps slashed out 15 miles of old grade and cleaned, repaired, or replaced the culverts. One 50-foot bridge was redecked and planked. An area of 5 acres near Snowdon Camp was cleared and prepared for nursery development, and inmates from this camp planted 8,650 trees on 25 acres. The seed production area at McNiven Lake was cleaned and weeded, and later yielded 43 bushels of cones. Pruning of the 1939 plantation was continued, and 288 acres were treated.

Silvicultural work on the Heffley Lake rehabilitation project began in the autumn, and crews from Rayleigh brushed out approximately 25 acres preparatory to planting next spring. Field examination and soil-sampling were carried out by Forest Service personnel at Rayleigh with a view to locating a suitable area for growing transplants. A 10-acre block was selected, and part of it will be ready for production in 1965.

Approximately 60,000 f.b.m. of logs have been decked on the Hutda Lake camp-site from the clearing operation during the year. This material will be hauled to a sawmill at the Prince George Vocational School. Efforts to locate a suitable water supply for the proposed camp are continuing.

Organization and procedures in connection with the interdepartmental forestry programme are now well established, and the work programme for 1965 has been drawn up and approved by the Headquarters Co-ordinating Committee.

WORKING PLANS DIVISION

In addition to the Working Plans Division's regular activities of sustained-yield planning, a considerable amount of time was spent during 1964 in collecting and compiling essential information for the Chief Forester and Assistant Chief Forester in Charge of Planning in connection with public hearings conducted by the Honourable the Minister of Lands, Forests, and Water Resources under authority of sections 17A and 36 of the *Forest Act*.

Each hearing involved a considerable amount of background work. Descriptions of the area applied for were checked, advertising arranged, and all briefs and letters received, acknowledged, summarized, and sorted as to stand taken with regard to a particular hearing. Key maps of the various areas were prepared, and a display map made for visual orientation purposes at each hearing. Following the hearing, copies of the decisions made were sent to everyone who contributed to the hearing and the procedures established by the decisions put into effect.

A third pulpwood harvesting area agreement was formally signed, granting an option to Northwood Pulp Limited to purchase pulpwood from five public sustained-yield units. A fourth pulpwood harvesting area, consisting of four public sustained-yield units in which Bulkley Valley Pulp and Timber Limited is interested in an option, was designated, but no formal agreement had been signed by the end of the year. Four new public sustained-yield units were established and a fifth one in name combined three others. A sixth unit was absorbed into a tree-farm licence reserve. There was no change in the number of tree-farm licences. Two new tree-farm licence reserves were declared.

Three new *Taxation Act* tree-farms were certified. Five new farm wood-lot licences were awarded and three farm wood-lots were cancelled. The managed units of the Province now include four pulpwood harvesting areas covering 33 public sustained-yield units and 50 other public sustained-yield units, altogether 83; 39 tree-farm licences; 28 out of a total of 42 taxation tree-farms which are not managed as an integral part of the tree-farm licences; and 55 farm wood-lot licences, making a total of 205 managed units.

The total area committed under working plans is 68,791,191 acres of productive forest, with a total allowable annual cut of 1,044,761 cubic feet. This is equivalent to 69 per cent of the total Provincial scale for 1964. Of this allowable annual cut, 100,000,000 cubic feet have been set up on the basis of a close utilization standard with basic inventory sound-wood volume being specified at 7.1 inches and over, diameter at breast height. The following table lists the forms of units committed to forest management under working plans for sustained yield:—

Progress of Sustained-yield Programme up to 1964

Type of Managed Unit	Number of Units	Productive Area (Acres)	Allowable Annual Cut (M C.F.)		
			Sawlog Utilization	Close Utilization	Total
Public sustained-yield units—					
In pulpwood harvesting areas	33	17,980,621	179,720	.....	179,720
Other public sustained-yield units—					
Sawlog utilization	49	37,829,539	377,270	.....	377,270
Close utilization	1	5,150,147	.....	100,000	100,000
Total public sustained-yield units	83	60,960,307	556,990	100,000	656,990
Tree-farm licences	39	7,130,067	.....	.....	352,870
Tree-farms (excluding those in tree-farm licences)	28	682,553	.....	.....	34,543
Farm wood-lot licences	55	18,264	.....	.....	358
Totals	205	68,791,191	.....	.....	1,044,761

PULPWOOD HARVESTING AREAS

The option agreement for Pulpwood Harvesting Area No. 3 was formally ratified by Northwood Pulp Limited and the Honourable the Minister of Lands, Forests, and Water Resources on October 30, 1964. Public sustained-yield units included are Bowron, Longworth, Monkman, Purden, and Robson.

In his decision of August 26, 1964, with regard to the public hearings held in April in the Prince Rupert Forest District, the Honourable the Minister designated the area including the Smithers, Babine, Morice, and Burns Lake Sustained-yield Units to be Pulpwood Harvesting Area No. 4. It was proposed, on evidence that proper financing could be arranged, to grant an option agreement to purchase the pulpwood from the designated pulpwood harvesting area, subject to site location, to Bulkley Valley Pulp and Timber Limited. This agreement had not been formally ratified by the end of the year.

Industry continued to study other Provincial areas as potential pulpwood harvesting areas.

OTHER PUBLIC SUSTAINED-YIELD UNITS

Four other public sustained-yield units were established during the year. The Lardeau was established in the Nelson Forest District and has a productive acreage of 703,028. The Finlay and Peace were established in the Prince George Forest District with productive acreages of 5,150,147 and 1,196,976 respectively.

The fourth unit was the Bell-Irving in the Prince Rupert Forest District with a productive acreage of 456,193. No allowable annual cut has yet been calculated for this unit.

The Finlay Public Sustained-yield Unit is the first unit to be set up initially on a basis of a pulpwood economy for which volumes will be determined to a close utilization standard for trees 7.1 inches and over, diameter at breast height.

TREE-FARM LICENCES

No new tree-farm licences were established in 1964, but two new areas within the Prince Rupert Forest District were reserved for two new tree-farm licences as applied for by Skeena Kraft Limited and MacMillan, Bloedel and Powell River Limited respectively. The reserve for the proposed extensions to Tree-farm Licences Nos. 29 and 34 in the Prince George Forest District was retained.

CERTIFIED TREE-FARMS

Three new certified tree-farms were certified in 1964, bringing the total to 42 tree-farms under the *Taxation Act*. Of these, 14 are managed as portions of tree-farm licences with a productive area of 300,562 acres and a total annual allowable cut of 20,074,000 cubic feet. The tree-farms not included within tree-farm licences total 28 and have a productive acreage of 682,553 with a total annual allowable cut of 34,543,000 cubic feet plus 386,740 Christmas trees.

FARM WOOD-LOT LICENCES

Due to the many time-consuming activities of the Forest Service, it has not been able to keep up with the requirements of the many farm wood-lot licence applications. Consequently the majority of these applications have been placed in a low-priority classification and most of the effort has been devoted to those already under way. This has resulted in five new farm wood-lots. Routine cancellations due to change in tenure and failure to adhere to the management plan totalled three. The 55 farm wood-lots have a productive acreage of 18,264 acres and an annual allowable cut of 358,000 cubic feet.

For basic data on sustained-yield units, *see* Tables Nos. 31, 32, and 33 in the Appendix.

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 31 DECEMBER 1964

PUBLIC SUSTAINED-YIELD UNITS

PULPWOOD HARVESTING AREAS

NO. 1

10. Big Valley
18. Carp
23. Crooked River
43. Naver
44. Nechako
51. Parsnip
72. Stuart Lake
78. Westlake
81. Willow River

NO. 2

1. Adams
6. Barriere
7. Barton Hill
12. Botanie
25. Eagle
45. Nehalliston
46. Nicola
47. Niskonlith
48. North Thompson
56. Raft
61. Salmon Arm
65. Shuswap
71. Spallumcheen

NO. 3

13. Bowron
37. Longworth
39. Monkman
53. Purden
59. Robson

NO. 4

4. Babine
69. Smithers
15. Burns Lake
40. Morice

OTHER PUBLIC SUSTAINED-YIELD UNITS

2. Arrowhead
3. Ashnola
5. Barkley
8. Bell-Irving
9. Big Bar
11. Blueberry
14. Broughton
16. Canoe
17. Cape Scott
19. Chilliwack
20. Cottonwood
21. Cranbrook
22. Creston
24. Dean
26. Edgewood
27. Fernie
28. Finlay
29. Granby
30. Harrison
31. Hecate
32. Kettle
33. Kinbasket
34. Kyuquot
35. Lac la Hache
36. Lardeau
38. Moberly
41. Nakusp
42. Narcosli
49. Okanagan
50. Ootsa
52. Peace
54. Queen Charlotte
55. Quesnel Lake
57. Redonda
58. Rivers Inlet
60. Salmo
62. Sayward
63. Sechelt
64. Seymour
66. Similkameen
67. Skeena
68. Slocan
70. Soo
73. Stum
74. Takla
75. Taseko
76. Tatla
77. Upper Kootenay
79. Windermere
80. Williams Lake
82. Yalakom
83. Yale

OTHER PUBLIC UNITS

S.S.A. Special Sale Area (o i c 2811/62)

K.R. Kamloops Region

TREE-FARM LICENCES

RESERVED

1. Eagle Lake Sawmills Limited
2. Church Sawmill Limited
3. Skeena Kraft Limited
4. MacMillan, Bloedel and Powell River Limited

AWARDED

T. F. L. No.	
1.	Celgar Limited
2.	Elk Falls Company Limited
3.	Pacific Logging Company Limited
4.	I. W. McDonagh
5.	Western Plywood Company Limited
6.	Rayonier Canada (B. C.) Limited
7.	MacMillan, Bloedel and Powell River Limited
8.	Boundary Sawmills Ltd.
9.	S. M. Simpson Limited
10.	Timberland Development Co. Ltd.
11.	Olinger Lumber Company 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.	Evans Products Company Limited
18.	Clearwater Timber Products Ltd.
19.	Tahsis Company, Ltd.
20.	MacMillan, Bloedel & Powell River Industries Ltd.
21.	MacMillan, Bloedel & Powell River 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
28.	Shelley Development Limited
29.	Eagle Lake Sawmills Limited
30.	Sinclair Spruce Lumber Company Ltd.
31.	Upper Fraser Spruce Mills Limited
32.	Vernon Box & Pine Lumber Co. Ltd.
33.	Shuswap Timbers Ltd.
34.	Church Sawmill Limited
35.	B. C. Interior Sawmills Ltd.
36.	F. & R. Logging Co. Ltd.
37.	Canadian Forest Products Ltd.
38.	Empire Mills Limited
39.	MacMillan, Bloedel and Powell River Limited

PUBLIC INFORMATION AND EDUCATION DIVISION

The year 1964 was, in general, one of smooth and planned activity, thanks primarily to a benign fire season which passed without excitement.

The year saw a mutually profitable liaison extended between the Division and persons working in similar fields, particularly with some of the forest industrial publications.

It was, however, an extremely busy year with personnel being employed on various projects that extended to the Peace River in the north and from the West Coast to the Alberta Boundary.

Some gratifying successes resulted, particularly in the exhibit field. Our own Forest Service exhibits won three separate awards of merit in three different exhibitions. In addition, during National Forest Products Week, the Public Information and Education Division gave assistance to an industrial exhibit that won a first prize at the national level. This was particulraly pleasing since this co-operative effort brought in the first prize for the third time in a row.

Equally pleasing has been the success of the small plastic hazard-rating signs designed and distributed by this Division. These tiny signs, tried experimentally in 1963, went into general distribution in 1964. It is a matter of some pride to its designers to learn that they have already been closely copied by two other Provinces and are being favourably considered by others.

COMMUNICATIONS MEDIA

Press and Periodicals

The press facet of public information activity continued to dominate the major portion of the Division's work. Nearly 100 releases were issued, ranging from special time-consuming articles for such publications as the "Truck Logger" magazine, the Toronto Globe and Mail, and the British Columbia News Letter published in London to more routine releases such as the monthly timber scale and weekly fire reports. Weekly submissions from the clipping service indicate that Forest Service releases are well received. They are used widely in the daily and weekly press.

In addition, the Division was the source of many feature and picture stories actually prepared by outside writers who came here for their material. One such picture story, on fire protection, appeared in the Illustrated London News.

Publications and Printing

The volume of material edited and published by the Division continued to grow as new items were added to the standard number of publications produced annually. Printing and publishing remains one of the most important duties of the Division. Major important publications include the Annual Report, the Research Review, and Management Notes. There are also the continuing processes of revising, amending, and republishing standard pamphlets and publicity material. In this regard, for example, 60,000 scribblers were distributed this year to school-children. The popular Illustrated Forest Activities series of four booklets was reprinted, with a press run of 3,000 copies each. An important new pamphlet, "Canada's Pacific Forests," was also published in 1964. It is based on a speech by the Deputy Minister, Mr. R. G. McKee. Other new pamphlets include a "Do and Don't" for tree-planters and a booklet on the Sayward Forest. The latter repaces a 1949 publication.

Radio, Television, and Theatre

The 1964 radio campaign of educational forest-protection announcements was broadcast by tape recordings during June, July, and August by all 28 radio stations in the Province. Each tape contained 12 individual 30-second announcements. In all, 2,649 single announcements were broadcast during the standard schedule.

In addition, copy for special hazard flashes to be used during periods of high hazard was prepared and supplied to all stations. Their use was limited due to an extremely mild fire season.

The willingness of the radio industry to broadcast on a one-for-one basis (for each paid announcement the station offers one gratis) can be attributed to the excellent work and co-operation between Forest Service district personnel and the local radio stations. This personal approach has enabled this Division to establish a satisfactory working agreement with all radio stations.

Paid television programming was restricted to supplying three sets of 35-mm. slide presentations to the Canadian Broadcasting Corporation network. Each set of slides was accompanied by a prepared tape. A total of 26 transmissions was scheduled, once each Thursday and Friday during the months of July and August. In addition, the Canadian Broadcasting Corporation presented 26 transmissions as a public service.

All television stations in the Province were supplied with a specially prepared hazard-rating sign which was designed to be affixed to the weather chart. Four stations were encouraged to develop special forestry programmes, and in co-operation this Division supplied slides, stills, and motion pictures in addition to printed material.

Staff members participated in or arranged for numerous interviews on both radio and television.

SIGNS, POSTERS, AND EXHIBITS

During the 1964 season it was extremely difficult to meet the demand for new and replacement standard Forest Service signs. Lack of available funds prohibits the proper production and maintenance of signs presently in use. As a result, the issuance of the standard Forest Service boundary signs was suspended until further notice. The entire sign programme is now under review, and it is anticipated that present investigations will result in a more satisfactory method of sign production and maintenance. A total of 890 individual standard signs is presently being displayed throughout the Province. The Division maintains eight designs in the sign programme.

The Division's "Keep B.C. Green—Use Your Ashtray" highway programme was continued for the 11th consecutive year. Due to radical changes in highway road construction, which has resulted in increased speed-limits, many of our sign sites have been abandoned. Where possible, new locations have been established.

The Forest Service's permanent exhibit in the British Columbia Building, Pacific National Exhibition, Vancouver, was completely renovated. It was viewed during the year by an estimated 750,000 persons.

In addition, the Division constructed three portable exhibits, one of which won a major award as the most interesting exhibit in the Victoria Exhibition. British Columbia House, London, England, was supplied with a seven-panel exhibit depicting the duties and responsibilities of the Forest Service.

During Forest Conservation Week and National Forest Products Week, the Division assisted numerous organizations to develop and promote exhibition material. One particular company which utilized Forest Service material won the top award for merchandising during National Forest Products Week.

Forest Service display won first prize in the "Most Interesting Exhibit" class at the Victoria Jaycee Exhibition.

Forest Service exhibits were displayed at four fall fairs, five conventions, three major exhibitions, and numerous special events such as educational days for students, junior forest wardens, and teachers.

PHOTOGRAPHY

Still and Motion-picture Production

This year, production of prints totalled 11,314, little change from the previous year's total. Although less printing was undertaken for Engineering Services Division, an increase was noted in the services to the Research Division.

The number of negatives taken during the year was 308, although, because of costs, the staff was forced to cut down on the number of colour negatives taken. The photographic library added 381 black-and-white and 122 colour negatives. The 35-mm. slide library received 220 additional slides, a big increase over the previous year's 91 additions. Approximately 300 duplicate colour slides were supplied to various users, and increased use was again noted in the use of slides from our library. A certain amount of work is now being done to provide black-and-white 35-mm. slides of charts and illustrations, mainly for lecturing purposes.

Coverage was given to the Christmas-tree industry, at the request of the Nelson Forest District staff, and a comprehensive set of colour photographs and 35-mm. slides was provided for the district's use. These photographs were obtained during two field trips.

Both members of the photographic staff undertook a field trip in December to cover experimental studies being carried on by the Engineering Services Division in the Parsnip River area. Both still photographs and motion-picture footage were

obtained, although a certain amount of camera failure was experienced due to low temperatures.

Work was done on the permanent Forest Service exhibit in the British Columbia Building at the Pacific National Exhibition, which was completely redesigned this year. Photographic colour transparencies in various sizes were used, from colour negatives taken by the staff.

The motion picture on slash-burning, "Fire, the Good Servant," shot in 1963, was edited, sounded, and released just before slash-burning got under way this year. Work commenced on re-editing "The Man in the Tower," the training film on look-out work. Some additional footage was shot and a script obtained for a shorter general-interest film entitled "The Man on the Mountain." This film will be completed and sounded when the necessary funds become available.

Film Library

The year 1964 commenced with a slight reduction in the number of films in the possession of the film library—from 152 to 147.

A total of 483 individual loans was made to the public. Total audience for 1964 was 107,006. This was a decrease due to a shortened school lecture season.

SCHOOL LECTURE PROGRAMME

The school lecture programme in 1964 was less extensive than in previous years due to the redirection of the Victoria headquarters lecturer to a variety of other duties and the loss of the Prince George Public Information Officer to the Canada Department of Forestry in mid-year. However, the Victoria lecturer did cover 22 secondary schools in the Vancouver and Kamloops Forest Districts.

The programme is expected to right itself in 1965 with the acquisition of a new full-time lecturer, made possible by the transfer of the Prince George Forest District staff position to Victoria headquarters.

During the year some 50 talks were given by staff members to organizations other than schools.

LIBRARY

The librarian visited the Prince Rupert Forest District office to reorganize its library, and at long last the library of the Management Division, Victoria, was catalogued by the assistant librarian.

Very full use has been made of the Xerox 914 copier, making a great deal of material available to foresters both in Victoria and the districts.

Much research was carried out to complete 180 inter-library loans from many libraries on the North American Continent.

The co-operation from the librarians of the Provincial Library, University of Victoria, Forest Entomology and Pathology Branch of the Canada Department of Forestry, and the Research Branch Experimental Farm of the Department of Agriculture is very much appreciated.

FOREST MANAGEMENT DIVISION

GENERAL

The good markets that the logging industry has experienced during the past few years continued through 1964 and were largely responsible for yet another record year for production from British Columbia's forests.

The total scale for all products from all lands was 1,514,595,176 cubic feet (8,916,037,961 board-feet). The net increase was 41,171,805 cubic feet or 2.8 per cent, which was considerably down from the 9.6-per-cent increase the previous year. The trend reported last year toward a larger percentage of the total production coming from the Interior of the Province was again noticeable.

Timber sales continue to be the main source of production, contributing nearly 50 per cent of the total scale. Tree-farm licences were the second largest single source of production, but only contributed 14 per cent to the total scale.

Interest in the pulp-mill potential of the Province has been on the increase during the past few years and took a very large step forward in 1964 with a number of applications for pulpwood harvesting areas and announcements of proposed pulp-mills throughout the Interior as well as on the Coast. This interest is very noticeably reflected in the volume of wood removed under relogging at reduced royalty rates. In 1960 the scaled volume in the Vancouver District was 1,976,000 cubic feet and has steadily risen to 4,324,000 cubic feet in 1964.

There was a considerable drop in the volume of logs exported from the Province in 1964, and it is thought that this also is a reflection of the upsurge of interest in pulp material within the Province. The scale of 52,954,217 f.b.m. was the smallest recorded since 1960 and was only 57 per cent of the 1963 scale.

PEACE RIVER FLOOD BASIN

During the first half of the year the programme of cruising and auctioning timber sales within the proposed Peace River flood basin continued, and a further 20 sales were awarded before a halt was called pending the processing and awarding of two special sales for pulp-mill development in the Finlay Sustained-yield Unit. As soon as the contracts for the two sales have been finalized, the timber within the remaining flood areas will be sold.

Data on Sales Sold to Date in the Peace River Flood Basin

Number of sales	48
Acreage	81,850
Estimated stumpage value	$1,391,908
Cruised volume (M c.f.)	118,955
Scaled volume to date (M c.f.)	12,386

COLUMBIA FLOOD BASIN

Most of the merchantable timber to be flooded by the Mica Dam was sold prior o 1964, but during the year it was announced that the flood-line was to be raised, nd this involved a very time-consuming job of rerunning the back line of timber ales still active.

The sale of timber in the Duncan flood area has progressed only slowly during the past four years, but this has been the result of the area being very remote and inaccessible, and there having been only one interested operator.

A start was made on selling the timber on areas to be flooded around the Arrow Lakes.

Data on Sales Sold to Date in the Columbia Flood Basin

Number of sales	50
Acreage	30,332
Estimated stumpage value	$749,498
Cruised volume (M c.f.)	55,316
Scaled volume to date (M c.f.)	19,724

WIND-THROW

Heavy gale winds were experienced in the Flathead and Elk River valleys north and south of Fernie in the spring of the year, causing extensive blow-down. In order to try to recover the volumes before decay and insect damage occurred, a concerted effort was made to map, cruise, and sell the timber involved. It was a considerable undertaking, and with the first snows coming early, only part of the blow-down was sold. It is hoped to sell the remainder in 1965.

In the Prince George Forest District extensive blow-down occurred in the spring in the area lying east of the main highway between Prince George and Quesnel. A total volume of 5,378,000 cubic feet was sold under blow-down timber sales.

SPRUCE BARK BEETLE

In the Prince George Forest District the spruce bark beetle continued to pose a serious threat. The studies initiated in 1962/63 by the Canada Department of Forestry in co-operation with the British Columbia Forest Service were continued. However, the main effort concentrated on the harvest of the more heavily infested stands. A priority cutting programme was developed in the Purden Lake Public Sustained-yield Unit and in the Aleza Lake Forest Reserve to remove the areas of high-density attack. Altogether, some 24 timber sales were made in connection with this programme. This entailed the sale of approximately 22,500,000 cubic feet.

The losses in the Prince Rupert Forest District continue to increase, although the over-all population appears to be somewhat lower than in 1963. However, the 1964 survey confirmed the fact that the mortality of alpine fir in the district was exceedingly high. This appears to be due to a beetle-fungus complex. The western balsam beetle attacks the trees and introduces fungi spores, some of which are pathogenic.

MARKET PRICES AND STUMPAGE TRENDS

The level of demand for forest products remained high, so that the manufacturing industry was able to market all that it could produce at stable high prices. The beneficial effect of demand for forest products on prices to the primary producer is illustrated in the log price table below. Using No. 3 grade hemlock logs as an index, the average price in the Howe Sound market during the last quarter of 1965 was $46.55 per thousand board-feet, which compares with an average of $58.60 per thousand board-feet for the last quarter of 1964.

1964 Uncorrected Quarterly Average Dressed-lumber Prices (Interior)

Species	Jan.–Mar.		Apr.–June		July–Sept.		Oct.–Dec.	
	Basis M B.M.	Average Price	Basis M B.M.	Average Price	Basis M B.M.	Average Price	Basis M B.M.	Average Price
Fir-larch	157,357	$63.57	178,281	$65.15	200,831	$63.47	127,575	$61.48
Spruce	247,176	60.41	321,251	61.81	292,641	59.13	225,311	58.14
Cedar	16,405	62.55	18,692	63.12	14,496	61.94	15,221	61.00
White pine	4,972	99.62	3,901	96.20	4,897	99.08	5,465	100.34
Yellow pine	3,452	54.18	8,353	58.94	8,110	57.58	3,002	60.56

1964 Quarterly Average Log Prices per M B.M. (Howe Sound Market)

No. 3 GRADE

Species	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.
Fir	$62.48	$65.58	$66.09	$66.09
Cedar	47.77	54.54	56.14	55.30
Hemlock	49.52	54.76	57.49	58.64
Balsam	38.93	40.47	43.93	47.47
Spruce	50.11	52.13	52.80	54.93
White pine	44.62	45.37	44.01	44.75

ALL GRADES

Fir	$74.59	$77.74	$78.75	$76.99
Cedar	53.98	62.07	62.15	61.43
Hemlock	51.82	56.75	59.38	60.14
Balsam	48.52	55.31	56.17	57.52
Spruce	60.70	62.14	60.59	63.07
White pine	50.82	51.89	49.66	50.88

Stumpage Prices

The average stumpage price bid for Crown timber sales, including those sales which were sold at salvage rates, increased in 1964 to $4.09 per 100 cubic feet for all species, up 22 per cent over the $3.36 per 100 cubic feet average for 1963. The comparable figures for 1959, 1960, 1961, and 1962 were $3.88, $3.53, $2.53, and $3.01.

The weighted average stumpage price per 100 cubic feet for all species for the Coast region was $6.18 and for the Interior $3.29, up from $5 and $2.80 respectively in 1963.

The average stumpage prices for all species, excluding "salvage value only" rates, was $6.43 per 100 cubic feet for the Coast and $3.59 for the Interior, which combine for an average of $4.43 per 100 cubic feet for the Province. The comparable figures for 1963 were $5.25, $3.22, and $3.69.

As a result of the general increase in log and lumber selling prices, there were 8,771 upward adjustments in the rates payable under existing timber contracts under provision of the sliding-scale procedure.

SILVICULTURE

The programme for 1964 included stand treatment, field studies, and road location.

Following the trend established in past years, the principal activities were in the field of stand treatment. All districts were active in this field, and some 550 timber sales, principally in the Interior, received some form of treatment. This involved the treatment of 151,296 acres.

Stands were generally treated to attain either natural regeneration or increment, or, in some cases, a combination of both. The cutting methods most frequently employed were single-tree selection, strips, groups, patches, or single seed-trees.

Although natural regeneration is dependent on several interrelated factors, a satisfactory seed-bed and a suitable seed source can be regarded as prime requisites. The preparation of a satisfactory seed-bed may require either burning or scarification. The past few years have seen an increase in this phase of the programme. To date, some 35,789 acres have been scarified in the Prince George Forest District, and similar programmes have been developed in the Nelson, Kamloops, and Prince Rupert Forest Districts. During 1964 some 7,519 acres were scarified.

Scarification appears to be achieving satisfactory results at a reasonable cost. Regeneration surveys indicate that stocking following scarification ranges from 50 to 65 per cent stocked quadrats.

The cost of scarification varies from area to area and from year to year, depending on the physical factors of the area and the prevailing weather conditions. However, experience over the past few years indicates that the majority of areas can be scarified for approximately $10 per acre.

Prior to 1963 most of the scarification was carried out following logging. This is now changing, and a trend to pre-scarification is developing. This has in part been occasioned by the increase in the spruce bark beetle population and the need for the prompt removal of the high-risk stems.

In 1959 the first of a series of evaluation studies was initiated to determine the results of the various forms of stand treatment. The results of these studies have been published in the Forest Management Note series. To date three reports have been published and a fourth, dealing with " The Results of Stand Treatment Following Seed-tree Marking in Dry Belt Fir Types," is being prepared.

Helicopter spraying Phytoactin on white pine blister rust.

The blister rust control programme, which was initiated in 1960, was continued. To date, in addition to the original basal stem applications of Actidione BR and Phytoactin L440, some 5,505 acres have been foliar-sprayed with Phytoactin L318. The results are still being evaluated.

The Douglas fir bark beetle control programme mentioned in the 1962 Annual Report is now in force and has been well accepted. Unfortunately the spruce beetle has now replaced the Douglas fir bark beetle as a problem of major concern.

SCALING

Coast

Official scaling west of the Cascades was carried out with a staff of 150 official scalers and 510 acting official scalers. The former were responsible for 95 per cent of the total scale.

Scaling examinations were held during the year for the staff and the public. Out of 143 candidates, 92 persons were successful in the examinations.

The Superintendent of Scaling at Vancouver reported an increased trend in log movements to manufacturing centres by barge and bundle rafts, thus decreasing the frequency of dispatching of scalers to remote areas.

Studies are continuing in scale computing and billing procedures through the medium of electronic data-processing systems.

Interior

East of the Cascades, scaling continued under the licensed-scaler system with supervision provided by the Inspectors of Licensed Scalers and the Ranger staffs.

Licensed-scaler examinations were held at various centres throughout the year, resulting in the issuance of 190 new scaling licences.

Weight Scaling

With the current trend in the forest industry toward the use of smaller-diameter logs and speedier logging and milling machinery, it has become obvious that some method of measurement faster than individual-log scaling is necessary in order to keep pace with modern methods of extraction and utilization. The projected pulp-mill development plans throughout the Province, which are contingent upon the use of large quantities of small wood, add emphasis to this fact.

In recognition of this need, the Forest Service has been encouraging the measurement of logs by weight as a basis for billing and allowable-cut control in sustained-yield units, where considered feasible. The first approval of this method was given in 1963 to two stud-mills in the Cariboo which use large quantities of small-diameter timber.

During 1964 there was a growing interest in this form of measurement. By the end of the year, approval had been given by the Chief Forester to 14 operations in the Kamloops and Prince George Forest Districts to scale by weight as a basis for official returns to the Government. Negotiations are continuing with other companies.

Weight-scaling equipment and techniques are such that there will be many situations not suited to this type of wood measurement. For instance, there has been relatively little interest in the Coastal areas thus far, due in part to the difficulties presented by the watering of logs prior to scaling. Nevertheless there is every indication that the weighing of wood in the interests of efficiency will become increasingly popular with the forest industry.

GRAZING DIVISION

GENERAL CONDITIONS

In many respects 1964 was a difficult year for the range live-stock industry. Cattle prices declined markedly. Cool, wet weather made haying extremely difficult. Ranges were very slow commencing growth in the spring, and severe winter weather set in relatively early. On the brighter side, range forage production was above average. The record number of stock using Crown range ended the grazing season in generally good condition.

Range

Low spring temperatures resulted in ranges not being properly ready for use for from two to four weeks later than normal. It was not practical to delay turnout of stock to this extent, and many ranges were grazed prematurely. However, excellent growing conditions throughout the summer compensated for this situation wherever reasonable management was practised. Total forage production was above average.

As was to be expected, delayed forage growth resulted in some difficulties with poisonous weeds early in the season. The cool, moist weather also produced a prolonged period of high toxicity in timber milk vetch, a plant which is prevalent over much of the forest range. However, stock losses from poisonous plants were not unduly heavy. Losses due to predatory animals appeared to be about normal. Highway accidents continued to take an increasing toll of range stock. A stepped-up highway fencing programme is required to reverse this serious trend.

Hay

Hay supplies were generally sufficient for the relatively mild winter of 1693/64. This was fortunate, as any shortage necessitating an earlier than normal range turnout would have had a devastating effect on ranges already suffering from retarded growth. Summer haying conditions were very unfavourable due to the abnormally wet weather. Although crops were good, the quantity harvested was much below average in some areas and quality generally substandard. This situation, combined with the early onset of severe winter weather, left the industry in a difficult position at the end of the year.

Markets and Prices

Cattle prices dropped drastically. The weighted average price received by cattlemen through the British Columbia Livestock Producers' Co-operative Association was $16.69 per hundredweight in 1964, compared to $20.01 in 1963, a drop of $3.32. This follows a drop of $1.19 the previous year and reflects current overproduction of cattle in North America.

Prices for sheep and lambs were up slightly from 1963 levels.

RANGE MANAGEMENT

A high level of management is necessary to achieve maximum forage utilization, without jeopardy to the resource, on the dry, rugged forest and grassland ranges of the Interior. Most Crown ranges are stocked to capacity under present levels of management, but many have the potential for greater utilization under superior methods. Increasing numbers of live stock, combined with the continuing diversion of range land to other uses, require that management be intensified.

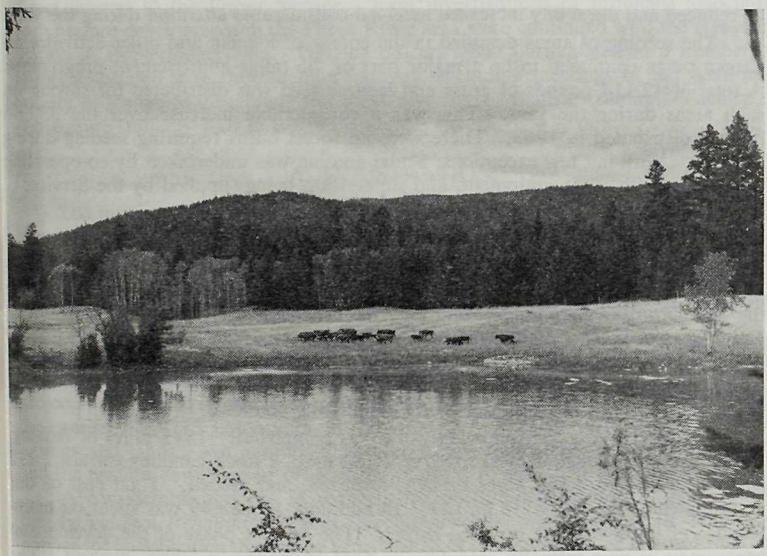
Achievement of this objective continued to be retarded by the lack of over-all land-use planning and a programme to develop the necessary knowledge on the part of range-users. A shortage of staff for range management and development planning was also a factor. Nevertheless some progress was made. Many individuals and small groups of permittees adopted more intensive management practices in 1964, and the British Columbia Beef Cattle Growers' Association is now actively encouraging such action by its members.

During the year, efforts were continued to ensure that grazing by domestic stock did not occur during periods where damage to Crown range would result. Management plans were complicated in a few areas by minor outbreaks of disease, necessitating the separating of herds. Numerous extensive range inspections were carried out as a basis for dealing with current problems. More detailed surveys were limited to relatively small areas where requests for intensive pasture development had been received.

Range Improvements

During 1964, $66,565.39 was spent from the Range Improvement Fund. Material to the value of $16,860.92 was on hand at the beginning of the year, and material valued at $12,159.45 remained on hand and not assigned to projects at the end of the year. Actual assistance to the range-improvement programme from the Fund was thus $71,266.86, the highest of any year to date.

The following projects, chargeable wholly or in part to the Fund, were constructed or extensively rehabilitated: 19 cattle-guards, 1 corral, 30 drift fences, 3 holding-grounds, 2 meadow improvements, 2 mud-hole fences, 2 pasture developments, 27 stock trails, 24 water developments, 1 weed control, 1 yellow pine thinning, and range-seeding.



Grazing on upper grassland type north of Kamloops indicated multiple-use capabilities of many areas of Crown lands.

Permittees also contributed extensively to most of the projects listed above, mainly in the form of labour. Further, during the year the following projects were authorized for construction entirely at permittee expense: 14 breeding pastures, 1 bull pasture, 1 cattle-guard, 11 corrals, 35 drift fences, 3 general-purpose enclosures, 5 holding-grounds, 3 horse pastures, 11 stock trails, and 4 water developments. This is by far the largest number of projects undertaken entirely at permittee expense in a single year. Although some of these projects are primarily for convenience in the handling of stock, most are also of distinct benefit to the range.

Field trials to determine the feasibility of improving range forage production were continued in 1964. Practices such as clearing, scarification, and seeding of carefully selected areas of non-commercial forest-cover, spraying of brush-infested ranges, and thinning of overstocked forest stands showed considerable promise. However, techniques will need to be considerably refined to reduce costs, and these practices will have only limited application for some time to come. On the other hand, the attention which has been given to restoring depleted grassland ranges through reseeding began to show results. A range-land drill, designed by the United States Forest Service, was acquired and put through its initial trails late in the year. This machine permits direct seeding without prior cultivation and can be used on rough terrain. Although the results from the use of this machine are not yet conclusive, it appears that it will be a valuable tool for the rehabilitation of depleted grasslands. A short trial on a natural-hay meadow indicated that it might also be used to advantage in improving forage composition and production on this type of site.

In spite of the growing importance of special practices, the installation of fencing, water developments, and trails to improve the distribution of live stock and control of grazing continued to be the principal means by which range utilization can be safely increased. Methods by which the cost of such improvements might be reduced and durability increased received considerable attention during the year.

The seeding of areas denuded in the course of logging and other activities on Crown range continued to be a major part of the range-improvement programme. A total of 42,114 pounds of grass and legume seed was distributed for sowing on such areas during the year. This was a considerable increase over the 33,686 pounds distributed in 1963. There were no forest burns requiring seeding during the year. With but few exceptions, actual seeding was undertaken by co-operating permittees, with seed, equipment, and supervision being supplied by the Service.

Peace River Pastures

The expanded pasture-development programme in the Peace River area, commenced in 1963 as the result of Federal-Provincial cost-sharing agreements under the *Agricultural Rehabilitation and Development Act,* was carried forward. The extremely wet weather made work extremely difficult and increased costs to a certain extent. However, where it was practical to break and seed early in the season, excellent results were obtained. Wet conditions resulted in the bulk of the seeding being delayed until late fall after germination was possible.

During the year the following work was completed: 18½ miles of fencing, 14 stock-watering dugouts, 6½ miles of access road, 2 stock-handling corrals, 2,173 acres cleared, and 2,560 acres broken, fertilized, and seeded. Total cost of this development work was $118,080.11. In addition, $3,088.49 was spent on maintenance of improvements installed earlier. The current phase of the development programme is now virtually complete on four of the five projects involved. The fifth will require one more year to complete.

During the year 43 permittees grazed 1,280 cattle and 32 horses within those portions of the projects which were ready for use. When the developed areas are complete and in full production, it is anticipated they will be able to accommodate at least four times this amount of stock.

CO-OPERATION

Range live-stock association activity reached a new high in 1964. There are now 62 such associations approved under the *Grazing Act,* two new associations having been recognized during the year. A total of 178 local association meetings were attended by one or more Forest Service officers to discuss range-improvement and management programmes. With increasing grazing pressures developing, ever-closer contact with these organizations is essential to avoid abuses to the range and ensure equitable allocation of grazing privileges.

Contact was also maintained with the British Columbia Beef Cattle Growers' Association and the British Columbia Sheep Breeders' Association on matters of industry-wide importance. The former organization, in consultation with the Forest Service, started a programme to encourage local range associations to adopt improved management and development practices. The British Columbia Live-stock Producers' Co-operative Association again supplied the live-stock price figures necessary for the sliding scale of grazing fees. This producer-owned marketing agency sold approximately 35.5 million pounds of beef animals during the year and is the most reliable source of information on prices received by stockmen in the range area.

Close liaison was maintained with the Canada Research Station in Kamloops. This agency is carrying out research on a variety of problems, such as range re-habilitation, carrying capacity, and improvement of native meadows, which are of direct interest to the Forest Service. Joint investigations of problems associated with pasture development in the Peace River area were continued with the Research Station at Beaverlodge, Alta. Grazing officers again participated in a number of events associated with the ranching industry, including meetings of the American Society of Range Management and the University of British Columbia Faculty of Agriculture students' tour in the range area.

ADMINISTRATION

The number of stock on Crown range again increased. The more intensive management and supervision required to safely accommodate the additional stock on already crowded ranges greatly increased the administrative work load. It was possible to carry this load only because a particularly light fire season made it practical to assign a larger amount of field work to the Ranger staff. A heavy fire season would have resulted in a serious situation.

As the result of pressure which has been building up for several years, the administration of the *Grazing Act* on Crown lands outside of pasture-development projects in the Peace River area was started in 1964. Forty-five permits, authorizing the grazing of 3,213 cattle, 512 horses, and 2,000 sheep, were issued on these unimproved lands. An additional agrologist was appointed to handle this work and the pasture-development programme referred to earlier in this report.

A considerable number of requests for pasture-development projects under the *Agricultural Rehabilitation and Development Act* were referred to the Forest Service for investigation during the year. Most of these were in the Central Interior, but the Kamloops and East Kootenay areas were also involved. Many of the requests were nebulous, and investigations to date indicate most are impractical

owing to conflicting land uses, cost of development, or poor soil quality. Further, it is becoming increasingly evident that such pasture-development projects can only be adequately considered within the framework of complete land-use studies.

Grazing Permits

During 1964, 2,104 grazing permits were issued authorizing the depasturing of 173,677 cattle, 6,231 horses, and 22,478 sheep on Crown ranges. This is an increase of 153 permits over 1963. Cattle were up 14,837 head or 9 per cent and horses 371 head or 6 per cent over the previous year. Sheep dropped by 2,888 head or 11 per cent. Both the number of permits issued and the number of cattle are the highest ever recorded. (*See* Table 81 in the Appendix.)

Hay Permits

Extremely wet weather made the harvesting of hay from natural meadows on Crown range extremely difficult. A total of 265 permits authorizing the cutting of 3,198 tons of hay was issued. Actual harvest was much below the authorized quantity. Hay-cutting fees remained at $1 per ton.

Grazing Fees

Grazing fees per head per month in 1964 were 20 cents for cattle, 25 cents for horses, and 3 cents for sheep. These fees represent a drop from 1963 of 1 cent for cattle and 1¼ cents for horses. Fees for sheep remained the same. Under the sliding-scale formula, the changes in fees reflect the prices received by producers the previous year.

In spite of reduced fees, billings increased over the previous year to the highest ever recorded due to the increased number of stock on the range.

Control and Enforcement

Rapidly growing numbers of live stock on Crown range make control of stock numbers and enforcement of proper management conditions increasingly important to ensure that the range and associated resources are not destroyed. This poses formidable physical problems, and the difficulties are being greatly increased by unplanned land alienation in the range area. In many localities there is developing a complicated checkerboard pattern of alienated land, much of which remains unfenced. Control of grazing on the remaining interspersed Crown range is all but impossible. In other situations, settlement is taking place on lands on which there is no chance to build up a full-time ranching operation. The necessity of at least part-time employment off the ranch almost invariably results in a low level of both range and live-stock management.

In an effort to control the situation, numerous stock counts were carried out during the year. In a number of areas the field staff was authorized to seize stock grazing in trespass. This action had a salutory effect on the offenders and was welcomed by the majority of permittees who comply with the regulations and permit conditions. A number of horses, both abandoned and intentionally grazed in trespass during closures, were removed from the range. In an effort to distinguish between trespassing and legitimate stock on the range, marking with an indelible dye was tried on an experimental basis with but indifferent success. This technique requires further investigation.

ENGINEERING SERVICES DIVISION

ENGINEERING SECTION

As in other years the largest part of the Engineering Services Division programme was the design and construction of forest-development roads under a Federal-Provincial cost-sharing agreement. Bridges formed an appreciable part of the construction programme, two being over 200 feet long. Navigational channels were the subject of considerable study and experiment in the Peace pondage area, the land to be flooded by the Portage Mountain dam.

Field engineering crews were occupied in all five districts on assignments covering development engineering, reconnaissance, road location, and other duties.

Accident-prevention measures were organized further by forming a Divisional Safety Committee charged with planning programmes, spreading information, and looking into the causes both of accidents and of good safety records. During the year the British Columbia Safety Council granted the following recognition to Engineering Section work groups: One bronze-on-gold, one gold, two silver, and five bronze awards of merit.

An unwelcome factor in this year's operations was the persistent and heavy rainfall.

Development Engineering

One field crew was assigned to each forest district. Between them they carried out engineering studies in 16 areas. In the Prince Rupert Forest District these were development of the drainages from the east into the Skeena, between Terrace and Cedarvale; a re-evaluation of the Babine-Shedin Creek area; and a study for timber-sale layout on Kagan Peninsula. In the Prince George Forest District a general study was made of the newly formed Takla Public Sustained-yield Unit, with special emphasis on water transport of logs to Fort St. James. This was a continuation of work begun in 1962. In the Kamloops Forest District the subject was road access to the north end of Anstey Arm on Shuswap Lake and into Bone Creek in the North Thompson area. In addition, the reconnaissance work started in 1963 was continued in the Chilcotin area. Work in the Nelson Forest District included route reconnaissance into Greely Creek, Canyon Creek, Glenogle Creek, and Glacier Creek. Five studies for protection and management were carried out in the Vancouver Forest District.

Haul-road studies included reconnaissance of 103 miles of route, and covered 260,000 acres of productive forest with a sawlog volume of 390,000,000 cubic feet. In addition, 174 miles of route were reconnoitred to provide access chiefly for protection and administration.

Road Location

During the field season, 212.7 miles of road were located on the ground, 63.2 miles being primarily to provide protection access. Terrain classification based on air-photo study is becoming an important part of the pre-field work and is saving time and money in the field.

Road Construction and Maintenance

A total of 80 miles of forest-development road was built, on 13 separate projects. The work involved the site preparation of 700 acres of right-of-way, the movement of 1,430,000 cubic yards of common excavation and of 131,000 cubic yards of solid rock, and the installation of 16,900 lineal feet of culvert pipe.

Construction of bridge over Flathead River on Flathead Forest Road.

This work represents only about 80 per cent of the achievement of the previous year, mainly due to heavy and continuous rain, particularly in Prince Rupert Forest District. Besides a general slowing effect, rain so interrupted some projects that they could not be completed during the 1964 construction season.

In December, 1964, a contract was awarded, and construction begun, on 4.6 miles of the Owikeno Lake Forest Development Road.

Bridges featured prominently in the year's construction work. Eleven permanent bridges and five local-material bridges were erected by Forest Service crews. One, a permanent bridge with an over-all length of 207 feet, replaced a temporary structure over the Willow River south of Prince George, the latter being condemned in the spring of 1964 as a result of ice damage. Another, of 215 feet over-all length, was built over the Flathead River south of Fernie, to provide access to large areas of blow-down timber in the Flathead and tributary valleys. Authority to build the second bridge was received in September, and it was completed on November 30th.

Maintenance was carried out over some 774 miles of previously constructed roads. In order to organize the maintenance programme and handle the increased maintenance responsibilities, an area superintendent and a small crew was established in each of the five forest districts. Late spring run-off combined with heavy rains caused considerable flooding and damage to roads and drainage structures in the Central Interior of the Province. Repair was effected by the maintenance crews with a minimum of delay.

A major maintenance project was the completion of a 1963 contract to replace one pier of the Kingcome River Bridge, washed out in the abnormal floods of 1962.

Peace River Pondage Waterway Improvement Project

Early in 1964 work began on the design and development of navigation channels which will be needed on the body of water which will form behind the

Portage Mountain dam. Main arteries for industrial traffic were considered, and also branches for access to the future shoreline. The design work consists of three basic steps: the updating of vertical control, to ensure that channels can be positioned correctly for safe navigation; field examination of these channels; and, finally, specifications and estimates to develop the areas.

So far work has been concentrated on the first two steps. A field crew under the Topographic Division of the Lands Service undertook the necessary field work and the Air Division obtained all necessary photographs. As this was being done, 55 miles of industrial channel were established in the Parsnip River area of the new lake, and specialized area inventory was completed over some 12,000 acres.

Later in the year, experimental site preparation was begun near Finlay Forks and also toward the southern end of the Parsnip River area. The results will be used in preparing future estimates. Near Finlay Forks some 950 acres were cut and piled ready for burning. At the southerly location, however, early snow and below-zero temperatures closed work down before effective production was achieved.

General Engineering

Designs, plans, and specifications were completed for nine pressure-creosoted timber bridges and for seven log spans. Tentative sketches and estimates were made for 27 proposed bridges and also a number of large culverts.

Some other commitments of the Design Subsection were inspections and reports on existing bridges and the design of sub-drainage for a new field at the Green Timbers nursery. Also, foundations were investigated at several bridge-sites using the Division's power-auger and rental equipment.

Engineering supervisors and other senior engineers made 17 inspections of roads for timber-sale administration.

Road-design work in the office received appreciable help from a computer programme, the first to be used in the routine work of the Division. This programme had been devised to print out, in accordance with the cruising data supplied, costs and quantities for each of the five different methods of site preparation in common use.

MECHANICAL SECTION

Additions to the motor-vehicle fleet during 1964 consisted of nine four-wheel-drive and four two-wheel-drive passenger vehicles. This increase was due largely to personnel electing to give up driving their own cars on a mileage basis in favour of using a Government car.

New lighting-plant demands continued despite the increase in Ranger stations supplied by the British Columbia Hydro and Power Authority. In this connection, it is perhaps significant that requirements were for the larger sizes of portable power units.

Two 15-kilowatt motor-generators, complete with synchronizing equipment, were purchased and mounted in a self-contained trailer power-house for use in the Peace River pondage area. A system of regular oil analysis was established and is providing a good degree of control over electric generating problems.

A new light-weight power-saw was tried out, with very satisfactory results. The trend appears to be toward smaller and lighter saws, which generally are much more reliable than their larger and older predecessors.

An additional 23 trail motor-cycles were purchased, with general satisfaction being expressed by the field staff. This type of unit may have a limited scope, and it is intended to acquire only a small number until experience shows to what extent they can be used with efficiency.

In the heavy-equipment category, the Engineering Section purchased two truck-mounted loader back-hoe machines for road maintenance. They have proven very satisfactory, particularly for ditch-cleaning operations. For general road maintenance, a 150-horsepower grader and a 225-horsepower tractor were obtained. The Prince George Forest District was supplied with a 1-yard rubber-tired four-wheel-drive loader for its road-mainteance programme, and the Reforestation Division acquired two farm-type wheel tractors of identical size for general nursery operational purposes.

In the instructional field, the Mechanical Section conducted the usual courses at the Forest Service Training-school and the Engineering Section conducted some trailer-towing instructional work in April.

BUILDING CONSTRUCTION AND DESIGN

Tables Nos. 93 and 94 in the Appendix list the work undertaken during the year, with emphasis again on improving the accommodation at our older Ranger stations in keeping with the changing role of the Ranger staff.

Assistance to the Research and Reforestation Divisions continued in nursery development, with irrigation, seed extraction, and cold-storage extensions playing a prominent part.

Field inspections throughout the year were increased due to more contract activity in conjunction with the over-all programme.

In addition to the normal assessment and consultation activities, 42 miscellaneous jobs were completed and 82 contracts were awarded for prime and sub-contract work.

During the year 66 additions were made to the Engineering Services Division library.

Although the Forest Service museum is still in the embryo stage and still lacks a permanent display area, articles from it have been shown in such places as the rotunda of the Legislative Buildings, the Forest Service training-school at Green Timbers, and at some district headquarters and Ranger stations. In addition to these displays, five large " flitches " of Coastal wood specimens have been loaned indefinitely to the newly formed Cowichan Valley Logging Museum at Duncan. These huge pieces of wood originally displayed at the 1939 San Francisco Exhibition, were reconditioned by the Parks Branch and erected beneath a shake roof on a permanent concrete slab.

FOREST SERVICE MAINTENANCE DEPOT

Effective July 1, 1964, the administration of the maintenance-shop for heavy equipment, the warehouse, and the transport pool of the Engineering Services Division were amalgamated with the units formerly known as the Forest Service Marine Station under the new name, Forest Service Maintenance Depot. A significant increase in efficiency is expected from the integration, making it possible to handle a mounting work load without unduly increasing staff and costs. However, established work patterns and procedures cannot be changed overnight, and the full effect of the reorganization may not be measurable for some years.

Marine Work

Forty-five annual refits and 19 minor overhauls were completed on marine craft, necessitating 60 dockings on the ways. The M.V. " Forest Surveyor " and the M.V. " Poplar III " were re-engined with modern diesel engines as both these

boats will be in service next year on the northern coast, where unprotected waters make dependable power a requisite. Another major project was the renovation of a former Highways Department ferry on Kootenay Lake, which was renamed the "L.C. 10." This craft, which will be of inestimable value in the event of fire in the forests adjacent to Kootenay Lake, was powered with a reconditioned Harbour-master unit, and a new wheel-house and accommodation prefabricated at the Maintenance Depot were installed by a crew from the depot who travelled to Nelson for the purpose. Other work accomplished included the repair of some 43 river boats, dinghies, and small boats.

Prefabrication and Carpentry Shop

Over the years the Forest Service has acquired trailers of many types including 175 units used for personnel accommodation. In addition, there are 64 Porta-buildings providing similar temporary field accommodation. The remodelling, renovation, and general maintenance of this fleet of mobile buildings is fast becoming a major problem and necessitated a realignment of the work programme for the carpentry crew. Hence the most significant production effort was the rebuilding of 12 trailer and Porta-building units to new condition. Other items produced in quantity included 271 signs of various types and sizes, 37 pieces of office furniture, and 227 boxes and crates.

Depot maintenance and improvement also occupy the time of the five-man carpenter crew to a significant extent. In this connection, the installation of doors and closing in of the floor space used for the repair of heavy equipment is an improvement which will pay high dividends by increasing the efficiency of the mechanics who formerly had to work under adverse conditions.

Machine Shop

The regular overhaul work load in the small-engine repair-shop was slightly lower than usual, with only 379 pumps, outboard engines, chain saws, and lighting plants overhauled, crated, and shipped. However, 181 new units were tested and shipped to the districts. The usual service in welding, plumbing, and electrical work continued to be supplied to the trailer rebuilding and repair programme. The machine-shop also carried out the machining and assembly from castings of 25 paper-punches, 25 hand-winches, 3,060 hose, pump, valve fittings, and miscellaneous items, which completed the major portion of this work load.

Transport Pool and Warehouse

The Transport Pool operates three 30-ton tractor-trailer combination diesel trucks and two 5-ton gasoline trucks. Transportation service was supplied to 17 engineering projects and all five forest districts. A total of 250 long-distance hauling assignments was completed, which included the movement of 11 bridges from Vancouver prefabricating plants to various projects throughout the Province, from the Flathead in the south-eastern area to the Upper Kispiox River north of Hazelton. The total distance travelled was approximately 150,000 miles, and an estimated 3,000 tons of freight were handled. In conjunction with the above transportation of material, the warehouse handled, stocked, conditioned, and repaired all construction-camp equipment for various Engineering Services Division projects.

Engineering Maintenance-shop

The maintenance and servicing of the Transport Pool fleet is an established function of the workshop. The annual overhaul and storage of 40 ¾-ton trucks

and two 3-ton crew buses was completed. Heavy equipment, used in various projects, received extensive repairs, which included three road graders, five D-8 crawler tractors, four scrapers, one gravel-crusher, and three grid-rollers. Installation of three 20-kilowatt lighting plants in mobile trailers was carried out and transported to various sites. Complete modification and overhaul of four four-wheel-drive trucks for A-frame use on projects completed the major portion of the year's work load.

RADIO SECTION

New radio transmitting equipment purchased in 1964 was as follows:—

A.M.—		
Portable	48	
Fixed station (14–80 watts)	15	
Fixed station (80–200 watts)	2	
General service band portable	8	
Total A.M.		73
F.M.—		
Portable	24	
Fixed station (60–80 watts)	21	
Fixed station (10–30 watts)	11	
Mobile	33	
Total F.M.		89
Total, all types		162
Written off during 1964		15
Net increase		147

In addition to the above, two 150-watt Civil Defence A.M. units were installed at Penticton and Enderby. The general trend continued to be toward increasing the amount of A.M. equipment available for forest-protection use, particularly in portables. Forest-protection communication showed a definite improvement during the year, partly due to a light fire season, but to a large extent to better pre-organization and more equipment. This branch of communication is still our weakest link, with insufficient portable and mobile equipment to meet the needs of a really bad fire year. Trunk systems, as mentioned later in this report, will in many cases improve fire to Ranger station communication due to the greatly increased range of mobile units.

The F.M. repeater trunk system previously planned for the Prince Rupert Forest District was installed during the summer, giving V.H.F. communication between Ranger districts from Burns Lake to a point half-way between Hazelton and Terrace. Being a trunk system, all repeaters transmit and receive on one common pair of frequencies, allowing any mobile to work through any repeater. It was originally planned to have the system extend beyond Terrace to Prince Rupert, but tests made during the year have shown this plan to be impractical at present.

In the Prince George Forest District, with particular reference to the Peace River pondage area, the first use was made of thermo generators operated by propane gas to supply power for F.M. repeaters where a power-line, diesels, or gasoline generators would normally be required. The pondage area now has mobile coverage from Finlay Forks almost to McLeod Lake, though some conflict exists between this system and the Prince George Forest District circuit. Correction of this mutual

interference will be made in the spring. Extension of the Prince George F.M. system beyond Fort St. John was postponed due to failure to obtain permission from the Federal Government to use or even test certain necessary repeater-sites.

In the Kamloops area it was intended to extend F.M. coverage up the North Thompson to Blue River, but here, too, withholding of permission to use repeater-sites caused cancellation of the project for the time being. Trunking of the Kamloops repeater system was completed, thereby greatly increasing the range of all mobile units. Toward the end of the fire season an extensive overhaul of all Kamloops A.M. stations took place. Grounds and aerials were replaced or improved, and a general upgrading of A.M. signals was noted.

In Vancouver an experiment in improved radio traffic management was carried out by establishing a sub-control station at Campbell River which was made responsible for the A.M. traffic, while Vancouver Radio simultaneously handled the F.M. Campbell River, Vancouver Radio, and the Marine Building were interconnected by teletype, and messages collected by Campbell River could be sent by this medium directly to the Marine Building. The superior A.M. reception at Campbell River and the time saved at Vancouver Radio justified the expense of the half-time (12 hours daily) rent of the teletype circuits for the duration of the fire season.

The Victoria section had a busy year designing, building, and evaluating new equipment and installing the new Prince Rupert repeater chain. With Department of Transport regulations becoming more stringent every year, the Forest Service is faced with the problem of suppressing spurious signals produced by every A.M. transmitter. Experimental work is at present in progress to discover a reliable method of suppression. One Victoria technician has been relieved of normal duties to develop a method of detecting and plotting the course of thunder-storms by means of a radio direction-finding device with visual recording. Radio staff increased by one temporary technician replacement at Victoria and one permanent technician appointment each at Vancouver and Prince Rupert.

FOREST PROTECTION DIVISION

WEATHER

The 1964 forest fire season will be remembered as cool and wet throughout the Province.

A spring hazard started to build up in the Fort Nelson-Peace River area, but by the end of May the district was experiencing weather conditions similar to the rest of British Columbia. Throughout the summer there were no periods of extended hazard build-up, and any incipient dry period soon ended.

This favourable forest-protection weather allowed the fire season to be terminated by Order in Council on September 30th.

Temperatures from April to September were 1 to 6 degrees below normal at most stations, with the greatest deviation from normal being generally in the south-east portion of the Province and particularly in the Kootenays.

Precipitation was greater than average during the summer at most points. In April the exceptions were the Lower Mainland and the Peace River areas. In May both the east coast of Vancouver Island and the south-west portion of the Province enjoyed less than average rainfall.

June and July saw most stations receiving more than average rainfalls, with some establishing new highs for July. August and September continued the established pattern of more than average rainfall.

FIRES

Occurrence and Causes

The cool, damp summer influenced fire statistics favourably. The total of 1,120 fires recorded in 1964 was well below that of last year, and below the 10-year average of 1,963. Lightning remained well in front as the leading individual cause of fires, at 36.6 per cent. During the previous four years, 1960 to 1963, inclusive, lightning was responsible for 44.8 per cent of all fires. (For details *see* Tables Nos. 109, 110, and 111 in the Appendix.)

Cost of Fire-fighting

Average fire-suppression cost per fire to the Forest Service was 34 per cent below that of last year. The total cost of suppression, at $121,645, very markedly reflected this, being only 7.6 per cent of the 10-year average. (*See* Tables Nos. 116, 117, and 118 in the Appendix.)

Damage

The area of forest-cover burned, at 6,309 acres, was the smallest ever recorded in Forest Service history. In only one other year, 1954, was there less than 10,000 acres of forest-cover burned. This compares with the 10-year annual average of 365,480 acres of forest-cover burned.

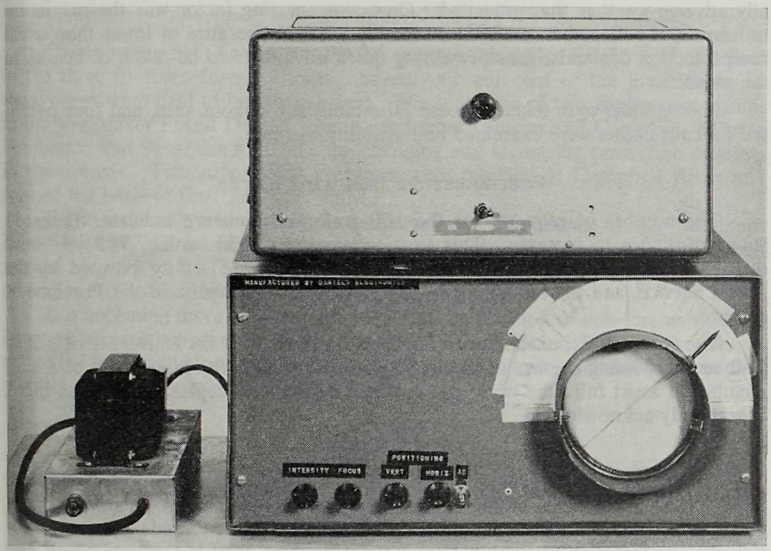
Damage to forest products cut was slightly lower than the 10-year average, but damage to buildings and logging and sawmilling equipment was considerably lower. (For details *see* Tables Nos. 114, 115, 116, and 117 in the Appendix.)

PROTECTION PLANNING AND RESEARCH

Fire Statistics

Plotting of 1964 forest fires on the Provincial Fire Atlas has been completed, and a summary of key fire information has been entered in the fire statistics ledgers. The current method of maintaining the Atlas, inaugurated in 1960, combines fire plotting and fire classification, and has received favourable comment. This system was made possible with the availability of Province-wide coverage by the Surveys and Inventory Division 2-mile base maps, and will be considerably improved when the present black-and-white maps are revised to show water surfaces in a blue overprint.

Preparations were made to expand the fire data recorded on punched cards to three cards per fire, and this programme will be proceeded with in 1965.



An experimental model of a sferics receiver designed to show the direction of lightning activity by receiving low-frequency waves that are generated at the time of each strike.

Protection Research

Equipment development and experimentation were continued, including work on hose winders and carriers, emergency rations, propane burning-off torches, plasticised fire-finder maps, and plastic axe-guards.

Two special field projects were the installation of green-tinted windows in one lookout in each forest district and field testing of a sferics receiver developed as a lightning direction finder. Both these projects will be continued and extended during 1965 on the basis of favourable initial field testing.

A comprehensive slash-burning research programme was undertaken in co-operation with the Canada Department of Forestry in the Interior Wet Belt.

A study of range fires in the Chilcotin was completed and a report written. From this study two educational pamphlets are being prepared—one on "Meadow Burning," and other on "Game and Fire."

A feasibility survey was made of utilization of Indians for forest fire-fighting on a regional basis. Plans are being formulated to initiate a pilot programme in 1965.

A series of statistical and graphical summaries of fire occurrence by Ranger districts was prepared for the Kamloops and Prince George Forest Districts in addition to other protection planning aids, including lightning occurrence and lookout coverage overlays.

Visibility Mapping and Lookout Photography

One two-man crew, both experienced university students, combined the work of both lookout photography and visibility mapping. Both these endeavours are dependent on good weather conditions and suffered thereby as a result of the generally adverse weather that prevailed. One compensating factor was the maximum utilization of helicopters, made more readily available because of lower than usual fire-protection demands, thus permitting quick advantage to be taken of breaks in the weather.

Photographs were taken at some 20 established lookout sites, and four potential lookout points were examined and visibility-mapped.

Fuel-moisture Indicator Sticks

The number of requests for the 100-gram fuel-moisture indicator (hazard) sticks continues to increase. This year, after spring field testing, 715 sets were distributed, 485 sets to industry in British Columbia, 215 sets to be used by the Forest Service, and the remainder to the Federal Government and the Province of Alberta.

The co-operation of the Forest Products Laboratory at the University of British Columbia, allowing the use of the kiln and facilities plus the assignment of a staff member to assist full time while the Protection Division's representative was there, is gratefully acknowledged.

Insect Control

An experimental helicopter spray project, using phosphamidon, was conducted in July over 1,705 acres of the Queen Charlotte Islands against an infestation of green-striped looper. This was a joint project by industry, Canada Department of Forestry, and British Columbia Forest Service. The British Columbia Fish and Game Branch conducted tests of possible effects of this chemical on birds and small mammals in the spray area.

Another small experimental phosphamidon spray project against the western hemlock looper was carried out on 100 acres near Enderby. This project was essentially a joint undertaking by Vernon laboratory and Kamloops Forest District.

Fire-weather Records and Investigation

The appointment of a meteorologist by the Department of Transport to the position of Forestry Meteorologist at the Vancouver Forecast Office has greatly improved the quality of the fire-weather forecasts for both industry and the Forest Service. The degree of accuracy and the usefulness of these forecasts to the various forest districts were favourably commented upon, and were directly proportional to the quantity and quality of weather data submitted by them.

The requests for slash-burning forecasts were all handled by the Forestry Meteorologist, leaving our seconded meteorologist, who is on educational leave, to carry out other special activities, which included a paper to the International Union of Theoretical and Applied Mechanics at Ann Arbor, Mich., and the preparation of studies of weather conditions associated with the "Dean" fire of 1960 and the "Grove" fire of 1961.

A map was maintained daily throughout the 1964 fire season showing in a colour legend the danger index rating for a number of selected stations throughout the Province, producing a Province-wide picture on one sheet. It is expected that this will be revised to include the drought index next year.

A field trip to visit all Ranger stations in the Nelson Forest District was undertaken by the meteorological assistant. Weather-station sites and the use made of the Model 8 burning index were checked, and it was found that a great deal of modification, based on local knowledge, is used in interpreting results.

Fire-suppression Crews

Owing to the light fire season the 16 suppression crews fought only 173 fires in the three southern forest districts. Seventy-six per cent of the fires fought by these crews were held to less than 1 acre. The locations of two suppression camps in the Vancouver Forest District were moved from Duncan and Campbell River to Pemberton and Squamish to handle the changing and increasing protection problem in those areas. Two suppression crewmen were retained at Campbell River and formed the basis of the "helitack" crew.

Eight Indians were successfully employed on four crews in the Kamloops Forest District. One Indian was appointed as safety officer on one crew, which worked out very well. Crewmen were used as "helitack" crews and for bentonite mixing at the bomber bases in the Nelson Forest District.

It is becoming more evident each year that the position of sub-foreman should be set up for each suppression crew. Many Rangers are dissatisfied with the present method of purchasing food supplies for suppression-crew camps, and it is hoped that a better system may be worked out for next year.

Aircraft

Thirty-eight aircraft were supplied under contract, two more than in 1963. The new contract did not include a Beaver-type aircraft at Prince Rupert as there are now suitable local machines available for hire.

The second Beaver-type aircraft at Kamloops was also dropped from the contract, but the flying-time was supplemented by two light patrol aircraft—one at Williams Lake and one at Kelowna.

Two light patrol aircraft were employed out of the Smithers base in addition to the two patrol aircraft in the Peace River area. Because the fire season was so favourable, little use was made of the air tankers. For statistical information on the use of contract and non-contract aircraft, *see* Tables Nos. 120 and 121 in the Appendix.

Roads and Trails

The construction and maintenance of forest-protection roads and trails was made more difficult due to the very wet season. It was necessary to replace many small bridges and culverts, especially in the northern areas, due to extremely heavy rains in the early summer. It was necessary to rearrange the road programme in many cases so that effective production could be carried out in the drier, gravelly type areas. *See* Table No. 102 in the Appendix for further information.

Slash Disposal and Snag-falling

In the Vancouver Forest District the generally damp weather conditions which prevailed throughout the season hampered and curtailed the fall slash-burning programme. An acceptable standard of hazard abatement was achieved by operators over some 44,000 acres in the district, but the weather influence resulted in non-acceptable results in many other instances. It was found that slash on northern exposures and in sheltered drainages, particularly hemlock-balsam types, did not dry out sufficiently to permit effective disposal, even during the relatively favourable burning period from mid-August to mid-September. Some satisfatcory abatement was achieved in isolated areas above 2,500 feet elevation in early October, when a drying trend became apparent at that level.

The trend toward more broadcast burning and less spot burning continued in 1964, with 91 per cent of hazard reports carrying broadcast recommendations, as compared with 81 per cent in 1963. For details of slash disposal in the Vancouver Forest District *see* Tables Nos. 105 to 108 in the Appendix.

The slash-disposal film produced by the Public Information and Education Division has been generally well received by both industry and our own field staff, and it is felt that this film will be of particular value to operators who are encountering Forest Service slash-burning requirements for the first time.

Interest in prescribed burning in the Interior districts has accelerated with the rapid maturing of an integrated forest industry. Many experimental burns have been conducted, and valuable information and experience are being gathered. Some 9,000 acres of slash were disposed of by burning in 1964, with Forest Service crews completing some 3,600 acres.

Forest Service snag-falling in the Vancouver Forest District saw some 3,300 acres completed under contract, 185 acres under "minor" projects, with reforestation crews completing approximately 480 acres under this programme. For details *see* Table No. 104 in the Appendix.

FIRE-LAW ENFORCEMENT

For the third successive very light fire season, during which only a few fire-fighters were impressed, not a single forest closure was imposed under section 122 of the *Forest Act*. There were only 10 prosecutions for fire-law infractions. This was fewer than one-fifth of the average for the last 10 years.

FOREST SERVICE TRAINING-SCHOOL

The 13th class of advanced trainees (Advanced Course No. 13), consisting of 20 men, graduated April 7, 1964. This was the first class to graduate from a six-month course under the new programme. Graduates from the Advanced Course (Ranger Course) now total 275.

The third class of basic trainees (Basic Course No. 3), consisting of 20 men, commenced training on September 21, 1964, and graduated on December 22, 1964. Graduates from the Basic Course now total 60.

Subjects covered during the year were as follows:—

Advanced Course No. 13, Final Term—Spring, 1964

Subject	Days Allotted
Public Speaking	4½
Management Policies and Procedures	8
Pre-suppression	4½
Fire Suppression	8
Mensuration	5½
Photogrammetry	2½
Scaling (Coast)	14
Scaling (Interior)	2
Ranger District Organization	5
Navigation	2
Mechanical Equipment	1½
Fish and Game Branch	1
Vancouver Island field trip	4
Visitors, speakers, spares, trips	2½
Total days	65

Basic Course No. 3—Fall, 1964

Subject	Days Allotted
Forest Protection Policies and Procedures	4
Forest Management Policies and Procedures	6½
Pre-suppression Studies	7½
Fire Suppression	14
Forest Measurements	7½
Mathematics	2½
Forest Surveying	5½
Silviculture	3
Mechanical Equipment Maintenance and Operation	10
Photogrammetry	3
Opening, closing, exams, clean-up	1½
Total days	65

First Aid: Two hours per week in evenings for 9 weeks.
Typing: One hour per week for 13 weeks.
Physical Education: One-half hour per day.

EXTRA COURSES AND FUNCTIONS

Training-school facilities were used for two weeks in April by the Department of Recreation and Conservation for an in-service training course. Average attendance was 32 men for 14 days.

The usual course for lookoutmen for the Vancouver Forest District was given to 15 men from May 5th to 8th. For the first time the trainees were hired following the course. This gave the staff an opportunity to decide who were best for the positions available. This system should be repeated.

Staff members assisted with instruction to lookoutmen and dispatchers in the Nelson Forest District, and also took an active part in the Aircraft Observer Course at Kamloops.

Two reading courses are now available to the staff in limited quantities—one on the *Forest Act* and another on mathematics.

Subject outlines and lesson plans have been developed for school subjects. A type of prospectus for the school was completed, which will be printed and distributed as soon as possible.

During the summer, assistance was given the Victoria Protection Research Section with experiments in mixing and dropping Gelgard fire retardant. Experimental work was done with propane torches for burning out fire-lines and slash-burning. A new type of torch was made up for operational testing in the field.

ACKNOWLEDGMENTS

Appreciation is expressed to speakers and lecturers and for equipment provided by the following agencies: Forest Entomology and Pathology Branch, Canada Department of Forestry; Air Division of the Surveys and Mapping Branch, Lands Service, Department of Lands, Forests, and Water Resources; University of British Columbia; British Columbia Forest Products Limited; Weldwood of Canada Limited; Burnaby Parks and Recreation Commission; Surrey Municipality; as well as lecturers from other divisions and districts of the Forest Service.

ACCOUNTING DIVISION

FISCAL

Expectations that 1964 would be another good year for the forest industry were more than fulfilled, and the resulting financial return to the Forest Service was considerably higher than estimated. The total scale of wood harvested again reached a new record, and there was an absence of prolonged work stoppages or a serious fire season, but the major factor governing increased revenues was the continued buoyancy of market conditions. The good prices obtainable for forest products throughout the year were reflected in higher stumpage prices collected on timber sales and cutting permits under the sliding-scale formula.

The percentage increase in the total volume of timber scaled over the 1963 total was 2.8 per cent, but the total of amounts charged to logging operations rose by 25 per cent to a record $44,970,934 (*see* Table No. 142 in the Appendix). The percentage increase by forest districts varied considerably from the situation in 1963. The Vancouver Forest District, which registered the smallest increase in 1963, gained a substantial 40.6 per cent, while the Kamloops Forest District, which recorded the largest increase last year, gained only 1.1 per cent in 1964. Prince Rupert, Prince George, and Nelson Forest Districts gained 26.7, 19.1, and 13.0 per cent respectively.

Forest revenue collected soared to an all-time high of $42,148,434 (*see* Table No. 141), an increase of 20.8 per cent over 1963. The largest single revenue category, timber-sale stumpage, contributed $37,221,058 or an increase of 23.2 per cent, while the related items, timber-sale rentals and fees and timber-sale cruising and advertising, were up 1.6 and 26 per cent respectively.

Timber royalties charged on timber cut from old Crown tenures and Crown-granted royalty-bearing lands increased moderately by 4.4 per cent to $2,610,292. Timber-licence rentals and fees were down slightly by 1.6 per cent and timber-berth rentals and fees declined 9.9 per cent, but timber-lease rentals and fees rose by 7.5 per cent. These old tenures are gradually being eliminated as they are logged, and the increase is probably due to advance payment of some 1965 rentals and fees. Forest-protection tax was practically unchanged at $522,672, a reduction of only 0.02 per cent, while miscellaneous revenue again increased, this year by 21.4 per cent to $210,330. Grazing permits and fees dropped 8.4 per cent, but this should be offset by late payments in 1965.

Tables showing charges, revenue and expenditure totals for the fiscal year 1963/64 also appear in the Appendix (*see* Tables Nos. 143, 144, and 145). Details of expenditure can be found in the Public Accounts, published by the Department of Finance.

The Federal-Provincial Forestry Agreement was extended for one year to March 31, 1965, and it was anticipated a further extension or signing of a new agreement would follow. This had not been decided by the end of 1964.

ADMINISTRATION

Arising out of discussions at the biennial District Foresters' meeting in January, the Chief Forester directed this Division to conduct a survey of methods practised in all Forest Service offices with a view to modernization and streamlining. This was undertaken by the Comptroller and Chief Accountant, and all five forest districts were visited during the year to review procedures at both district headquarters and Ranger office levels. It is not anticipated the survey will be completed until late

1965 as further visits will be required to all districts as well as Victoria divisions and their field offices.

However, an interim report was submitted in October making recommendations for certain changes in the expenditure accounting structure. As a result, effective April 1, 1965, Treasury Board has approved the merger of five administrative votes—salaries, expenses, management, office furniture, and protection—into a single vote entitled "General Administration, Management, and Protection of Forests." This should effect a considerable reduction of paper work on all levels, particularly in the field, and allow for greater flexibility in the expenditure of administration funds. A merger was also effected of the Engineering Services and Forest-development Roads votes, which should assist in streamlining paper work in the Engineering Services Division.

Early in 1964 arrangements were made to centralize the preparation of claims under the Federal-Provincial Forestry Agreement in this Division instead of each of the four divisions preparing a separate quarterly claim. This proved advantageous as claims were submitted earlier than in past years and the corresponding payments from Canada received sooner. By December 31st it was possible to submit a claim for the balance of the full amount of $1,804,461 payable by Canada.

No changes were made in the organization or personnel establishment of the Division during the year. However, all sections were kept fully occupied to cope with the expanding volume of work stemming from both the general growth of business and the need to institute new accounting procedures as required by changes in policy.

As indicated under "Fiscal" above, billing of Crown charges on timber cut increased substantially, but district offices were able to maintain the improved collection position noted in last year's report. Most cases requiring lien action to enforce collection were of a minor nature.

PERSONNEL DIVISION

There were no major personnel changes in the Forest Service during 1964, and general administration again proceeded without any disruption. Staff turnover increased over 1963, but the number of applications for employment was slightly below that of the previous year. A general reclassification of professional forester and professional engineer positions took place, involving approximately 150 foresters and 35 engineers, and while this did create a few anomalies, it was in general well received.

In the matter of employee relations, the Deputy Minister and Personnel Officer met with the British Columbia Scalers' Association in an endeavour to solve some minor points of grievance. A similar meeting was arranged where the Chief Forester and Personnel Officer met with the Society of British Columbia Forest Officers. This meeting was of an exploratory nature, being the first official contact between the society and the Forest Service, and resulted in a much better understanding of the policies and practices on both sides.

One formal grievance was heard by the Chief Personnel Officer of the Civil Service Commission concerning the lay-off of an employee. The hearing proved that there was insufficient cause for the lay-off, and the employee was reinstated with full pay back to the date of lay-off. One complaint was received from the Employees' Association, which was resolved by the association representative and the Personnel Officer at the Departmental level. A general salary increase involving all employees became effective April 1st.

COMMUNICATIONS AND TRAINING

A District Foresters' meeting was held in January and provided an opportunity for discussion of common problems throughout the Service, as well as specific problems with the headquarters division concerned. Full-scale Ranger meetings were held at Prince Rupert, Prince George, and Kamloops, and Ranger zone meetings were held at Nelson and Vancouver. The district Protection Officers held a three-day meeting with the headquarters Protection staff in Victoria. The Engineering Services Division held its annual pre-season meeting of engineers. A combined Forest Management and Siliviculture meeting was held at the Forest Service training-school, with all district staffs and Victoria headquarters staff participating.

The Personnel Officer and Assistant Personnel Officer, as well as a number of other Forest Service officers, took part in vocation-day programmes sponsored by various schools throughout the Province, and the Service was represented on a programme of instructive interviews jointly sponsored by the Victoria Chamber of Commerce and the National Employment Service.

Four men were selected for the ninth class of the course in public administration under the Executive Development Training Plan sponsored by the Government. In 1964 the administrative responsibility for this programme was transferred from the University of British Columbia to Victoria University. Class IX of this course is for employees in the Victoria and Vancouver areas and includes from this Department three foresters and one engineer. Three employees—one forester, one engineer, and the Personnel Officer—graduated from the sixth class of the programme. A number of field employees took first-aid courses at various levels throughout the Province, and benefit was gained by several headquarters employees from Civil Defence sponsored St. John Ambulance first-aid courses in Victoria. The informal training continued for junior engineers and foresters.

ESTABLISHMENT, RECRUITMENT, AND STAFF TURNOVER

The permanent Civil Service establishment of the Forest Service was increased from 860 to 863 with the establishment of a new forester position in the Reforestation Division to take up the duties of the forester now working in liaison with the Corrections Branch of the Department of the Attorney-General on the establishment and operation of forestry prison camps, and of two radio technician positions for the Prince Rupert and Vancouver Forest Districts. These two technicians were required to ease the load on the present technician in these two districts where travel and communication are difficult.

During the year 63 persons obtained Civil Service appointments and 82 left the permanent service. Sixteen 25-year service certificates and badges were earned. There were seven retirements and 107 transfers of permanent staff. Thirteen graduate foresters and five engineers left the Service, and 10 graduate foresters and three engineers were hired.

Turnover of Civil Service appointed staff, including full-time casual staff, was 11.6 per cent, up from 9.8 per cent last year and 10 per cent in 1962. The Prince Rupert Forest District suffered the greatest disruption with 16.4 per cent, followed by Victoria headquarters and Vancouver with 13 and 12.6 per cent respectively. The Prince George Forest District had 11.1 per cent turnover, and Nelson District 9.1 per cent. Vancouver Scaling had a turnover of 8.8 per cent. Kamloops Forest District was lowest at 7.7 per cent.

Professional-staff turnover was 7.5 per cent up from 6.7 per cent last year, and technical-staff turnover went from 4 per cent in 1963 to 7.6 per cent in 1964. Total office-staff turnover at 18 per cent was up only slightly, from 17.7 per cent last year, but still much too high for the efficient performance of this important function.

There were two fatal accidents involving employees during the year, but there is some doubt in one case as to whether the employee was on duty at the time. In the matter of discipline among permanent staff or during probationary periods, there were no employees released by Order in Council and only one disciplinary suspension. No annual statutory merit increases or permanent appointments were withheld.

There were 595 written applications for employment processed in the Personnel Office, in addition to those handled by the district offices and divisional staffs. Promotional examinations were held as usual for draughtsmen and mapping assistants, and screening examinations were held for two other positions in accounting and public information. Oral examinations were employed at panel interviews to fill 32 positions. The Personnel Officer and Assistant Personnel Officer participated in the filling of 142 other positions. At the annual spring examination for Technical Forest Officer 1, 289 candidates sat and 104 qualified. Since there were only 23 vacant positions for Assistant Ranger, this examination provided an excellent eligible list for Technical Forest Officer 1 positions in other areas, as well as any further vacancies for Assistant Ranger.

CLASSIFICATION, SALARIES, AND WORKING CONDITIONS

In addition to the general reclassification of 185 foresters and engineers, 78 requests were received for reclassification of other positions, and of these, 65 were forwarded to the Civil Service Commission for review. Of this group, 59 were approved, four were rejected, and two were still under review at the year's end.

Seven employees were registered as professional foresters and five as professional engineers, one employee receiving registration in both professions. Working

conditions in general remain unchanged, and although some progress is being made in the study of special living allowance for northern areas, no decision has yet been received.

The Service's accident and prevention programme appears to be producing some results in fewer accidents and fewer time-loss accidents. During the past year there was a total of 237 accidents, of which 78 were time-loss. The previous year showed 279 accidents, with 115 causing a loss of over three days. In 1964 the time-loss accidents were only 33 per cent of the total accidents, while in 1963 time-loss accounted for 40 per cent of the total number.

PERSONNEL DIRECTORY, 1964

(As of December 31st)

VICTORIA HEADQUARTERS

R. G. McKee - - - - - - - - - - Deputy Minister of Forests
F. S. McKinnon - - - - - - - - - - - Chief Forester
L. F. Swannell - - - - - - Assistant Chief Forester i/c Operations Branch
J. S. Stokes - - - - - - Assistant Chief Forester i/c Planning Branch

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:

Forse, H. B. - - - - - - - - Forester i/c Protection Division
Greggor, R. D. - - - - - - - Forester i/c Engineering Services Division
Hughes, W. G. - - - - - - - - Forester i/c Management Division
Pendray, W. C. - - - - - - - - - Director, Grazing Division
Robinson, E. W. - - - - - Forester i/c Forest Service Training School

Planning Branch Division Heads:

Pogue, H. M. - - - - - - - Forester i/c Working Plans Division
Young, W. E. L. - - - - - Forester i/c Surveys and Inventory Division
Silburn, G. - - - - - - - - Forester i/c Reforestation Division
Spilsbury, R. H. - - - - - - - - Forester i/c Research Division

FOREST DISTRICTS

Vancouver Forest District

I. T. Cameron - - - - - - - - - - - District Forester
J. A. K. Reid - - - - - - - - - - Assistant District Forester

Forest Rangers:

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

Deputy Forest Rangers:

Hewitt, E. W. (Hope); Ferrier, D. M. (Lund); Elder, N. (Ganges); Archer, W. C. (Alberni).

Prince Rupert Forest District

N. A. McRae - - - - - - - - - - - District Forester
Lehrle, L. W. - - - - - - - - - - Assistant District Forester

Forest Rangers:

Simmons, C. F. (Ocean Falls); Brooks, T. (Queen Charlotte City); Hamilton, H. D. (Prince Rupert); Lindstrom, W. C. (Terrace); Gorley, O. J. (Kitwanga); Antonenko, J. (Hazelton); Hawkins, R. M. (Smithers); Clay, W. D. (Telkwa); Berard, R. K. (Houston); Mould, J. (Pendleton Bay); Mastin, T. (Burns Lake); Harvie, T. (Bella Coola); Pement, A. T. (Southbank); Dodd, G. F. (Lower Post); Crosby, D. N. (Topley).

Deputy Forest Rangers:

Barge, V. H. (Telkwa); Jaeger, J. (Hazelton); Quast, H. W. (Smithers); Smith, W. H. (Houston); Waldron, W. C. (Lower Post).

Prince George Forest District

A. H. Dixon - - - - - - - - - - - District Forester
Young, W. - - - - - - - - - - - Assistant District Forester

Forest Rangers:

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

Deputy Forest Rangers:

Barton, M. H. (Prince George); Macalister, J. S. (Quesnel); Kalau, W. O. (Fort Fraser); Marynovich, S. R. (Quesnel).

Kamloops Forest District

W. C. Phillips - - - - - - - - - - - District Forester
Boulton, L. B. B. - - - - - - - - - Assistant District Forester

Forest Rangers:

Hopkins, H. V. (Lumby); Ivens, J. H. (Birch Island); Wittner, D. J. (Barriere); Hill, A. F. (Kamloops (S.)); Paquette, O. (Chase); Gibson, C. L. (Salmon Arm); Jones, G. G. (Sicamous); Cameron, A. G. (Lillooet); Kuly, A. (Vernon); Scott, E. L. (Penticton); Baker, F. M. (Princeton); Petty, A. P. (Clinton); Hamilton, T. J. (Williams Lake); Donnelly, R. W. (Alexis Creek); Hewlett, H. C. (Kelowna); Noble, J. O. (Ashcroft); Janning, H. A. W. (Merritt); Huva, G. G. (Blue River); Collins, B. G. (Enderby); Schmidt, J. T. (100 Mile (N.)); Weinard, J. P. (Kamloops (N.)); Craig, V. D. (Horsefly); Monteith, M. E. (100 Mile (S.)).

Deputy Forest Rangers:

Cawston, R. L. (Birch Island); Perry, W. R. (Kamloops (S.)); Lynn, J. F. (Chase); Wanderer, J. (Penticton); Ross, B. A. (Alexis Creek); Dearing, J. C. (Ashcroft); Reiter, D. (Merritt); Jones, W. H. (Kamloops (S.)).

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 (E.)); 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); Russell, P. F. (Arrowhead); Loomer, I. M. (Edgewood); Benwell, W. G. (Elko); Bellmond, C. N. (Spillimacheen); Bailey, J. F. (Cranbrook (W.)); Hamann, L. O. (Beaverdell); Webster, G. R. (Slocan City); Jackson, R. C. (Revelstoke).

Deputy Forest Rangers:

Perdue, J. E. (Invermere); Peterson, E. E. (Creston); Drew, R. A. (Kaslo); Osborne, H. (Nakusp); Thompson, H. B. (Kettle Valley); Pistak, W. O. (Edgewood); Budden, A. T. (Cranbrook (W.)); Lussier, R. L. (Revelstoke).

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283	Douglas Fir Thinning Experiments	Vancouver Island.
343	Red Alder Thinning	Vancouver Island.
364	Thinning Experiments in Douglas Fir	Vancouver Island.
384	Experimental Thinning in Lodgepole Pine	Nelson.
429	Spacing Trials of Pure and Mixed Coastal Species	Vancouver Island.
435	Ponderosa Pine Thinning	East Kootenay.
468	Cone-crop Studies	Kamloops.
474	Inbreeding Experiments with Douglas Fir	Vancouver Island.
479	Plus-tree Selection for Douglas Fir Seed Orchards	Vancouver Island.
482	Climate and the Altidudinal Distribution of Conifers	Vancouver Island.
483	Record of Introduced Species in Plantations	British Columbia.
492	Douglas Fir Thinning Experiments	Vancouver Island.
497	Thinning Studies in Engelmann Spruce	Kamloops.
500	Hardwood Arboretum	Vancouver Island.
502	Plantation Trials	Prince Rupert.
513	Intra- and Inter-specific Crosses within the Genus *Pseudotsuga*	Vancouver Island.
528	Influence of Time on the Effectiveness of Scarified Seed-beds	Prince George.
534	Spacing Trial of Douglas Fir	Vancouver Island.
537	White Spruce Spacing Study	Prince Rupert.
538	Seed Dissemination and the Influence of Weather Conditions	Vancouver Island.
541	Natural Nurseries	Prince Rupert.
554	Thinning Experiments in Douglas Fir	Vancouver Island.
555	Germination and Survival of Western Hemlock and Associated Species	Vancouver Island.
560	A Study of Methods of Planting Ponderosa Pine	Kamloops.
570	Sitka Spruce Spacing Study	Prince Rupert.
572	Planting Trials with Ponderosa Pine	Nelson.
573	Planting White Spruce throughout the Growing Season	Prince George.
581	Planting Study of 2+0 Douglas Fir Culls	Vancouver Island.
582	Cold Storage of 2+0 Douglas Fir in Multi-wall Bags	Vancouver Island.
585	Plantation Studies	Vancouver Island.
586	Planting-stock Comparison Trials	Vancouver Island.
589	Comparison of 2+0, 2+1, and 1+2 Doulgas Fir on High-site Lands	Vancouver Island.
591	Regeneration Study in Cut-over Lodgepole Pine Stands	Prince Rupert.
592	Direct-seeding Trial, Mars Creek	Nelson.
594	Brush Control, Coastal British Columbia	Vancouver Island.
595	Outplanting of Different Fertilized Stock	Vancouver Island.
599	Problem Anlaysis: Approach to Provenance Experimentation in Coastal Douglas Fir	Vancouver Island.
602	Lodgepole Pine Problem Analysis	Prince Rupert.
603	Study of Some Hand-planting Methods in White Spruce	Prince Rupert.
605	Determination of the Optimum Season for Direct Seeding	Nelson.
606	Direct Seeding of Douglas Fir and Engelmann Spruce	Kamloops.
607	Ponderosa Pine Spacing Trials	Nelson.
609	A Study of Forest-land Classification, Quilchena	Kamloops.
610	Photoperiodic Response in White and Engelmann Spruce	Prince George.
611	Jennis Bay Reforestation Trials	Vancouver Island.
613	Western Hemlock Spacing Study	Prince Rupert.
616	Study of Regeneration Problems in Decadent Hemlock-Cedar Stands	Kamloops.
617	The Effect of Seed-bed Density on the Survival and Initial Growth of 2+0 Douglas Fir Seedlings	Vancouver Island.
618	Cone Production in the Interior of British Columbia	Interior.
619	Douglas Fir-Engelmann Spruce Planting Study, 1963	Kamloops.
620	A Study of Forest-land Classification, McGillivray Lake	Kamloops.
621	Problem Anlaysis: Genetic Variation and Its Assessment with Reference to White and Engelmann Spruce	All districts.
622	Factors Affecting the Germination Behaviour of Interior Spruce	Prince George.
623	The Growth Behaviour of Interior Spruce in the Nursery	Prince George.
624	Geographic Variation in Spruce Cone Scale Morphology	Prince George.
626	Engelmann Spruce Planting Trials, 1964	Nelson.
628	Forest-land Classification, Bear Creek	Okanagan.
629	Classification of Soil Capability for Forestry	Prince George.
630	Spacing Effects on Increments of Individual Trees in Overstocked Juvenile Stands of Lodgepole Pine	Prince Rupert.
631	Planting Trials of Douglas Fir, 1964–65	Kamloops.
632	Exploratory Direct Seeding Trials in the Wet Belt Type of the Southern Interior	Kamloops.
633	Coastal Douglas Fir Provenance Studies	Coast.

(12) RESEARCH PUBLICATIONS, 1964

Ebell, L. F., and Schmidt, R. L. (1964): Meteorological Factors Affecting Conifer Pollen Dispersal on Vancouver Island. Canada Department of Forestry Publication No. 1036, Ottawa.

UNPUBLISHED MANUSCRIPT REPORTS

Clark, M. B.: Planting Trials with Ponderosa Pine.

Clark, M. B.: Cutting Methods in Overmature Spruce Alpine Fir.

Eis, S.: Garman, E. H.; and Ebell, L. F.: Relation between Cone Production and Diameter Increment of Douglas Fir.

Hetherington, J. C.: Seed Dissemination and the Influence of Weather Conditions on This Process on the West Coast of Vancouver Island.

Hetherington, J. C.: The Germination and Survival of Western Hemlock and Associated Species on the West Coast of Vancouver Island.

Illingworth, K.: Planting Trials with Ponderosa Pine.

Orr-Ewing, A. L.: An Analysis of the Breeding Program for Coastal Douglas Fir.

Roche, L.: Genetic Variation and Its Assessment with Reference to White and Engelmann Spruce.

Sprout, P. N.; Lacate, D. S.; and Arlidge, J. W. C.: Forest Land Classification Survey, Southern Interior of British Columbia, McGillivray Lake.

(21) NURSERY STOCK DISTRIBUTED, 1964

Nursery	Age Classes				Total for Field Planting	Total Trees Transplanted
	1–1	2–0	2–1, 1–2, and 2–2	1–0 and 3–0		
Green Timbers	.....	4,723,300	.....	.....	4,723,300	.....
Campbell River	.....	3,528,200	211,700	2,000	3,741,900	109,000
Duncan	.....	3,257,650	95,910	620,150	3,973,710	165,000
East Kootenay	20,000	289,400	88,800	91,900	490,100	504,000
Chilliwack	.....	347,750	102,100	.....	449,850	52,000
Haney	.....	.....	47,000	.....	47,000	303,000
Brannen Lake	4,650	35,800	387,750	.....	428,200	479,000
Telkwa	.....	88,000	243,000	26,000	357,000	195,000
Hixon	.....	.....	46,200	.....	46,200	64,000
Aleza Lake	.....	1,600	.....	.....	1,600	212,000
Kelowna	.....	43,400	.....	.....	43,400	.....
Totals	24,650	12,315,100	1,222,460	740,050	14,302,260	2,083,000

SUMMARY OF PLANTING, 1955–64

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										
1964[1]	1,179.4	3,304	1,165.3	3,247	6,917.4	20,385	3,720.6	10,886	12,982.7	37,832
1963	2,081.3	5,379	1,592.2	3,538	6,487.3	18,463	3,130.6	9,226	13,291.4	36,606
1962	1,202.8	2,703	1,758.2	4,240	4,903.1	14,536	1,792.3	5,015	9,656.4	26,494
1961	330.0	770	563.3	1,508	4,549.6	14,399	1,120.4	3,145	6,563.3	19,822
1960	137.1	318	1,261.7	2,299	5,110.2	15,161	131.1	338	6,640.1	18,116
1959	856.5	1,482	1,575.2	2,932	4,614.1	11,540	398.5	914	7,444.3	16,868
1958	887.5	915	1,894.4	2,128	4,955.4	11,438	102.5	129	7,839.8	14,610
1957	305.7	448	.....	.....	2,971.4	7,399	65.9	84	3,343.0	7,931
1956	984.9	1,711	.....	.....	1,406.9	3,493	78.8	130	2,470.6	5,334
1955	2,184.6	3,425	1,910.5	2,110	2,583.4	4,926	146.2	135	6,824.7	10,596
Previously planted	84,087.7	99,100	2,739.1	3,495	13,763.3	20,293	1,927.5	2,458	102,517.6	125,346
Totals to date	94,237.5	119,555	14,459.9	25,497	58,262.1	142,043	12,614.4	32,460	179,573.9	319,555
Interior										
1964[1]	1,075.8	2,913	.....	.....	189.3	883	45.3	120	1,310.4	3,916
1963	596.5	1,286	.....	.....	324.4	923	5.9	15	926.8	2,224
1962	566.1	1,171	.....	.....	346.2	1,007	.....	.....	912.3	2,178
1961	409.6	1,010	.....	.....	248.0	625	0.5	1	658.1	1,636
1960	198.4	357	.....	.....	187.8	416	.....	.....	386.2	773
1959	777.5	1,320	.....	.....	81.9	114	10.2	14	869.6	1,448
1958	475.3	638	.....	.....	82.2	181	12.4	18	569.9	837
1957	168.6	216	.....	.....	47.6	93	80.9	113	297.1	422
1956	228.9	293	.....	.....	105.1	189	39.7	56	373.7	538
1955	217.3	336	.....	.....	76.0	112	17.2	19	310.5	467
Previously planted	1,159.1	1,753	.....	.....	126.0	153	27.5	36	1,312.6	1,942
Totals to date	5,704.5	11,079	.....	.....	1,814.5	4,696	239.6	392	7,758.6	16,167
All planted to date	99,942.0	130,634	14,459.9	25,497	60,076.6	146,739	12,854.0	32,852	187,332.5	335,722
All planted this year	2,255.2	6,217	1,165.3	3,247	7,106.7	21,278	3,765.9	11,006	14,293.1	41,748

[1] Subject to correction due to incomplete returns.

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

Tree-farm Licence Number and Name	Licensee	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 Forest District									
2. Duncan Bay	Elk Falls Co. Ltd.	163,612	116,946	280,558	378,371	.....	.....	.....	15,000
4. Blind Channel	I. W. McDonagh	4,360	.....	4,360	4,616	4,755	.....	4,755	260
6. Quatsino	Rayonier Canada (B.C.) Ltd.	196,092	114,453	310,545	432,274	983,512	461,939	1,445,451	25,800
7. Salmon River	MacMillan, Bloedel and Powell River Ltd.	88,484	52,465	140,949	189,890	357,862	316,343	674,205	13,000
10. Toba	Timberland Development Co.	87,355	611	87,966	574,065	355,375	1,816	357,191	3,300
12. Hardwicke	Bendickson Logging Ltd.	17,572	2,801	20,373	23,207	33,109	7,862	40,971	1,330
17. Knight Inlet	Evans Products Co. Ltd.	66,100	640	66,740	472,670	437,429	.....	437,429	4,000
19. Tahsis	Tahsis Co. Ltd.	164,180	27,541	191,721	398,122	785,190	156,532	941,722	12,400
20. Tofino	MacMillan, Bloedel & Powell River Industries Ltd.	232,921	142,939	375,860	428,099	1,425,130	712,591	2,137,721	27,500
21. Alberni	MacMillan, Bloedel & Powell River Industries Ltd.	283,268	266,604	549,872	636,463	1,890,558	1,988,283	3,878,841	49,270
22. Maquinna	British Columbia Forest Products Ltd.	180,955	67,568	248,523	392,683	1,313,601	408,641	1,722,242	24,000
25. Naka	Rayonier Canada (B.C.) Ltd.	103,130	80,610	183,740	355,717	459,838	203,708	663,546	14,400[1]
26. Mission Municipal	The Corporation of the District of Mission	13,707	2,727	16,434	18,884	17,830	789	18,619	800
27. Nitinat	British Columbia Forest Products Ltd.	26,274	3,729	30,003	34,724	172,542	20,307	192,849	2,400
36. Cordero	F. & R. Logging Co. Ltd.	12,141	1,249	13,390	19,165	49,828	2,624	52,452	870
37. Nimpkish	Canadian Forest Products Ltd.	124,207	104,499	228,706	457,895	574,961	551,909	1,126,870	20,400
38. Squamish	Empire Mills Ltd.	99,099	535	99,587	541,175	505,759	555	506,314	5,400
39. Haida	MacMillan, Bloedel and Powell River Ltd.	247,821	193,674	441,495	1,009,617	604,809	663,677	1,268,486	43,912[1]
Totals		2,111,278	1,179,591	3,290,822	6,367,637	9,972,088	5,497,576	15,469,664	264,042
Prince Rupert Forest District									
1. Port Edward	Celgar Ltd.	721,036	11,924	732,960	1,961,399	2,564,370	54,260	2,618,630	22,000
24. Moresby	Rayonier Canada (B.C.) Ltd.	114,426	20,450	134,876	281,411	454,878	69,763	524,641	8,200
25. Naka	Rayonier Canada (B.C.) Ltd.	98,636	39,444	138,080	778,191	299,298	132,723	432,021	([2])
39. Haida	MacMillan, Bloedel and Powell River Ltd.	332,890	157,049	489,939	752,607	1,146,195	523,115	1,669,310	([2])
Totals		1,266,988	228,867	1,495,855	3,773,608	4,464,741	779,861	5,244,602	30,200
Prince George Forest District									
5. MacKenzie-Cariboo	Weldwood of Canada Ltd.	81,267	195	81,462	83,693	147,010	163	147,173	3,100
28. Shelley	Shelley Development Ltd.	71,635	9,633	81,268	89,538	90,018	10,039	100,057	2,800
29. Eagle Lake	Eagle Lake Sawmills Ltd.	95,593	1,224	96,817	105,912	208,847	3,835	212,682	2,000
30. Sinclair	Sinclair Spruce Lumber Co. Ltd.	71,083	.....	71,083	84,373	112,199	.....	112,199	1,073
31. McGregor	Upper Fraser Spruce Mills	42,534	.....	42,534	45,761	102,338	.....	102,338	1,038
34. Seebach	Church Sawmill Ltd.	42,071	.....	42,071	53,858	98,630	.....	98,630	822
Totals		404,183	11,052	415,235	463,135	759,042	14,037	773,079	10,833

[1] This cut is for entire area including Prince Rupert blocks.
[2] Total allowable cut for licence shown under Vancouver District.

(31) SUMMARY OF BASIC DATA FOR TREE-FARM LICENCES (PRIVATE SUSTAINED-YIELD UNITS)—*Continued*

Tree-farm Licence Number and Name	Licensee	Productive Area (Acres)			Total Area (Acres)	Total Mature Volume (M Cu. Ft.)			Allowable Annual Cut (M Cu. Ft.)
		Crown	Private	Total		Crown	Private	Total	
Kamloops Forest District									
9. Okanagan (West)	S. M. Simpson Ltd.	171,395	1,536	172,931	189,696	353,123	.....	353,123	3,600
15. Inkaneep	Oliver Sawmills Ltd.	90,540	160	90,700	119,600	38,874	.....	38,874	800
16. Monte Lake	Pondosa Pine Lumber Co.	123,588	132	123,720	129,226	41,627	215	41,842	1,500
18. Clearwater	Clearwater Timber Products Ltd.	161,047	.....	161,047	184,405	123,453	.....	123,453	2,500
32. Bolean	Vernon Box & Pine Lumber Co. Ltd.	31,074	250	31,324	32,721	24,846	573	25,419	550
33. Sicamous	Shuswap Timbers Ltd.	14,565	280	14,845	22,210	27,622	567	28,189	385
35. Jamieson Creek	B.C. Interior Sawmills Ltd.	88,878	.....	88,878	98,496	113,120	.....	113,120	1,800
Totals		681,087	2,358	683,445	776,354	722,665	1,355	724,020	11,135
Nelson Forest District									
3. Little Slocan	Pacific Logging Co. Ltd.	100,085	.....	100,085	196,625	52,879	.....	52,879	2,000
8. Boundary Creek	Boundary Sawmills Ltd.	89,530	.....	89,530	111,010	59,620	.....	59,620	1,260
11. Carmi	Olinger Lumber Co. Ltd.	64,787	.....	64,787	80,815	17,400	.....	17,400	800
13. Bull River	Galloway Lumber Co. Ltd.	54,329	503	54,832	100,783	37,873	.....	37,873	1,100
14. Spillimacheen	Crestbrook Timbers Ltd.	67,925	3,790	71,715	308,294	54,622	7,011	61,633	1,500
23. Arrow Lakes	Celgar Ltd.	827,271	36,490	863,761	2,537,673	1,108,560	351,715	1,450,275	30,000
Totals		1,203,927	40,783	1,244,710	3,335,200	1,330,954	348,726	1,679,680	36,660
Grand totals		5,667,463	1,462,651	7,130,067	14,715,934	17,249,490	6,641,555	23,891,045	352,870

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

(32)

Within Tree-farm Licences

Tree-farm Number and Licensee	Productive Area (Acres)				Total Area (Acres)	Mature Volume (M Cu. Ft.)	Present Allowable Cut (M Cu. Ft.)	Estimated Productive Capacity (M Cu. Ft.)
	Mature	Immature	N.S.R. and N.C.C.	Total				
Vancouver Forest District								
8. T.F.L. No. 2	204	51,891	1,761	53,856	61,959	.....	.....	3,089
12. T.F.L. No. 17	51	179	259	489	1,230	135	21	22
13. T.F.L. No. 20	26,792	45,714	12,783	85,289	93,524	91,508	4,242	4,732
14. T.F.L. No. 21	10,695	17,448	2,279	30,422	32,691	37,441	1,405	1,742
16. T.F.L. No. 22	6,519	11,849	4,446	22,814	24,719	44,515	1,285	1,285
20. T.F.L. No. 19	2,440	1,793	501	4,734	5,683	6,447	277	336
21. T.F.L. No. 39	24,442	12,104	2,216	38,762	40,249	96,532	1,777	2,316
25. T.F.L. No. 37	2,964	5,884	1,079	9,927	11,331	16,040	749	836
29. T.F.L. No. 6	2,286	1,961	425	4,672	4,964	10,680	282	530
30. T.F.L. No. 25	3,344	13,546	3,452	20,342	25,151	10,318	1,727	2,299
31. T.F.L. No. 25	10,095	10,477	2,307	22,879	26,715	44,947	2,008	2,700
Totals	89,832	172,846	31,508	294,186	328,216	358,563	13,773	19,887
Prince George Forest District								
41. T.F.L. No. 29	123	668	463	1,254	1,280	331	27	37
Nelson Forest District								
35. T.F.L. No. 23	1,055	3,473	90	4,618	5,447	210	.....	130
37. T.F.L. No. 13	.....	504	.....	504	504	.....	.....	20
Totals	1,055	3,977	90	5,122	5,951	210	.....	150
Grand totals within tree-farm licences	91,010	177,491	32,061	300,562	335,447	359,104	13,800	20,074

Not Included within Tree-farm Licences

Vancouver Forest District								
1. Thomas G. Wright	.....	244	3	247	305	.....	31	44
2. H. R. Nickson	(1)	165	.....	165	180	68	9	10
4. MacMillan, Bloedel and Powell River Ltd.	43	8,167	1,534	9,744	10,347	1,045	358	430
5. Western Forest Industries Ltd.	841	20,985	3,150	24,976	27,386	1,208	.....	1,749
6. British Columbia Forest Products Ltd.	383	1,982	287	2,652	3,568	1,713	125	135
7. Victoria Plywood Ltd.	3,689	4,406	1,373	9,468	10,303	12,176	282	606
9. Robert J. Filberg	235	4,741	1,559	6,535	7,566	935	100	492
10. Canadian Forest Products Ltd.	113	2,037	.....	2,150	2,561	.....	30	141
15. W. J. Robertson	.....	157	.....	157	163	.....	.....	17
17. British Columbia Forest Products Ltd.	80	4,002	597	4,679	4,945	248	22	266
19. MacMillan, Bloedel and Powell River Ltd.	129,460	139,244	27,635	296,339	313,479	1,105,704	29,500	21,456
22. Merrill & Ring	.....	2,274	25	2,299	2,458	.....	.....	197
23. W. & W. Holdings Ltd.	.....	779	231	1,010	1,010	.....	.....	111
24. Merrill & Ring - Canadian Properties Inc.	.....	1,888	10	1,898	1,947	59	.....	175
28. Merrill & Ring - Canadian Properties Inc.	.....	749	.....	749	788	.....	.....	67
32. Savary Island Hotels Ltd. and A. B. Christopher[1]	(1)	106	.....	106	106	151	5	5
34. Robert J. Filberg	.....	1,282	155	1,437	1,699	.....	.....	90
39. Canadian Collieries Resources Ltd.	213	27,818	4,774	32,805	34,706	347	.....	1,470
42. John C. Cowan	198	4,735	47	4,980	5,533	348	.....	250
44. Friedrich W. Fuerst zu Wied	189	1,161	985	2,335	2,476	160	16	180
45. Erbprinz Von Hohenzollern	255	657	178	1,090	1,090	160	65	60
Totals	135,699	227,579	42,543	405,821	432,616	1,124,322	30,543	27,951

[1] Scattered.

(32) SUMMARY OF BASIC DATA FOR CERTIFIED TREE-FARMS (PRIVATE SUSTAINED-YIELD UNITS)—*Continued*

NOT INCLUDED WITHIN TREE-FARM LICENCES—*Continued*

Tree-farm Number and Licensee	Productive Area (Acres)				Total Area (Acres)	Mature Volume (M Cu. Ft.)	Present Allowable Cut (M Cu. Ft.)	Estimated Productive Capacity (M Cu. Ft.)
	Mature	Immature	N.S.R. and N.C.C.	Total				
Nelson Forest District								
26. Kirk Ltd.	96	16,999	.....	17,095	22,362	(488,762)	(194,235)	(427,375)
27. The Crow's Nest Pass Coal Co. Ltd.	25,457	77,301	3,349	106,107	236,807	37,627	1,510	1,543
33. Elkhorn Ranch & Emerald Christmas Tree Co.	.....	2,931	.....	2,931	3,230	(79,066)	(18,496)	(73,275)
36. J. Hofert Ltd.	.....	24,048	1,982	26,030	28,835	(1,072,896)	(174,009)	(651,050)
38. William T. Joyce Co.	31,646	848	.....	32,494	33,632	85,572	945	1,029
40. Kootenay Lake Logging Co.	33,804	52,808	.....	86,612	139,341	66,839	1,370	1,260
43. Donald D. MacDonald	370	4,480	613	5,463	6,061	6,558	175	245
Totals	91,373	179,415	5,944	276,732	470,268	196,596	4,000	4,077
						(1,640,724)	(386,740)	(1,151,700)
Grand totals not within tree-farm licences	227,072	406,994	48,487	682,553	902,884	1,320,918	34,543	32,028
						(1,640,724)	(386,740)	(1,151,700)

Numbers in parentheses are Christmas trees.

SUMMARY OF BASIC DATA FOR FARM WOOD-LOT LICENCES (PRIVATE SUSTAINED-YIELD UNITS) (33)

Farm Wood-lot Number and Licensee	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 Forest District								
1. Copley, G. R.	107	23	130	150	74	.....	74	3.0
5. Thompson, A. R.	70	75	145	232	31	29	60	6.0
8. Heiltkla, E.	135	8	143	159	35	.....	35	1.0
17. Wells, G. E.	101	38	139	199	86	32	118	6.0
22. Kirkelund, P.	70	.....	70	92	66	.....	66	2.6
26. Dawson, C.	190	7	197	274	640	.....	640	9.0
34. Morris, F.	174	62	236	494	419	11	430	6.5
40. Courchene, R. O.	122	8	130	223	72	8	80	2.5
41. Jones, T. E. D.	29	.....	29	69	143	.....	143	2.0
43. Evans, L. W.	235	14	249	304	374	40	414	5.0
44. Wilson, M. R.	152	.....	152	282	195	.....	195	4.0
46. Williams, G. C.	75	38	113	189	316	33	349	8.0
49. Fall, J. S. T.	253	.....	253	321	343	.....	343	4.5
52. Dawson, H.	198	.....	198	202	550	.....	550	10.0
57. Mellor, J. G.	186	16	202	202	362	.....	362	7.0
58. Kokaska, A.	122	.....	122	136	576	.....	576	10.0
78. Pickard, G.	115	19	134	138	106	.....	106	8.0
Totals	2,334	308	2,642	3,666	4,388	153	4,541	95.1
Prince Rupert Forest District								
28. Priest, C. V.	143	110	253	640	354	11	365	10.0
42. Nysven, K.	353	240	593	927	178	36	214	8.0
66. Grainger, B. H.	321	37	358	824	616	82	698	6.2
70. Burt, A. H.	343	.....	343	480	372	.....	372	4.0
73. Sprigler, L. F.	296	88	384	825	388	4	392	8.3
77. Hewett, H. F.	336	.....	336	350	387	.....	387	6.2
Totals	1,792	475	2,267	4,046	2,295	133	2,428	42.7
Prince George Forest District								
14. Macallister, J. M.	258	95	353	428	550	91	641	10.0
31. Myers, A. P.	400	.....	400	404	321	.....	321	8.0
36. Hiller, W.	292	.....	292	299	785	.....	785	10.0
38. Miller, A. B.	222	28	250	251	170	3	173	9.5
45. Douglas, E. C.	283	.....	283	302	186	.....	186	6.0
47. Sanford, J.	154	3	157	166	263	6	269	5.5
53. Hiller, B.	240	.....	240	240	648	.....	648	10.0
54. Teichman, O.	240	.....	240	240	645	.....	645	10.0
55. Kienzle, C. W.	240	.....	240	240	642	.....	642	10.0
59. McCauley, H. K.	200	50	250	250	261	.....	261	5.0
61. Kaska, M. G.	245	29	274	274	332	.....	332	5.0
63. Walsh, G. D.	218	.....	218	226	427	.....	427	7.0
67. Higdon, J. and K.	289	.....	289	290	381	.....	381	4.5
68. Aiken, E. F.	225	.....	225	256	429	.....	429	7.0
74. Caron, L. A.	202	.....	202	202	540	.....	540	9.0
75. Lavally, E. L.	243	.....	243	249	370	.....	370	5.9
76. Paley, W. J.	138	53	191	193	387	.....	387	7.0
79. Windt, T. E.	281	3	284	286	271	5	276	4.4
Totals	4,370	261	4,631	4,796	7,608	105	7,713	133.8
Kamloops Forest District								
3. Myers, J. A.	236	.....	236	260	286	.....	286	8.0
9. Black, W.	142	110	252	276	27	18	45	4.5
29. Hankey, A.	154	48	202	326	127	.....	127	4.0
30. Kershaw, R. T.	320	.....	320	160	112	.....	112	6.0
48. Durrell, J. M.	499	.....	499	540	865	.....	865	10.0
72. Law, D. A.	417	36	453	724	235	.....	235	7.5
Totals	1,768	194	1,962	2,286	1,652	18	1,670	40.0
Nelson Forest District								
7. Bombini, S.	98	147	245	254	98	24	122	4.9
1.8 Siska, C.	176	13	189	195	153	2	155	3.4
21. Sahlstrom, G. O.	126	90	216	270	176	96	272	6.0
60. Stevenson, J., and Boyd, R. A.	162	147	309	333	123	46	169	6.2
62. Braisher, O.	154	382	536	567	193	109	302	5.5
65. Johnson, B. P.	238	379	617	617	160	240	400	6.7
69. Davidson, D. G.	564	27	591	601	443	19	462	9.4
71. Carey, F. H.	515	118	633	633	243	8	251	4.2
Totals	2,033	1,303	3,336	3,470	1,589	544	2,133	46.3
Grand totals	12,297	2,541	14,838	18,264	17,532	953	18,485	357.9

(41)

MOTION-PICTURE LIBRARY, 1955–64

Stock Records

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
Films in library at January 1st	64	71	78	80	83	92	95	140[1]	145	152
Films withdrawn during year	2	3	——	1	10	2	2	1	3	9
New films added during year	9	10	2	4	19	5	3	5	10	6
Films in library at December 31st	71	78	80	83	92	95	96	145	152	147
Films used during year	70	80	79	84	83	96	96	145	150	142

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

Circulation Records

Number of loans made during year	429	413	455	604	468	374	344	473	955	483
Number of film loans during year (one film loaned one time)	1,280	1,743	1,758	1,253	1,454	749	776	957	1,926	990
Number of showings during year	1,998	1,909	1,956	1,775	1,622	1,217	1,085	1,490	1,146	1,115
Number of audiences—										
Adults	14,353	14,537	18,983	10,330	17,329	12,277	13,096	10,576	7,691	10,511
Children	131,844[1]	157,086[1]	86,829[1]	69,316[1]	54,429[1]	90,658	57,366	76,699	64,946	64,057
Mixed	41,340	42,587	38,143	42,938	51,421	62,405	69,896	67,777	40,386	32,438
Totals	187,537[1]	218,275[1]	148,124[1]	126,216[1]	123,179[1]	165,340[1]	140,358	155,052	113,023	107,006

[1] Including attendances of school lecturers.

SUMMARY OF COVERAGE BY SCHOOL LECTURERS, 1955–64

Forest District	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	Total
Vancouver—											
Number of school visits	203	232	10	176	108	117	57	60	28	9	1,000
Number of lectures given	352	419	11	237	162	145	113	109	64	33	1,645
Attendance	56,760	67,962	871	29,606	35,082	30,380	9,644	19,493	7,325	3,450	260,573
Kamloops—											
Number of school visits	.....	39	71	.....	47	48	3	.....	4	13	225
Number of lectures given	.....	49	86	.....	49	54	9	.....	8	42	297
Attendance	.....	5,731	10,046	.....	5,420	5,203	640	.....	1,285	6,150	34,475
Nelson—											
Number of school visits	.....	.....	42	.....	62	36	40	15	.....	.....	195
Number of lectures given	.....	.....	60	.....	75	59	64	35	.....	.....	293
Attendance	.....	.....	7,002	.....	9,972	5,094	5,834	2,910	.....	.....	30,812
Prince George—											
Number of school visits	.....	.....	66	.....	76	5	27	21	29	.....	224
Number of lectures given	.....	.....	75	.....	82	5	28	23	38	.....	251
Attendance	.....	.....	5,671	.....	5,600	820	3,076	2,419	4,195	.....	21,781
Prince Rupert—											
Number of school visits	.....	.....	.....	.....	21	.....	.....	.....	13	.....	34
Number of lectures given	.....	.....	.....	.....	25	.....	.....	.....	41	.....	66
Attendance	.....	.....	.....	.....	5,135	.....	.....	.....	2,435	.....	7,570
All districts—											
Number of school visits	203	271	189	176	314	206	127	96	74	22	1,678
Number of lectures given	352	468	232	237	393	263	214	167	151	75	2,552
Total attendance	56,760	73,693	23,590	29,606	61,209	41,497	19,194	25,348	15,240	9,600	355,737

(43) FOREST SERVICE LIBRARY, 1955–64

Classification	Items Catalogued and Indexed										10-year Average 1955–64
	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	
Bound volumes	55	37	45	48	43	39	31	29	23	30	38
Government reports and bulletins	190	179	266	177	142	123	92	113	191	146	161
Other bulletins and reports	94	170	109	159	165	200	135	140	110	92	137
Periodicals	136	151	155	133	130	115	134	151	151	151	140
Serials	141	177	214	230	302	274	375	378	370	380	284
References indexed	1,090	1,321	1,417	1,139	1,502	999	878	911	1,165	1,263	1,168

BRITISH COLUMBIA FOREST INDUSTRIES, VALUE ADDED BY MANUFACTURE, 1955–64

(In thousands of dollars.)

Industry	Basis: Old Standard Industrial Classification					Basis: Revised Standard Industrial Classification and New Establishment Concept						
	1955	1956	1957	1958	1959	1958	1959	1960	1961	1962	1963*	1964*
Logging industry	267,293	296,838	262,508	194,749	234,895	194,749	234,895	276,289	286,705	351,552	360,000*	380,000*
Wood industries—												
Sawmills[1]	196,774	178,630	138,873	153,726	162,382	147,203	156,247	154,165	146,394	184,000*	.....	.....
Coast[1]	123,557	107,381	81,773	92,636	91,442	89,743	88,545	96,998	85,307	95,000*	.....	.....
Interior[1]	73,217	71,249	57,100	61,090	70,940	57,460	67,702	57,167	61,087	89,000*	.....	.....
Shingle-mills[1]	.....	.....	.....	.....	.....	.....	.....	7,476	7,791	8,615	.....	.....
Sash, door, and planing mills	22,294	23,487	20,305	22,885	26,688	23,063	26,971	21,582	24,132	27,305	.....	.....
Veneer and plywood mills	37,200	42,792	33,940	37,456	38,958	38,794	40,183	36,148	35,485	43,844	.....	.....
Other wood industries[2]	5,991	6,444	6,386	6,181	7,525	5,699	6,828	7,331	4,649	4,455*	.....	.....
Totals, wood industries	262,259	251,353	199,504	220,248	235,553	214,759	230,229	226,702	218,451	268,219*	290,000*	300,000*
Paper and allied industries—												
Pulp and paper mills	92,140	97,236	87,890	102,420	139,734	106,557	144,545	153,573	167,296	177,220	.....	.....
Other paper and allied industries[3]	13,038	10,395	12,960	14,098	15,877	14,116	15,986	15,944	15,664	15,478	.....	.....
Totals, paper and allied industries	105,178	107,631	100,850	116,518	155,611	120,673	160,531	169,517	182,960	192,698	200,000*	220,000*
Totals, forest industries	634,730	655,822	562,862	531,515	626,059	530,181	625,655	672,508	688,116	812,469*	850,000*	900,000*
Furniture industries[4]	8,518	9,302	10,090	10,543	12,255	10,593	12,109	11,194	11,000*	11,000*	11,000*	11,000*

* Estimated.

1 Shingle-mills included with sawmills up to 1960.

2 Includes the hardwood flooring industry, wooden-box factories, the coffin and casket industry, and the miscellaneous wood industries.

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

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

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

(52) WATER-BORNE LUMBER TRADE (IN M B.M.), 1955–64

Destination	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	10-year Average, 1955–64
Eastern Canada	3,037	4,917	2,102	5,482	10,481	9,680	8,828	11,394	5,295	6,057	6,727
Africa	188,567	145,132	181,560	139,523	94,598	142,293	75,146	70,726	110,237	84,470	123,225
Arabia	644	146	123	.....	.....	.....	.....	.....	.....	.....	91
Australia	137,308	99,829	87,213	98,808	80,115	113,536	91,935	122,470	113,915	106,166	105,129
Belgium	3,121	2,628	5,095	10,790	4,080	21,937	31,300	22,810	34,009	37,596	17,337
Central America	.....	.....	5,330	5,349	.....	.....	.....	.....	.....	.....	1,068
Denmark, Norway, and Sweden	109	.....	14	18	16	66	30	184	212	242	89
Eire	4,211	142	483	1,070	.....	3,684	4,773	6,465	6,013	7,223	3,406
France	2,845	3,191	4,110	3,265	3,184	9,883	11,061	21,922	26,371	38,744	12,458
Germany	732	177	169	22	.....	1,062	6,040	10,558	15,611	14,155	4,853
Greece	.....	25	.....	.....	70	.....	.....	10	1	1,059	117
Hawaiian Islands	12,715	13,183	7,668	3,166	2,133	7,755	12,887	6,813	5,433	3,483	7,524
Holland	4,042	3,802	3,552	6,091	4,569	6,272	13,866	21,802	19,068	20,789	10,385
Hong Kong, China, and Formosa[1]	1,909	1,275	1,256	597	509	867	360	.....	172	447	739
India	1,745	416	468	3,372	27,581	9,793	.....	.....	5	.....	4,338
Israel	676	1,248	5,643	213	1,340	1,681	10,225	4,009	233	919	2,619
Italy	4,349	3,007	6,530	4,560	2,805	5,363	5,909	12,624	9,609	8,706	6,346
Japan	1,623	5,852	2,301	999	1,201	1,607	155,550	107,438	278,168	204,439	75,918
Korea	9,101	.....	1,412	.....	6,413	.....	.....	399	1,701	.....	1,903
New Zealand	12,588	14,097	11,030	8,397	5,212	6,689	8,392	6,603	5,008	6,236	8,425
Puerto Rico	33,788	41,937	44,555	46,493	62,826	67,022	73,249	77,033	59,448	87,994	59,434
South America	5,756	16,541	25,503	8,816	10,178	7,743	1,187	119	83	100	7,603
South Sea Islands	16,140	15,339	8,147	11,841	8,068	13,414	9,970	10,477	10,042	10,794	11,423
Spain	.....	.....	.....	.....	.....	.....	.....	5,373	10,156	2,517	1,805
United Kingdom	607,240	320,126	384,754	336,889	267,293	518,090	422,939	442,237	465,428	695,196	446,019
United States	345,694	283,834	275,452	602,427	595,170	714,050	838,080	876,420	963,783	932,313	642,722
West Indies	10,516	11,599	12,085	13,492	8,478	10,796	5,482	7,913	8,901	12,494	10,176
Foreign, unclassified	3,603	1,221	2,363	2,681	1,333	2,068	1,906	1,227	230	570	1,720
Totals	1,412,059	989,664	1,078,918	1,314,361	1,197,653	1,675,351	1,789,115	1,847,026	2,149,132	2,282,709	1,573,599

[1] Figures for 1956 to 1963, inclusive, are for Hong Kong only.

TOTAL AMOUNT OF TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING YEARS 1963 AND 1964 IN F.B.M.

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

Forest District	10-year Average, 1955–64	1963	1964	Increase	Decrease	Net Increase
Vancouver	3,610,774,804	4,246,691,460	4,392,978,408	146,286,948		
Prince Rupert (C.)	445,010,261	640,847,064	577,798,368		63,048,696	
Totals, Coast	4,055,785,065	4,887,538,524	4,970,776,776			83,238,252
Prince Rupert (I.)	271,369,917	394,162,098	412,424,707	18,262,609		
Prince George	831,400,389	1,079,231,863	1,165,780,823	86,548,960		
Kamloops	1,133,862,895	1,466,537,891	1,449,044,609		17,493,282	
Nelson	614,270,920	848,361,446	918,011,046	69,649,600		
Totals, Interior	2,850,904,121	3,788,293,298	3,945,261,185			156,967,887
Grand totals	6,906,689,186	8,675,831,822	8,916,037,961			240,206,139

TOTAL AMOUNT OF TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING YEARS 1963 AND 1964 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, 1955–64	1963	1964	Increase	Decrease	Net Increase
Vancouver	601,795,801	707,781,910	732,163,068	24,381,158		
Prince Rupert (C.)	74,168,376	106,807,844	96,299,728		10,508,116	
Totals, Coast	675,964,177	814,589,754	828,462,796			13,873,042
Prince Rupert (I.)	47,194,768	68,549,930	71,726,036	3,176,106		
Prince George	144,591,372	187,692,498	202,744,491	15,051,993		
Kamloops	197,193,547	255,050,068	252,007,758		3,042,310	
Nelson	106,829,725	147,541,121	159,654,095	12,112,974		
Totals, Interior	495,809,412	658,833,617	686,132,380			27,298,763
Grand totals	1,171,773,589	1,473,423,371	1,514,595,176			41,171,805

(54A)

SPECIES CUT, ALL PRODUCTS, 1964, CONVERTED TO F.B.M.

Forest District	Fir	Cedar	Spruce	Lodgepole Pine	Hemlock	Balsam	White Pine	Yellow Pine	Cypress	Larch	Hard-woods	Cotton-wood	Total
Vancouver	1,206,582,822	926,329,446	65,268,546	631,980	1,459,837,086	650,491,644	22,305,828	6,942	51,523,878		6,079,446	3,920,790	4,392,978,408
Prince Rupert (C.)	28,133,070	106,712,136	125,381,226	103,392	256,227,906	39,647,388			2,366,310		35,988	19,190,952	577,798,368
Totals, Coast	1,234,715,892	1,033,041,582	190,649,772	735,372	1,716,064,992	690,139,032	22,305,828	6,942	53,890,188		6,115,434	23,111,742	4,970,776,776
Prince Rupert (I.)		29,586,809	126,186,774	90,217,765	104,878,143	52,049,500					46,575	9,459,141	412,424,707
Prince George	98,099,617	923,899	830,382,921	212,258,829	20,251	22,302,220	171,868			6,118	44,769	1,570,331	1,165,780,823
Kamloops	867,478,885	35,190,909	300,398,406	107,133,643	27,487,375	34,147,646	11,827,094	50,019,388		14,777,293	548,970	35,000	1,449,044,609
Nelson	165,504,326	128,189,051	273,426,398	35,420,506	140,910,891	50,558,548	25,273,332	10,947,764		86,831,198	28,664	920,368	918,011,046
Totals, Interior	1,131,082,828	193,890,668	1,530,394,499	445,030,743	273,296,660	159,057,914	37,272,294	60,967,152		101,614,609	668,978	11,984,840	3,945,261,185
Grand totals	2,365,798,720	1,226,932,250	1,721,044,271	445,766,115	1,989,361,652	849,196,946	59,578,122	60,974,094	53,890,188	101,614,609	6,784,412	35,096,582	8,916,037,961

(54B)

SPECIES CUT, ALL PRODUCTS, 1964, IN CUBIC FEET

(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	Yellow Pine	Cypress	Larch	Hard-woods	Cotton-wood	Total
Vancouver	201,097,137	154,388,241	10,878,091	105,330	243,306,181	108,415,274	3,717,638	1,157	8,587,313		1,013,241	653,465	732,163,068
Prince Rupert (C.)	4,688,845	17,785,356	20,896,871	17,232	42,704,651	6,607,898			394,385		5,998	3,198,492	96,299,728
Totals, Coast	205,785,982	172,173,597	31,774,962	122,562	286,010,832	115,023,172	3,717,638	1,157	8,981,698		1,019,239	3,851,957	828,462,796
Prince Rupert (I.)		5,145,532	21,945,526	15,690,046	18,239,677	9,052,087					8,100	1,645,068	71,726,036
Prince George	17,060,803	160,678	144,414,421	36,914,579	3,522	3,878,647	29,890			1,064	7,786	273,101	202,744,491
Kamloops	150,865,893	6,120,158	52,243,201	18,631,938	4,780,413	5,938,721	2,056,886	8,699,024		2,569,964	95,473	6,087	252,007,758
Nelson	28,783,361	22,293,748	47,552,417	6,160,088	24,506,242	8,792,791	4,395,362	1,903,959		15,101,078	4,985	160,064	159,654,095
Totals, Interior	196,710,057	33,720,116	266,155,565	77,396,651	47,529,854	27,662,246	6,482,138	10,602,983		17,672,106	116,344	2,084,320	686,132,380
Grand totals	402,496,039	205,893,713	297,930,527	77,519,213	333,540,686	142,685,418	10,199,776	10,604,140	8,981,698	17,672,106	1,135,583	5,936,277	1,514,595,176

TOTAL SCALE OF ALL PRODUCTS BILLED IN 1964 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
Special timber licences	941,320,962	315,180	2,300	15,143,809	15,743,339	28,295,934	1,000,821,524
Timber berths	79,391,208				39,484,531	55,576,384	174,452,123
Timber leases	94,640,310						94,640,310
Pulp leases	53,937,024	18,984,342					72,921,366
Pulp licences	19,354,446	67,520,724					86,875,170
Farm wood-lots	334,758		42,148	663,849	185,725	202,377	1,428,857
Timber sales	1,302,922,356	233,141,958	281,602,305	1,003,189,948	1,021,112,422	504,153,445	4,346,122,434
No mark visible	128,808,642						128,808,642
Tree-farm licences	568,095,816	197,170,356	110,355,397	64,117,779	71,931,505	216,609,164	1,228,280,017
Miscellaneous	4,138,164	5,846,862	1,964,752	14,542,072	19,087,200	10,202,225	55,781,275
Sub-totals, Crown lands	3,192,943,686	522,979,422	393,966,902	1,097,657,457	1,167,544,722	815,039,529	7,190,131,718
Federal lands	20,131,686	14,086,998	2,662,779	251,062	53,769,187	4,318,181	95,219,893
Crown grants—							
To 1887	977,943,708		40,245	166,687	46,186,777	10,745,853	1,035,083,270
1887–1906	79,994,694	3,516,996	396,146	147,091	23,450,231	49,704,115	157,209,273
1906–1914	21,482,310	6,649,980	2,954,482	5,666,464	29,691,833	13,695,827	80,140,896
1914 to date	100,482,324	30,564,972	12,404,153	61,892,062	128,401,859	24,507,541	358,252,911
Totals	4,392,978,408	577,798,368	412,424,707	1,165,780,823	1,449,044,609	918,011,046	8,916,037,961

TOTAL SCALE OF ALL PRODUCTS BILLED IN 1964 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
Special timber licences	156,886,827	52,530	400	2,633,706	2,737,972	4,921,032	167,232,467
Timber berths	13,231,868				6,866,875	9,665,458	29,764,201
Timber leases	15,773,385						15,773,385
Pulp leases	8,989,504	3,164,057					12,153,561
Pulp licences	3,225,741	11,253,454					14,479,195
Farm wood-lots	55,793		7,330	115,452	32,300	35,196	246,071
Timber sales	217,153,726	38,856,993	48,974,314	174,467,817	177,584,769	87,678,860	744,716,479
No mark visible	21,468,107						21,468,107
Tree-farm licences	94,682,636	32,861,726	19,192,243	11,150,918	12,509,827	37,671,159	208,068,509
Miscellaneous	689,694	974,477	341,696	2,529,056	3,319,513	1,774,300	9,628,736
Sub-totals, Crown lands	532,157,281	87,163,237	68,515,983	190,896,949	203,051,256	141,746,005	1,223,530,711
Federal lands	3,355,281	2,347,833	463,092	43,663	9,351,163	750,988	16,312,020
Crown grants—							
To 1887	162,990,618		6,999	28,989	8,032,483	1,868,844	172,927,933
1887–1906	13,332,449	586,166	68,895	25,581	4,078,301	8,644,194	26,735,586
1906–1914	3,580,385	1,108,330	513,823	985,472	5,163,797	2,381,883	13,733,690
1914 to date	16,747,054	5,094,162	2,157,244	10,763,837	22,330,758	4,262,181	61,355,236
Totals	732,163,068	96,299,728	71,726,036	202,744,491	252,007,758	159,654,095	1,514,595,176

TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING 1964, BY MONTHS AND FOREST DISTRICTS

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Vancouver—													
F.b.m.	103,981,557	68,586,855	106,137,155	131,627,786	122,033,139	159,565,769	153,990,771	131,763,878	116,633,528	147,087,114	139,120,991	111,087,876	1,491,616,419
Cubic feet	24,013,615	24,661,287	29,806,551	37,986,407	40,206,541	44,600,016	43,692,037	44,871,072	47,122,583	51,960,772	44,101,356	36,713,014	469,735,251
Lineal feet	2,214,497	256,107	444,110	286,963	711,946	681,437	876,845	406,926	987,070	806,504	774,744	417,560	8,864,709
Cords	4,482	6,508	4,237	6,787	4,936	9,493	4,739	5,260	4,386	6,239	4,900	5,145	67,112
All products, cu. ft.	44,308,022	36,940,330	48,346,432	60,844,198	61,558,757	72,503,460	70,381,828	67,611,614	67,734,490	77,622,557	68,301,423	56,009,957	732,163,068
Prince Rupert (C.)—													
F.b.m.	3,656,277	4,907,474	8,696,961	10,618,615	9,078,580	13,168,005	10,995,549	13,315,017	13,634,657	8,660,394	19,438,991	8,258,584	124,429,104
Cubic feet	4,392,504	4,523,681	5,128,851	6,973,295	4,979,708	6,967,878	6,433,114	8,509,153	7,967,413	6,562,592	7,047,594	5,361,254	74,847,037
Lineal feet	7,810	16,972	1,970	45,877	67,080	238,755	28,985	84,040	147,306	71,175	80,070	39,133	829,173
Cords				53	13				8	93			167
All products, cu. ft.	5,012,037	5,363,657	6,580,906	8,807,013	6,581,308	9,341,611	8,287,444	10,791,352	10,351,186	8,068,702	10,347,478	6,767,034	96,299,728
Prince Rupert (I.)—													
F.b.m.	700,623	1,353,061	2,126,042	1,562,700	547,540	1,396,577	1,490,121	1,277,839	1,267,873	876,978	913,106	1,306,360	14,818,820
Cubic feet	6,250,899	9,090,210	10,204,869	9,371,499	3,145,944	2,193,299	3,339,682	3,826,706	7,367,015	5,346,163	3,419,082	3,806,787	67,362,155
Lineal feet	57,775	45,315	90,315	121,405	131,880	232,585	159,755	30,545	365,474	35,355	443,835	105,520	1,819,759
Cords	130		2,576		112	100	115	83	2,153	190	100	60	5,619
All products, cu. ft.	6,417,118	9,358,261	10,847,121	9,734,327	3,349,038	2,616,215	3,725,974	4,078,930	8,027,601	5,537,897	3,915,634	4,117,920	71,726,036
Prince George—													
F.b.m.	3,964,724	7,097,860	9,470,666	9,819,180	1,900,182	1,054,192	2,430,883	2,585,896	2,314,560	3,183,217	2,943,289	1,845,334	48,609,983
Cubic feet	23,663,766	37,080,329	36,421,949	33,013,797	5,566,820	3,369,561	8,174,824	11,361,221	11,136,258	9,193,974	8,102,802	6,853,680	193,938,981
Lineal feet	6,263	38,320	7,750	56,583	2,285	9,250	21,250	56,690	27,500	48,905	32,755	30,319	337,870
Cords	4		59	414	70	64	74	73	28	75	90	34	985
All products, cu. ft.	24,358,340	38,343,480	38,080,644	34,805,231	5,906,014	3,566,189	8,620,913	11,860,811	11,562,231	9,791,601	8,648,294	7,200,743	202,744,491
Kamloops—													
F.b.m.	11,227,734	10,055,210	11,472,202	10,057,742	5,420,804	12,678,231	19,279,051	16,915,079	14,606,435	13,834,415	8,910,377	11,494,594	145,951,874
Cubic feet	21,239,596	23,929,601	25,160,064	19,668,646	7,624,921	11,016,966	16,374,995	20,781,557	20,218,918	18,209,258	19,404,682	20,711,364	224,340,568
Lineal feet	270,465	80,081	49,858	110,775	35,760	59,767	410,888	249,765	197,382	295,272	101,725	326,900	2,188,638
Cords	568	244	1,520	678	216	428	616	406	1,041	308	652	709	7,386
All products, cu. ft.	23,435,005	25,760,369	27,344,632	21,568,651	8,615,698	13,301,809	20,080,684	23,949,458	22,997,757	20,861,768	21,090,798	23,001,129	252,007,758
Nelson—													
F.b.m.	3,809,362	6,326,872	6,027,861	5,251,119	7,264,841	3,531,152	3,036,275	8,281,221	7,021,650	9,696,362	8,050,634	9,017,256	77,314,605
Cubic feet	9,947,531	10,324,576	10,601,911	9,963,239	10,593,551	9,697,650	9,143,651	8,623,439	11,339,683	15,950,782	15,389,894	21,204,793	142,780,700
Lineal feet	270,943	279,230	150,888	137,752	367,997	23,580	331,939	252,377	209,144	536,036	334,780	731,021	3,625,687
Cords	644	570	756	770	1,545	376	998	839	930	1,817	1,472	881	11,598
All products, cu. ft.	10,773,509	11,682,712	11,830,170	11,054,715	12,245,158	10,366,200	9,993,084	10,293,363	12,762,510	18,122,760	17,175,045	23,354,869	159,654,095
Totals—													
F.b.m.	127,340,277	98,327,332	143,930,887	168,937,142	146,245,086	191,393,926	191,222,650	174,138,930	155,478,703	183,338,480	179,377,388	143,010,004	1,902,740,805
Cubic feet	89,507,911	109,609,684	117,324,195	116,976,883	72,117,485	77,845,370	87,158,303	97,973,148	105,151,870	107,223,541	97,465,410	94,650,892	1,173,004,692
Lineal feet	2,827,753	716,025	744,891	759,355	1,316,948	1,245,374	1,829,662	1,080,343	1,933,876	1,793,247	1,767,909	1,650,453	17,665,836
Cords	5,828	7,322	9,148	8,702	6,892	10,461	6,542	6,661	8,546	8,722	7,214	6,829	92,867
All products, cu. ft.	114,304,031	127,448,809	143,029,905	146,814,135	98,255,973	111,695,484	121,089,927	128,585,528	133,435,775	140,005,285	129,478,672	120,451,652	1,514,595,176

VOLUME OF WOOD REMOVED UNDER RELOGGING AT REDUCED ROYALTY AND STUMPAGE, 1955–64, IN THOUSANDS OF CUBIC FEET

(57) (1955–63—Vancouver Forest District only. 1964—Vancouver and Prince Rupert.)

Year	Salvage Wood (M Cu. Ft.)	Year	Salvage Wood (M Cu. Ft.)
1955	1,209	1960	1,976
1956	1,795	1961	1,813
1957	3,663	1962	2,580
1958	1,427	1963	3,217
1959	1,257	1964	5,224[1]

[1] Prince Rupert, 901 M cu. ft.

Ten-year average, 1955–64, 2,416 M cu. ft.

(58) NUMBER OF ACRES OPERATING UNDER APPROVED ANNUAL ALLOWABLE CUTS, 1955–64

Year	Tree-farm Licences		Tree-farms[1]		Christmas-tree Permits		Farm Wood-lots		Public Sustained-yield Units[3]		Total Acres
	Number	Productive Acres	Number	Productive Acres	Number	Productive Acres[2]	Number	Productive Acres	Number	Productive Acres	
1955	23	4,685,492	10	60,884	209	72,603	29	6,455	33	9,328,447	14,081,278
1956	23	4,680,846	11	61,041	221	76,457	37	8,320	47	21,667,410	26,417,617
1957	23	4,871,237	15	305,193	283	80,651	44	10,488	58	28,820,776	34,007,694
1958	27	5,349,773	26	499,681	277	83,500	53	13,108	61	32,389,893	38,252,455
1959	36	5,851,979	26	503,200	279	83,210	50	12,059	64	34,606,543	40,973,781
1960	37	6,081,496	25	507,581	294	89,224	52	12,375	72	40,257,302	46,858,754
1961	39	7,017,594	22	545,164	282	96,478	50	11,993	78	46,203,742	53,778,493
1962	39	7,054,191	22	665,666	306	106,966	57	14,940	80	48,940,122	56,674,919
1963	39	7,070,774	25	672,712	346	123,538	53	14,124	82	52,530,686	60,288,296
1964	39	7,146,685	28	682,553	348	119,911	55	14,950	83	60,960,307	68,804,495
Ten-year average, 1955–64	33	5,981,007	21	450,367	285	93,254	48	11,881	66	37,570,523	44,013,778

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

(59)

TOTAL SCALE OF ALL PRODUCTS FROM AREAS OPERATED UNDER APPROVED ANNUAL ALLOWABLE CUTS, 1955–64

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	
1955	23	69,715,422	10	1,834,000	209	301,319	.....	29	64,482	33	115,091,229	186,705,133
1956	23	121,869,721	11	862,000	221	430,447	3,403	37	92,124	47	188,463,981	311,287,826
1957	23	125,622,175	15	23,527,000	283	498,286	2,500	44	70,116	58	207,892,534	357,111,825
1958	27	144,260,543	26	27,593,000	277	408,874	2,700	53	139,396	61	254,876,246	426,869,185
1959	36	178,742,435	26	30,308,000	279	398,504	297,691	50	205,676	64	312,048,987	521,305,098
1960	37	241,410,459	25	32,683,000	294	495,697	349,513	52	92,168	72	385,200,000	659,385,627
1961	39	279,917,294	22	27,842,000	282	434,796	323,254	50	244,577	78	454,029,600	762,033,471
1962	39	337,057,599	22	35,678,000	306	552,512	153,618	57	277,701	80	527,054,000	900,067,300
1963	39	365,631,639	25	33,305,000	346	617,753	220,393	53	263,678	82	633,193,000	1,032,393,317
1964	39	350,806,403	28	34,543,000	348	511,726	395,168	55	258,552	83	607,641,611	993,244,566
Ten-year average, 1955–64	33	221,503,369	21	24,817,500	285	464,991	174,824	48	170,347	66	368,549,118	615,040,335

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

(60) LOGGING INSPECTIONS, 1964

Forest District	Type of Tenure Operated			Number of Inspections Made		
	Timber Sales	Leases, Licenses, Crown Grants, and Other Tenures	Total	Timber Sales	Other Tenures	Total
Vancouver	1,228	1,600	2,828	4,654	3,727	8,381
Prince Rupert	609	305	914	2,631	692	3,323
Prince George	1,653	2,084	3,737	4,474	5,508	9,982
Kamloops	1,862	1,609	3,471	3,565	1,442	5,007
Nelson	1,205	962	2,167	2,465	1,942	4,407
Totals, 1964	6,557	6,560	13,117	17,789	13,311	31,100
Totals, 1963	6,926	7,168	14,094	18,021	7,189	25,210
Totals, 1962	7,079	6,645	13,724	18,602	6,353	24,955
Totals, 1961	7,088	6,463	13,551	18,330	6,242	24,572
Totals, 1960	7,249	5,120	12,369	(1)	(1)	26,151
Totals, 1959	6,273	4,898	11,171	(1)	(1)	26,912
Totals, 1958	5,936	4,341	10,277	(1)	(1)	23,802
Totals, 1957	7,503	5,940	13,443	(1)	(1)	25,253
Totals, 1956	7,492	5,841	13,333	(1)	(1)	22,038
Totals, 1955	6,818	4,676	11,494	(1)	(1)	22,355
Ten-year average, 1955–64	6,892	5,765	12,657	———	———	25,235

1 No breakdown made prior to 1961.

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, Car-stakes	Posts	Reserved Trees		
Vancouver	145	590	2,004,019	1,780	143	.....	112	447,871	150	.....	9	$199,774.39
Prince Rupert	54	228	138,658	15,335	98	.....	.....	27	.....	226	.....	10,271.63
Prince George	78	282	373,686	.....	.....	.....	.....	.....	.....	883	.....	21,103.03
Kamloops	125	1,020	309,099	2,260	42	.....	4,319	.....	750	1,699	.....	40,996.81
Nelson	62	368	197,913	36,875	22	.....	2,293	5,340	.....	180	2	12,651.61
Totals, 1964	464	2,488	3,023,375	56,250	305	.....	6,724	453,238	900	2,988	11	$284,797.47
Totals, 1963	546	3,761	4,085,328	36,401	3,494	.....	10,995	17,938	2,233	2,145	13	$257,136.75
Totals, 1962	524	4,210	4,174,109	78,879	790	2,125	8,141	57,600	3,412	1,048	7	$217,146.45
Totals, 1961	517	4,953	3,531,505	141,904	2,319	.....	9,239	164,415	179	1,038	10	$190,547.22
Totals, 1960	533	4,588	3,438,931	129,420	1,339	73	11,698	67,865	900	2,702	11	$240,494.65
Totals, 1959	627	6,668	2,841,015	117,043	5,814	3,473	26,398	133,363	7,149	2,922	13	$221,192.64
Totals, 1958	513	6,435	4,100,971	126,127	608	2,661	14,897	21,924	765	.....	13	$221,931.11
Totals, 1957	668	8,032	4,949,784	386,520	6,545	2,071	7,666	664,569	22,814	.....	15	$380,057.83
Totals, 1956	630	7,744	5,692,862	384,231	1,321	1,367	14,794	177,559	28,573	.....	5	$489,065.90
Totals, 1955	499	6,098	4,218,705	458,426	1,607	963	14,100	66,975	5,607	.....	4	$212,183.49
Ten-year average, 1955–64	552	5,498	4,005,658	191,520	2,414	1,273	12,465	182,545	7,253	1,284	10	$271,455.35

AREAS EXAMINED BY THE FOREST SERVICE FOR MISCELLANEOUS PURPOSES OF THE LAND ACT, 1964

(62)

Forest District	Applications for Foreshore Leases		Applications to Purchase		Miscellaneous		Total	
	Number	Acres	Number	Acres	Number	Acres	Number	Acres
Vancouver	25	473	1	15	9	23	35	511
Prince Rupert	14	213	9	211	15	449	38	873
Totals	39	686	10	226	24	472	73	1,384

AREAS CRUISED FOR TIMBER SALES, 1964

(63)

Forest District	Number Cruised	Acreage	Saw-timber (M C.F.)	Pit-props, Poles, and Piles (Lin. Ft.)	Shingle-bolts and Cord-wood (Cords)	Railway-ties (No.)	Car-stakes, Posts, Shakes, etc. (No.)
Vancouver	509	112,796	256,391	4,000	12,816	.....	316,200
Prince Rupert	231	63,591	145,638	833	7,345	.....	.....
Prince George	338	166,420	297,649	2,500	634	.....	104,670
Kamloops	405	200,173	293,635	1,949,000	2,258	.....	7,650
Nelson	226	118,841	114,115	987,671	2,101	.....	50,000
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	24,000	1,395,285
Totals, 1960	2,122	767,351	1,142,479	8,807,614	29,050	13,809	1,405,370
Totals, 1959	2,317	681,550	877,370	7,387,960	27,753	26,875	1,124,400
Totals, 1958	1,922	609,563	890,285	8,772,888	24,316	34,430	1,146,719
Totals, 1957	2,582	781,748	1,171,283	16,099,489	39,254	95,209	1,149,133
Totals, 1956	3,089	1,095,150	1,273,970	13,981,856	44,287	128,432	1,916,510
Totals, 1955	3,354	1,077,986	1,131,521	9,885,451	16,819	145,525	501,820
Ten-year average, 1955–64	2,272	772,751	1,070,926	9,796,279	27,329	46,828	1,033,930

TIMBER-SALE RECORD, 1964

(64)

Forest District	Sales Made	Sales Closed	Total Sales Existing	Total Area (Acres)	Area Paying Forest-protection Tax (Acres)	Total 10-per-cent Deposit
Vancouver	583	533	1,731	611,899	569,358	$6,353,607.60
Prince Rupert	267	231	1,043	411,122	377,886	1,679,922.70
Prince George	404	360	1,242	689,799	604,131	2,526,772.55
Kamloops	450	415	1,643	1,007,911	970,585	3,676,938.76
Nelson	192	167	664	612,941	573,107	1,982,985.30
Totals	1,896	1,706	6,323	3,333,672	3,095,067	$16,220,226.91
Cash sales	385	.....	.....	.....	.....	.....
Total sales	2,281	.....	.....	.....	.....	.....

	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	505	86.6	64	11.0	14	2.4	583	1	584	157,075	73.6	50,759	23.8	5,499	2.6	213,333
Prince Rupert	225	84.3	42	15.7	.....	.....	267	36	303	92,452	90.4	9,823	9.6	.....	.....	102,275
Prince George	385	95.3	14	3.5	5	1.2	404	45	449	198,657	90.5	2,588	1.2	18,276	8.3	219,521
Kamloops	424	94.2	18	4.0	8	1.8	450	184	634	252,192	95.9	4,411	1.7	6,209	2.4	262,812
Nelson	184	95.8	4	2.1	4	2.1	192	119	311	97,729	97.7	1,555	1.6	701	.7	99,985
Totals, 1964	1,723	90.9	142	7.5	31	1.6	1,896	385	2,281	798,195	88.9	69,136	7.7	30,685	3.4	897,926
Totals, 1963	1,518	88.7	156	9.1	38	2.2	1,712	471	2,183	669,382	87.1	51,781	6.7	47,615	6.2	768,778
Totals, 1962	1,523	90.7	118	7.0	38	2.3	1,679	312	1,991	544,893	88.3	56,863	9.2	15,200	2.5	616,956
Totals, 1961	1,715	92.3	85	4.6	57	3.1	1,857	282	2,139	795,853	91.1	39,578	4.5	38,102	4.4	873,533
Totals, 1960	1,659	90.0	117	6.4	67	3.6	1,843	295	2,138	539,999	78.6	74,569	10.8	72,753	10.6	687,321
Totals, 1959	1,683	87.4	139	7.2	104	5.4	1,926	234	2,160	530,298	71.7	108,941	14.7	100,104	13.6	739,343
Totals, 1958	1,720	90.5	110	5.8	70	3.7	1,900	245	2,145	552,647	81.0	93,346	13.7	36,134	5.3	682,127
Totals, 1957	2,074	92.6	120	5.4	45	2.0	2,239	305	2,544	567,378	91.6	42,735	6.9	9,247	1.5	619,360
Totals, 1956	2,303	87.9	248	9.5	69	2.6	2,620	239	2,859	605,031	75.4	139,594	17.4	57,827	7.2	802,452
Totals, 1955	2,735	87.4	267	8.5	128	4.1	3,130	248	3,378	560,997	73.3	144,814	19.0	59,033	7.7	764,844
Ten-year average, 1955–64	1,865	89.7	150	7.2	65	3.1	2,080	302	2,382	616,458	82.7	82,136	11.0	46,670	6.3	745,264

(66)

TIMBER SALES AWARDED BY FOREST DISTRICTS, 1964

Forest District	No. of Sales	Acreage	Sawtimber (Cu. Ft.)	Saw-timber (F.B.M.)	Poles and Piling (Lin. Ft.)	No. of Posts	No. of Cords	No. of Ties	No. of Christmas Trees	No. of Carstakes	No. of Blasting-sticks	No. of Cedar Shakes	No. of Fence Rails and Palings	Estimated Revenue
Vancouver	584	101,935	213,333,000		152,500	3,453	12,060							$13,886,810.75
Prince Rupert	303	71,144	102,274,519		3,971,971	2,000	7,025		387	1,500		40,000		3,341,277.10
Prince George	449	141,668	219,520,765		37,830	64,654	175							6,256,894.42
Kamloops	634	196,193	262,812,500		1,412,850	82,140	12,918			10,000			500	10,330,613.72
Nelson	311	95,648	99,985,190		1,410,604	97,751	2,260					464,600		3,393,796.29
Totals, 1964	2,281	606,588	897,925,974		6,985,755	249,998	34,438		387	11,500		504,600	500	$37,209,392.28
Totals, 1963	2,183	534,569	768,778,307		4,123,192	501,980	16,300		1,155	9,800		172,950	3,180	$26,194,611.24
Totals, 1962	1,991	437,864	616,956,200		15,700,256	439,058	12,696			10,442		272,000	220,930	$18,959,259.42
Totals, 1961	2,139	746,644	873,533,841		9,898,830	1,046,724	22,988		725	7,750		332,758	2,000	$22,599,089.53
Totals, 1960	2,138	612,482	687,324,482		7,190,459	397,328	20,934	32,849	425	17,850		850,000	1,870	$24,872,154.78
Totals, 1959	2,160	642,682	739,347,750		5,795,626	1,295,896	13,088	45,580		7,000		162,000	400	$29,823,289.07
Totals, 1958	2,145	617,467	682,221,469		8,696,222	958,690	11,822	35,334	100	13,300		20,900	900	$20,517,298.67
Totals, 1957	2,544	655,310	617,155,900		12,743,369	1,116,375	16,659	165,210		10,500	3,000	80,330		$24,680,864.98
Totals, 1956	2,859	870,171	802,425,430		13,600,600	799,427	12,214	150,581		3,200		71,360		$55,943,757.66
Totals, 1955	3,378	923,230	764,812,540	8,356,000	10,765,982	757,890	22,590	156,077	300	1,000	45,000	110,400	1,951	$40,507,422.12
Ten-year average, 1955–64	2,382	664,701	745,048,189		9,550,029	756,337	18,373			9,234		257,730		$30,130,713.98

AVERAGE STUMPAGE PRICES, AS BID, BY SPECIES AND FOREST DISTRICTS, ON TIMBER SALES DURING 1964, PER HUNDRED CUBIC FEET LOG SCALE

Forest District	Douglas Fir			Cedar			Spruce			Hemlock			Balsam		
	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.
Vancouver (C.)	36,728	$12.83	$4.80–41.20	53,317	$5.77	$1.60–22.80	1,665	$6.30	$3.60–12.70	69,323	$5.21	$1.60–26.50	46,091	$4.50	$0.60–18.00
Vancouver (I.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prince Rupert (C.)	2,659	10.11	3.60–12.00	6,322	2.34	0.20– 6.30	6,147	5.71	1.10–10.20	14,985	4.67	0.20– 9.60	5,009	1.69	0.20– 4.10
Prince Rupert (I.)	.....	.....	.....	4,186	3.01	2.20– 5.40	22,048	2.72	0.30– 5.90	16,350	2.36	1.30– 5.00	9,703	1.77	0.80– 4.50
Prince George	10,768	5.90	0.90–11.50	297	1.38	1.30– 2.60	166,395	2.82	0.20–10.00	2	2.10	2.10	6,217	1.91	0.20– 3.70
Kamloops	164,965	4.25	0.90–24.60	3,760	5.64	0.25–24.30	51.284	3.68	0.60–24.00	2,483	2.49	0.25– 5.30	9,700	2.62	0.60–16.10
Nelson	17,634	5.29	0.20–12.00	4,502	2.69	0.20– 5.70	43,570	2.46	0.25– 4.60	4,016	2.91	0.20–12.00	11,541	1.53	0.20– 3.50
Totals for Province	232,754	$5.82	$0.20–41.20	72,384	$5.09	$0.20–24.30	291,109	$2.99	$0.20–24.00	107,159	$4.55	$0.20–26.50	88,261	$3.26	$0.20–18.00

Forest District	White Pine			Lodgepole Pine[1]			Larch			Other Species			All Species		
	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.
Vancouver (C.)	357	$3.39	$3.00–16.50	.....	.....	.....	.....	.....	.....	5,852	$4.04	$1.50–11.10	213,333	$6.48	$0.60–41.20
Vancouver (I.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prince Rupert (C.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	445	3.01	0.20– 9.20	35,567	4.40	0.20–12.00
Prince Rupert (I.)	.....	.....	.....	13,890	$2.37	$0.20– 5.30	.....	.....	.....	531	2.91	0.20– 5.30	66,708	2.44	0.20– 5.90
Prince George	.....	.....	.....	33,717	2.33	0.20– 8.00	.....	.....	.....	2,125	1.67	0.20– 5.80	219,521	2.86	0.20–11.50
Kamloops	550	11.20	4.50–18.90	25,390	2.07	0.60– 6.60	1,400	$6.27	$2.70– 9.40	3,280	2.56	0.55– 7.90	262,812	3.87	0.25–24.60
Nelson	1,486	9.25	0.25–17.40	7,663	2.37	0.20– 4.20	8,816	5.81	0.20–10.50	757	2.18	0.20– 7.60	99,985	3.27	0.20–17.40
Totals for Province	2,393	$8.83	$0.25–18.90	80,660	$2.26	$0.20– 8.00	10,216	$5.87	$0.20–10.50	12,990	$3.09	$0.20–11.10	897,926	$4.09	$0.20–41.20

[1] Yellow pine has been replaced in this table by lodgepole pine.

AVERAGE STUMPAGE PRICES RECEIVED, BY SPECIES AND FOREST DISTRICTS, ON SAW-TIMBER ON TREE-FARM LICENCE CUTTING PERMITS ISSUED IN 1964

(68)

Forest District	Douglas Fir			Cedar			Spruce			Hemlock			Balsam		
	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.
Vancouver	12,396	$13.52	$4.30–19.10	20,543	$6.01	$2.40–11.00	1,767	$5.97	$2.30–10.40	38,129	$5.33	$2.50–11.30	18,204	$4.13	$2.30– 8.40
Prince Rupert (C.)	.....	.....	.....	2,088	2.82	2.00– 3.60	3,362	6.68	3.10– 8.30	8,623	2.84	2.20– 3.90	816	2.45	2.00– 2.90
Prince Rupert (I.)	.....	.....	.....	2,200	2.40	2.00– 3.40	2,471	2.51	2.20– 2.60	7,699	2.51	2.10– 2.60	1,820	2.27	2.00– 2.30
Prince George	1,457	3.45	0.55– 8.20	.....	.....	.....	9,659	2.35	0.85– 4.40	.....	.....	.....	366	1.58	0.55– 2.50
Kamloops	3,817	4.12	1.80– 8.80	72	1.10	0.25– 2.10	5,714	1.87	1.40– 2.60	124	1.67	0.25– 3.10	654	0.97	0.90– 1.80
Nelson	2,900	5.57	0.50–10.30	4,313	0.53	0.25– 6.00	5,784	2.11	0.70– 3.80	6,713	1.14	0.25– 6.20	1,738	1.22	0.25– 2.10
Totals for Province	20,570	$9.94	$0.50–19.10	29,216	$4.69	$0.25–11.00	28,757	$2.95	$0.70–10.40	61,288	$4.16	$0.25–11.30	23,598	$3.59	$0.25– 8.40

Forest District	White Pine			Lodgepole Pine[1]			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	285	$4.30	$2.50– 6.80	.....	.....	.....	.....	.....	.....	872	$5.40	$2.30– 8.20	92,196	$6.36	$2.30–19.10
Prince Rupert (C.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	226	3.00	2.00– 3.10	15,115	3.67	2.00– 8.30
Prince Rupert (I.)	.....	.....	.....	421	$2.04	$2.00– 2.10	.....	.....	.....	1,304	3.00	2.00– 3.00	15,915	2.49	2.00– 3.40
Prince George	.....	.....	.....	260	2.33	0.90– 2.80	.....	.....	.....	.....	.....	.....	11,742	2.46	0.55– 8.20
Kamloops	16	12.84	12.00–14.60	1,488	1.47	1.20– 3.60	261	$5.47	$2.20– 5.70	251	1.50	1.40– 2.40	12,397	2.54	0.25–14.60
Nelson	931	11.98	6.00–16.60	823	1.77	0.50– 3.80	1,294	5.42	0.50– 9.20	8,441	0.26	0.25– 2.40	32,937	1.89	0.25–16.60
Totals for Province	1,232	$10.21	$2.50–16.60	2,992	$1.71	$0.50– 3.80	1,555	$5.43	$0.50– 9.20	11,094	$1.07	$0.25– 8.20	180,302	$4.46	$0.25–19.10

[1] Yellow pine has been replaced in this table by lodgepole pine.

Forest District	Cubic Feet	Board-feet	Lineal Feet	Cords	Ties	Posts	Christmas Trees	Hop-poles	Stakes and Sticks	Car-stakes	Fence Rails, Palings	An-chor-blocks	Shingle Shakes	Shake Blanks
Vancouver	210,779,079	25,193,818	552,884	3,912	.....	9,433	.....	.....	.....	.....	.....	.....	6,274,961	685,620
Prince Rupert (C.)	38,170,658	1,310	795,496	58	.....	.....	.....	.....	.....	.....	.....	.....	40,000	.....
Prince Rupert (I.)	47,770,094	955,094	827,427	5,629	.....	.....	137	.....	.....	2,865	.....	.....	.....	.....
Prince George	173,680,448	2,843,961	284,972	332	.....	45,807	.....	.....	.....	.....	.....	.....	.....	.....
Kamloops	173,899,473	11,520,552	1,528,420	5,489	.....	41,005	.....	.....	.....	230	.....	.....	57,960	.....
Nelson	85,390,281	2,128,389	1,851,122	3,627	.....	307,190	482,865	.....	.....	207	9,260	.....	.....	42,563
Totals, 1964	729,684,953	42,643,124	5,840,321	19,047	.....	403,435	483,002	.....	.....	3,302	9,260	.....	6,379,921	728,183
Totals, 1963	713,287,016	51,131,178	7,811,867	15,217	1,913	500,287	485,637	.....	.....	5,643	88,721	.....	4,679,585	655,827
Totals, 1962	645,464,932	71,557,831	7,803,821	11,621	625	530,504	354,763	11,818	.....	6,210	29,840	.....	4,678,254	503,049
Totals, 1961	575,338,601	117,488,982	10,403,972	8,362	25,761	564,443	500,764	9,496	.....	6,873	.....	.....	4,622,529	776,010
Totals, 1960	574,578,669	95,002,548	9,065,920	9,071	97,639	504,996	397,353	35,800	.....	4,056	.....	.....	7,323,265	644,490
Totals, 1959	539,033,503	99,187,243	6,756,635	9,551	114,056	709,633	339,598	10,738	.....	2,448	.....	22	6,214,428	986,461
Totals, 1958	441,192,089	160,011,288	7,935,015	8,641	48,419	667,907	479,657	.....	.....	2,298	.....	18	3,546,527	922,900
Totals, 1957	392,306,642	281,403,429	25,475,664	44,489	304,329	844,246	562,658	3,360	9,335	11,640	.....	.....	11,618,566	3,890,503
Totals, 1956	423,459,495	501,950,576	11,426,509	13,529	308,076	607,528	268,945	.....	.....	1,954	.....	.....	5,943,124	1,040,496
Totals, 1955	360,046,248	707,975,332	10,646,201	19,839	158,748	712,813	313,820	.....	45,000	3,971	.....	610	5,966,313	1,196,178
Ten-year average, 1955–64	539,439,715	212,835,153	10,316,592	15,937	105,957	604,579	418,620	7,121	5,434	4,840	12,782	65	6,096,551	1,134,410

(70)

SAW AND SHINGLE MILLS OF THE PROVINCE, 1964

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	170	7,465	70	51	43	638	67	203	----	----
Prince Rupert	165	2,216	4	4	1	2	85	420	1	3
Prince George	450	7,987	----	----	----	----	223	1,545	----	----
Kamloops	428	7,674	16	20	15	36	56	274	1	1
Nelson	204	3,523	7	7	2	4	82	593	4	14
Totals, 1964	1,417	28,865	97	82	61	680	513	3,035	6	18
Totals, 1963	1,541	29,339	----	----	69	1,003	502	3,490	9	65
Totals, 1962	1,627	28,234	----	----	33	591	512	3,217	14	92
Totals, 1961	1,778	29,025	----	----	60	917	559	3,613	9	49
Totals, 1960	1,938	29,432	----	----	44	950	558	3,381	17	93
Totals, 1959	2,005	28,280	----	----	65	1,138	587	3,975	6	23
Totals, 1958	2,010	27,694	----	----	56	1,141	586	4,007	9	37
Totals, 1957	2,255	26,752	----	----	58	1,390	514	3,124	10	121
Totals, 1956	2,435	29,080	----	----	66	1,381	390	2,013	8	15
Totals, 1955	2,489	28,016	----	----	92	1,804	404	2,285	3	19
Ten-year average, 1955–64	1,950	28,472	----	----	58	1,100	513	3,139	9	53

[1] Figures not available prior to 1964.

(71) EXPORT OF LOGS (IN F.B.M.), 1964

Species	Grade No. 1	Grade No. 2	Grade No. 3	Ungraded	Fuel-logs	Total
Fir	.....	212,599	429,094	.....	.....	641,693
Cedar	11,426	39,599	201,988	.....	.....	253,013
Spruce	2,519,166	9,179,035	12,221,384	.....	762	23,920,347
Hemlock	167,353	2,250,489	8,473,331	.....	62,581	10,953,754
Balsam	.....	.....	.....	3,354,079	21,491	3,375,570
Lodgepole pine	.....	.....	1,612	.....	.....	1,612
Cypress	1,040,432	2,421,785	7,770,484	.....	.....	11,232,701
Hardwood	.....	.....	.....	815	.....	815
Cottonwood	10,000	487,026	1,691,717	385,969	.....	2,574,712
Totals, 1964	3,748,377	14,590,533	30,789,610	3,740,863	84,834	52,954,217[1]
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
Totals, 1957	524,180	3,987,443	22,016,291	5,625,910	3,421,354	35,575,178
Totals, 1956	183,859	2,933,129	27,433,037	12,929,722	3,530,479	47,010,226
Totals, 1955	906,141	7,468,949	58,863,477	16,974,165	4,754,796	88,967,528
Ten-year average, 1955–64	2,443,529	9,663,780	35,269,927	9,441,199	2,239,825	59,058,260

[1] Of this total, 28,446,668 f.b.m. were exported from Crown-granted lands carrying the export privilege; 24,507,549 f.b.m. were exported under permit from other areas.

(72) SHIPMENTS OF POLES AND OTHER MINOR PRODUCTS, 1964

Forest District and Product	Quantity Exported	Approximate Value, F.O.B.	Where Marketed		
			United States	Canada	Other Countries
Vancouver—					
Poles lin. ft	5,171,912	$2,781,057.45	561,525	3,913,186	697,201
Piling ,,	1,354,842	478,838.76	232,129	35,489	1,087,224
Fence-posts pieces	3,064	919.20	.....	3,064	.....
Cedar shakes ,,	33,692,484	2,695,398.72	.....	33,615,702	76,782
Shake blanks ,,	20,000	3,000.00	20,000	.....	.....
Christmas trees ,,	31,020	40,842.00	.....	31,020	.....
Pulpwood cords	4	88.00	.....	4	.....
Prince Rupert—					
Poles lin. ft	2,614,920	993,669.60	1,045,968	1,568,952	.....
Prince George—					
Poles lin. ft	26,440	10,600.40	4,800	21,640	.....
Piling ,,	16,473	5,930.28	16,473	.....	.....
Fence-posts pieces	27,799	6,393.77	27,799	.....	.....
Christmas trees ,,	275	453.75	.....	275	.....
Kamloops—					
Cedar poles lin. ft	1,133,945	362,862.40	695,848	438,097	.....
Poles and piling ,,	17,090	4,272.50	17,090	.....	.....
Posts cords	865	34,600.00	865	.....	.....
Christmas trees pieces	460,991	276,594.60	25,004	435,987	.....
Nelson—					
Poles and piling lin. ft	1,547,490	693,472.00	758,735	788,755	.....
Mine timbers ,,	52,353	6,282.00	52,353	.....	.....
Orchard-props ,,	175,300	5,259.00	.....	175,300	.....
Corral-rails ,,	47,844	478.00	47,844	.....	.....
Fence-posts cords	2,983	149,150.00	2,438	545	.....
Shingle-bolts ,,	21	525.00	21	.....	.....
Mine-props ,,	18	144.00	18	.....	.....
Christmas trees pieces	1,147,133	917,706.00	160,599	986,534	.....
Cedar shake blanks ,,	630,957	100,953.00	22,380	608,577	.....
Palings and pickets ,,	179,302	21,516.00	51,517	127,785	.....
Total value, 1964	.....	$9,591,006.43	.....	.....	.....
Total value, 1963	.....	$11,378,235.23	.....	.....	.....

(73) SUMMARY OF EXPORT OF MINOR PRODUCTS FOR PROVINCE, 1964

Product	Quantity	Value	Per Cent of Total Value
Poles lin. ft.	8,947,217	$4,148,189.85	43.2508
Piling ,,	1,371,315	484,769.04	5.0544
Other poles and piling ,,	1,564,580	697,744.50	7.2750
Mine timbers ,,	52,353	6,282.00	0.0655
Orchard-props ,,	175,300	5,259.00	0.0548
Corral-rails ,,	47,844	478.00	0.0050
Cedar shakes pieces	33,692,484	2,695,398.72	28.1034
Shake blanks ,,	650,957	103,953.00	1.0839
Christmas trees ,,	1,639,419	1,235,596.35	12.8829
Palings and pickets ,,	179,302	21,516.00	0.2243
Fence-posts ,,	30,863	7,312.97	0.0762
Fence-posts cords	3,848	183,750.00	1.9159
Pulpwood ,,	4	88.00	0.0009
Mine-props ,,	18	144.00	0.0015
Shingle-bolts ,,	21	525.00	0.0055
Total value	.....	$9,591,006.43	100.0000

(74) TIMBER MARKS ISSUED, 1955–64

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	10-year Average, 1955–64
Old Crown grants	609	480	320	215	299	315	268	300	313	356	348
Crown grants, 1887–1906	218	207	108	93	103	115	121	150	125	148	139
Crown grants, 1906–1914	171	172	97	93	125	123	121	164	161	164	139
Section 58, *Forest Act*	653	655	460	362	524	517	470	589	608	672	551
Stumpage reservations	95	82	59	89	108	116	117	109	141	149	107
Pre-emptions	2	6	1	.....	.....	1	3	9	13	7	4
Timber berths	10	10	7	7	9	4	4	12	12	9	8
Indian reserves	31	46	23	9	21	15	8	20	18	27	22
Timber sales	3,130	2,859	2,239	1,900	1,926	2,136	2,141	1,991	2,183	2,281	2,279
Hand-loggers	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Special marks and rights-of-way	43	71	74	80	85	113	91	90	97	121	87
Pulp leases	6	1	1	7	1	1	5	5	.....	.....	3
Pulp licences	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
Totals	4,968	4,589	3,389	2,855	3,201	3,456	3,349	3,441	3,671	3,934	3,687
Transfers and changes of marks	867	873	615	598	669	794	691	809	725	802	744

(81) GRAZING PERMITS ISSUED

District	Number of Permits Issued	Number of Stock under Permit		
		Cattle	Horses	Sheep
Kamloops	1,322	139,666	3,816	18,307
Nelson	467	21,396	1,212	1,808
Prince George	310	12,535	1,203	2,363
Vancouver	5	80	.....	.....
Totals, 1964	2,104	173,677	6,231	22,478
Totals, 1963	1,951	158,840	5,860	25,366
Totals, 1962	1,924	146,830	5,007	23,370
Totals, 1961	1,825	132,749	4,985	21,309
Totals, 1960	1,726	127,148	4,504	19,460
Totals, 1959	1,683	124,425	4,377	20,604
Totals, 1958	1,571	122,489	4,169	20,927
Totals, 1957	1,640	128,978	3,886	20,693
Totals, 1956	1,776	127,182	3,667	22,310
Totals, 1955	1,705	121,284	3,575	22,560

(91) FOREST ROAD PROGRAMME, 1964

Project	Regulation Unit	Reconnaissance	Location	Construction
		Miles	Miles	Miles
Vancouver Forest District				
Big Silver–Nahatlatch F.R.	Yale P.S.Y.U.	.....	13.2	.....
	Harrison P.S.Y.U.	.....	8.6	.....
Chilliwack River F.D.R.	Chilliwack P.S.Y.U.	.....	.....	3.5
Cracroft Island	Broughton P.S.Y.U.	5	.....	.....
Garnet–Talc F.R.	Yale P.S.Y.U.	.....	3.0	.....
	Harrison P.S.Y.U.	.....	1.0	.....
Gilford Island	Broughton P.S.Y.U.	14	.....	.....
Hallowell Mountain F.R.s	Sechelt P.S.Y.U.	.....	6.0	.....
Harrison East F.R.	Harrison P.S.Y.U.	11	.....	.....
Holden Creek	Broughton P.S.Y.U.	3	.....	.....
Skagit River F.R.	Yale P.S.Y.U.	.....	8.3	.....
Sloquet–Stave Lake F.R.	Soo P.S.Y.U.	.....	3.0	.....
Soo River F.R.	Soo P.S.Y.U.	.....	2.7	.....
Sowaqua Creek F.R.	Yale P.S.Y.U.	7	.....	.....
West Harrison F.R.	Harrison P.S.Y.U.	.....	.....	10.2
Prince Rupert Forest District				
Fiddler Creek	Skeena P.S.Y.U.	27	.....	.....
Kispiox F.D.R.	Skeena P.S.Y.U.	.....	10.6	7.0
Kleanza Creek F.R.	Skeena P.S.Y.U.	.....	7.3	.....
Smithers Landing Road	Smithers P.S.Y.U.	.....	.....	2.5
Suskwa River F.R.	Skeena P.S.Y.U.	.....	1.1	.....
Prince George Forest District				
Aleza Lake F.D.R.	Aleza Lake Forest	.....	.....	2.9
McLeod–Tsilcoh F.R.	Carp P.S.Y.U.	.....	37.7	.....
	Stuart Lake P.S.Y.U.	.....	8.1	.....
Naver–Ahbau F.D.R.	Naver P.S.Y.U. and Big Valley P.S.Y.U.	.....	14.6	0.5
Takla Lake	Stuart Lake P.S.Y.U.	46	.....	.....
	Takla P.S.Y.U.	12	.....	.....
Willow River F.D.R.	Willow River P.S.Y.U.	.....	.....	0.2
Kamloops Forest District				
Ashnola River F.D.R.	Ashnola P.S.Y.U.	.....	8.4	22.0
Bone Creek	North Thompson P.S.Y.U.	14	.....	.....
Cariboo River F.R.	Quesnel Lake P.S.Y.U.	.....	24.8	.....
Cayoosh Creek F.D.R.	Yalakom P.S.Y.U.	.....	.....	9.4
Craigellachie–Anstey Arm	Eagle P.S.Y.U.	4	.....	.....
	Shuswap P.S.Y.U.	23	.....	.....
Chilcotin River	Stum P.S.Y.U.	40	.....	.....
	Taseko P.S.Y.U.	39	.....	.....
North Barriere F.D.R.	Barriere P.S.Y.U.	.....	.....	11.3
North Thompson F.R.	North Thompson P.S.Y.U.	.....	10.3	.....
Okanagan Mountain F.R.	Okanagan P.S.Y.U.	.....	2.0	.....
Nelson Forest District				
Akolkolex River F.D.R.	Arrowhead P.S.Y.U.	.....	.....	10.8
Bench Creek F.R.	Edgewood P.S.Y.U.	.....	13.7	.....
Bush River F.R.	Kinbasket P.S.Y.U.	.....	14.9	.....
Canyon Creek	Kinbasket P.S.Y.U.	9	.....	.....
Glacier Creek	Lardeau P.S.Y.U.	11	.....	.....
Glenogle Creek	Kinbasket P.S.Y.U.	7	.....	.....
Greely Creek	Arrowhead P.S.Y.U.	5	.....	.....
Lodgepole F.D.R.	Fernie P.S.Y.U.	.....	4.3	.....
Norns Creek F.R.	Salmo P.S.Y.U.	.....	9.1	.....
White River F.D.R.	Upper Kootenay P.S.Y.U.	.....	.....	0.1
Totals, 1964 programme		277	212.7	80.4
Previous works		4,080	1,909.7	774.2
Totals, forest road programme, 1950–64		4,357	2,122.4	854.6

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

(92) FOREST SERVICE MECHANICAL EQUIPMENT, 1964

Type	Total Units, Jan. 1, 1964	Removed from Service	New Purchases	Total Units, Jan. 1, 1965
Sedans	46	6	10	50
Suburbans, station wagons, sedan deliveries	116	16	15	115
Panel deliveries	70	16	19	73
Four-wheel-drive passenger types	118	19	28	127
Four-wheel-drive pick-ups, power wagons, panel deliveries	288	48	43	283
5,000–10,000 G.V.W. pick-ups, ½ and 1 ton	174	25	29	178
14,000–24,000 G.V.W. trucks, 2, 3, and 4 tons	55	4	3	54
24,000–40,000 G.V.W. heavy-duty trucks	4	1	2	5
Fire-fighting tank-trucks	4	2	1	3
Total vehicles	875	137	150	888
Trail motor cycles	42	.....	23	65
Tractors	44	2	1	43
Graders	15	.....	3	18
Scrapers—self-propelled	4	.....	.....	4
Scrapers—not self-propelled	2	.....	.....	2
Shovels—power	2	1	1	2
Loaders—self-propelled	2	.....	1	3
Outboard motors	393	25	38	406
Fire-pumps—various	826	26	34	834
Fire-pumps—portable tanker	108	.....	17	125
Bean fire-fighting units—high-pressure	34	.....	.....	34
Borate mixer pumps	10	.....	.....	10
Chain-saws	384	80	73	377
Lighting plants	101	4	6	103
Snow sedan—propellor-driven	1	.....	.....	1
Speeders—railway	14	1	.....	13
Trailers—low and high bed	9	1	.....	8
Trailers—dwelling and bunk house	166	8	5	163
Trailers—miscellaneous	245	.....	39	284
Air-compressors	9	.....	2	11
Range-land drill	.....	.....	1	1
Rock drill—gas-powered	8	.....	.....	8
Muskeg and snow tractors (personnel carriers)	10	.....	1	11
Crushing plants	1	.....	.....	1
Mechanical wheelbarrows	22	2	.....	20
Welders	12	1	1	12
Cement-mixers	7	.....	.....	7
Augers—power, planting	3	.....	.....	3
Fork-lift trucks	2	.....	.....	2

(93) BUILDING CONSTRUCTION UNDERTAKEN DURING 1964

Location	Project	Construction Agency	Progress
Carry-over of 1963/64 Programme			
Aleza Lake	Water-system renovations	Own forces	Completed.
Beaverdell	Residence	Own forces	Completed.
Duncan	Warehouse conversion	Own forces	Design proceeding.
Duncan	Utility building	Own forces	Completed.
Duncan	Pumping and irrigation	Own forces	Completed.
Green Timbers	Irrigation-system extension	Own forces	Completed.
Green Timbers	Cold-storage extension	Own forces	Completed.
Green Timbers	Domestic water system	Own forces	Design proceeding.
Mesachie Lake	Office extension	Own forces	Completed.
Mesachie Lake	Soil-shed	Own forces	Completed.
Mesachie Lake	Irrigation system	Own forces	Completed.
1964/65 Programme			
Aleza Lake	Office extension	Own forces	Work proceeding.
Aleza Lake	Well-drilling	Contract	Work proceeding.
Beaverdell	Warehouse	Own forces	Completed.
Bella Coola	Residence renovations	Own forces	Completed.
Bella Coola	Heating renovations	Own forces	Completed.
Bella Coola	Warehouse	Own forces	Work proceeding.
Canal Flats	Office	Own forces	Work proceeding.
Duncan	Renovations to seed-extracting plant	Own forces	Design proceeding.
Duncan	Cone-drying shed	Own forces	Work proceeding.
Duncan	Extension to cold-storage building	Own forces	Design proceeding.
Duncan	Extension to irrigation system	Own forces	Design proceeding.
Elko	Office extension	Own forces	Work proceeding.
Enderby	Office	Own forces	Work proceeding.
Green Timbers	Extension to irrigation system	Own forces	Completed.
Green Timbers	Sewage-disposal system	Own forces	Completed.
Green Timbers	Office	Own forces	Design proceeding.
Green Timbers	Paving	Contract	Completed.
Houston	Office	Own forces	Completed.
Invermere	Paving	Contract	Completed.
Lardeau	Heating renovations	Contract	Completed.
Mesachie Lake	Bunk-house renovations	Own forces	Completed.
Mesachie Lake	Nursery construction	Own forces	Completed.
North Barriere	Construction camp	Own forces	Completed.
Parsnip River	Construction camp	Own forces	Completed.
Parsnip River	Well-drilling	Contract	Completed.
Parsnip River	Pump installation	Contract	Completed.
Pendleton Bay	Residence renovations	Own forces	Completed.
Penticton	Paving	Contract	Completed.
Port McNeill	Two residences	Contract	Completed.
Prince George	Storage compound	Own forces	Completed.
Prince George	Electrical installation	Contract	Completed.
Prince Rupert	Mooring facilities	Contract	Tender called.
Salmo	Well-drilling	Contract	Work proceeding.
Smithers	Hangar renovations	Own forces	Completed.
Smithers	Electrical renovations	Contract	Work proceeding.
Snowden Camp	Fencing and irrigation	Own forces	Work proceeding.
Southbank	Warehouse	Own forces	Work proceeding.
Spillimacheen	Well improvement	Contract	Completed.
Valemount	Warehouse	Own forces	Completed.
Vancouver	Rebuilt marine ways	Own forces	Completed.
Vancouver	Renovations to warehouse	Own forces	Completed.
Vancouver	Lighting renovations	Own forces	Design completed.
Wells	Warehouse	Own forces	Completed.

(94) TRAILERS DESIGNED IN 1964

Type and Size	Used by—	District or Division
32-foot river-boat trailer	Cruising crew	Prince George—headquarters.
26-foot jet-craft trailer	Survey crew	Engineering—headquarters.
Dwelling, 8′ x 14′	Ranger staff	Prince Rupert—Terrace.
Dwelling, 8′ x 14′	Ranger staff	Nelson—Slocan City.
Dwelling, 8′ x 14′	Ranger staff	Nelson—Spillimacheen.
Office bunkhouse, 10′ x 35′	Ranger staff	Prince Rupert—Dease Lake.
Dwelling, 8′ x 21′	Ranger staff	Prince George—McLeod Lake.
Cookhouse-diner, 8′ x 30′	Project crew	Prince George—headquarters.
Engineering office, 10′ x 40′	Field planning crew	Engineering—pondage clearing.
Wash-house, 10′ x 40′	Field planning crew	Engineering—pondage clearing.
Cook-house, 10′ x 30′	Field planning crew	Engineering—pondage clearing.
Dining-hall, 10′ x 40′	Field planning crew	Engineering—pondage clearing.
Storage and cook's quarters, 10′ x 30′	Field planning crew	Engineering—pondage clearing.
Bunk-house (two), 10′ x 50′	Field planning crew	Engineering—pondage clearing.
Recreation and first aid, 10′ x 40′	Field planning crew	Engineering—pondage clearing.

(95) SMALL-BOAT PURCHASES, 1964

Size and Type	Used by—	District or Division
9-foot inflatable	Planting crew	Reforestation—Coast.
12-foot aluminum	Ranger staff	Prince George—Quesnel.
12-foot aluminum	Ranger staff	Nelson—Kaslo.
12-foot aluminum	Ranger staff	Prince George—Fort Fraser.
12-foot aluminum	Ranger staff	Prince Rupert—Lower Post.
12-foot aluminum	Ranger staff	Prince George—headquarters.
12-foot aluminum	Ranger staff	Vancouver—Port Hardy.
12-foot aluminum	Silviculture crew	Prince Rupert—Smithers.
12-foot aluminum	Ranger staff	Kamloops—Clinton.
13-foot inflatable	Survey crew	Engineering—headquarters.
14-foot aluminum	Ranger staff	Prince Rupert—Ocean Falls.
14-foot aluminum	Ranger staff	Kamloops—Lillooet.
16-foot aluminum	Ranger staff	Kamloops—Shuswap.
16-foot aluminum	Ranger staff	Vancouver—Port Hardy.
16-foot aluminum	Ranger staff	Prince George—Hixon.
16-foot aluminum	Ranger staff	Prince George—Horsefly.
16-foot aluminum	Ranger staff	Nelson—Lardeau.
16-foot aluminum	Ranger staff	Nelson—Kaslo.
16-foot aluminum (canoe)	Silviculture crew	Prince George—headquarters.
18-foot aluminum	Ranger staff	Kamloops—Adams Lake.
8-man life-raft	Log-boom scaling crew	Vancouver—"B.C. Scaler."
10-man life-raft	Log-boom scaling crew	Vancouver—"B.C. Scaler."
10-man life-raft	Log-boom scaling crew	Vancouver—"Tamarack."

(101) FOREST-PROTECTION EXPENDITURE BY THE FOREST SERVICE FOR THE FISCAL YEAR 1963/64

Travelling expense	$23,342.86
Clothing and uniforms	6,056.15
Equipment rental (aircraft)	636,105.79
Equipment and machinery	286,480.07
Maintenance of buildings and grounds	267,891.66
Maintenance and operation of equipment	320,821.39
Acquisition or construction of buildings and works	184,240.77
Motor-vehicles and accessories	128,966.59
Incidentals and contingencies	27,713.65
Slash and snag disposal	60,215.07
Wages and expenses, seasonal staff	1,473,968.00
Increased protection, Peace River	197,494.49
Insect control	17,237.35
Total	$3,630,533.84
Fire-suppression expenditure by the Forest Service for the fiscal year 1963/64	$430,872.73

(102) CONSTRUCTION OF PROTECTION ROADS AND TRAILS, 1964

	Light	Medium	Heavy	Total
	Miles	Miles	Miles	Miles
New road construction	29	58	31	118
Road maintenance	1,336	546	202	2,084
Totals, road construction and maintenance	1,365	604	233	2,202
New trail construction	6	13	19	38
Trail maintenance	138	146	69	358
Totals, trail construction and maintenance	144	159	88	396

(103) REPORTED APPROXIMATE EXPENDITURE IN FOREST PROTECTION BY OTHER AGENCIES,[1] 1964

Forest District	Expenditures				
	Patrols and Fire Prevention	Tools and Equipment	Fires	Improvements	Total
Vancouver	$73,418	$475,023	$18,760	$50,100	$617,301
Prince Rupert	154,256	34,845	3,130	37,541	229,772
Prince George	2,400	42,600	3,825	18,500	67,325
Kamloops	1,200	9,025	6,266	6,100	22,591
Nelson	143,190	132,177	14,437	38,680	328,484
Totals	$374,464	$693,670	$46,418	$150,921	$1,265,473
Ten-year average, 1955–64	$336,539	$467,752	$335,598	$312,963	$1,452,852

[1] Principally forest industry.

(104) SUMMARY OF SNAG-FALLING, 1964, VANCOUVER FOREST DISTRICT

		Acres
Total area logged, 1964, Vancouver Forest District		100,590
Logged in small exempted operations[1]	196	
Assessed for non-compliance, less 251 acres subsequently felled	1,144	
		1,340
Balance logged acres snagged, 1964		99,250
Snags felled, 1964, by Forest Service contract		3,485
Snags felled, 1964, by Forest Service Reforestation Division		1,418
Total area snagged, 1964		104,153

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

(105) SUMMARY OF LOGGING SLASH REPORTED IN 1964, VANCOUVER FOREST DISTRICT

		Acres
Total area logged, 1964		100,590
Area covered by full hazard reports	65,708	
Covered by snag reports but exempted from slash disposal	17,504	
Covered by acreage reports only (exempted from slash and snag disposal)[1]	196	
		83,408
Slash created and not reported in 1964		17,182

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

(106) ACREAGE ANALYSIS OF SLASH DISPOSAL REQUIRED, 1964, VANCOUVER FOREST DISTRICT

	Acres of Slash		
	Prior to 1964	1964[1]	Total Acres
Broadcast burning	27,379	32,580	59,959
Spot burning	3,435	2,314	5,749
Totals	30,814	34,894	65,708

1964 reports not recommending slash disposal	17,504	
1964 slash on very small operations exempted without special examination	196	
		17,700
Total area of slash dealt with, 1964		83,408

[1] Does not include the estimated 17,182 acres (*see* Table No. 107) created too late to be dealt with in 1964.

ANALYSIS OF PROGRESS IN SLASH DISPOSAL, 1964, VANCOUVER FOREST DISTRICT

(107)

	Acres
Total disposal required (*see* Table No. 106)	65,708

Type of Disposal	Acres of Slash Prior to 1964	Acres of Slash 1964	Total Acres
Spring broadcast burning	136	356	492
Spring spot burning	11	20	31
Fall broadcast burning	19,820	18,578	38,398
Fall spot burning	4,534	1,148	5,682
Total burning completed	24,501	20,102	44,603
Burning by accidental fires			74
Lopping, scattering, land-clearing, etc.			*Nil*
Total			44,677
Balance reported slash not yet abated			21,031
Slash created, 1964, acres assessed			25
Plus slash created too late to be dealt with, 1964			17,182
Total area of slash carried over to 1965 for disposition			38,238

Actual area burned in spring spot burning, 10 acres.
Actual area burned in fall spot burning, 765 acres.
The above figures do not include 1963 slash-burn reports received too late for inclusion in 1963 Annual Report, 1,858 acres.

SUMMARY OF SLASH-BURN DAMAGE AND COSTS, 1964, VANCOUVER FOREST DISTRICT

(108)

Total acres of forest-cover burned in slash fires, 1964	362
Net damage to forest-cover	$7,414.88
Net damage to cut products	604.00
Net damage to equipment and property	*Nil*
Total damage	$8,018.88

Cost of Slash-burning as Reported by Operators

	Total Cost	Acres	Cost per M B.F.	Cost per Acre
(*a*) Spring broadcast burning	$4,865.00	492	$0.247	$9.89
(*b*) Spring spot burning	3,330.00	31	3.58	107.42
(*c*) Fall broadcast burning	136,378.69	38,398	.090	3.55
(*d*) Fall spot burning	9,851.41	5,682	.057	1.73

(109) FIRE OCCURRENCES BY MONTHS, 1964

Forest District	March	April	May	June	July	August	September	October	Total	Per Cent
Vancouver[1]	1	20	66	28	36	55	40	2	248	22.1
Prince Rupert	1	8	30	17	5	8	8	.....	77	6.9
Prince George	5	2	34	17	49	6	4	7	124	11.0
Kamloops[2]	23	11	100	60	160	68	11	.....	433	38.7
Nelson	.....	8	23	40	125	35	6	1	238	21.3
Totals	30	49	253	162	375	172	69	10	1,120	100.0
Per cent	2.7	4.4	22.5	14.4	33.5	15.3	6.2	1.0	100.0	.....
Ten-year average, 1955–64	33	88	304	276	601	479	154	28	1,963	.....
Per cent	1.7	4.5	15.5	14.1	30.6	24.4	7.8	1.4	100.0	.....
Railroad-tie fires	.....	.....	102	24	77	80	82	.....	365	.....

[1] Excludes 248 railroad-tie fires.
[2] Excludes 117 railroad-tie fires.

(110) NUMBER AND CAUSES OF FOREST FIRES, 1964

Forest District	Lightning	Recreational (Campers, etc.)	Railroads Operating	Smokers	Brush-burning (Not Railway or Right-of-way Clearing)	Range-burning	Road and Power-, Telephone, and Pipeline Construction)	Industrial Operations (Logging, etc.)	Incendiary	Miscellaneous Known Causes	Unknown Causes	Total	Per Cent of Total Fires in Province
Vancouver[1]	12	47	6	47	28	.....	4	18	1	62	23	248	22.1
Prince Rupert	2	20	2	5	6	4	3	8	4	12	11	77	6.9
Prince George	46	20	4	6	9	9	1	14	4	3	8	124	11.0
Kamloops[2]	96	45	14	57	15	62	3	21	34	78	8	433	38.7
Nelson	121	12	25	14	8	4	.....	20	2	23	9	238	21.3
Totals	277	144	51	129	66	79	11	81	45	178	59	1,120	100.0
Per cent	24.7	12.9	4.6	11.5	5.9	7.0	1.0	7.2	4.0	15.9	5.3	100.0	.....
Ten-year average, 1955–64	719	210	110	246	80	92	33	149	39	225	60	1,963	.....
Per cent	36.6	10.6	5.6	12.5	4.1	4.7	1.7	7.6	2.0	11.5	3.1	100.0	.....
Railroad-tie fires	.....	.....	365	.....	.....	.....	.....	.....	.....	.....	.....	365	.....

[1] Excludes 248 railroad-tie fires.
[2] Excludes 117 railroad-tie fires.

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

Causes	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	Total
Lightning	418	497	307	1,150	184	1,166	1,426	615	1,144	277	7,184
Recreational (campers, etc.)	195	214	170	296	172	241	269	182	221	144	2,104
Railroads operating[1]	74	135	85	162	88	245	154	41	65	51	1,100
Smokers	206	281	182	478	211	257	336	162	220	129	2,462
Brush-burning (not railway or right-of-way clearing)	47	112	65	120	75	82	86	60	82	66	795
Range-burning	2	47	48	131	190	87	179	62	95	79	920
Road and power-, telephone-, and pipe-line construction	24	73	46	18	30	36	36	35	24	11	333
Industrial operations (logging, etc.)	89	183	107	246	204	137	194	109	141	81	1,491
Incendiary	15	27	22	53	34	54	49	25	62	45	386
Miscellaneous known causes	132	213	172	310	253	271	290	183	250	178	2,252
Unknown causes	50	73	45	94	33	59	83	62	41	59	599
Totals	1,252	1,855	1,249	3,058	1,474	2,635	3,102	1,536	2,345	1,120	19,626
Railroad-tie fires	132	955	370	1,062	536	1,478	1,489	2,479	528	365	9,394

[1] Excludes 9,394 railroad-tie fires.

FIRES CLASSIFIED BY SIZE AND DAMAGE, 1964

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[1]	248	22.1	184	74.2	25.3	55	22.2	17.6	9	3.6	11.7	.....	0.0	.....	238	6	4
Prince Rupert	77	6.8	49	64.0	6.7	21	27.0	6.7	5	6.0	6.5	2	3.0	100.0	66	11	.....
Prince George	124	11.1	64	51.6	8.8	35	28.2	11.2	25	20.2	32.5	.....	0.0	.....	107	10	7
Kamloops[2]	433	38.7	230	53.1	31.6	171	39.5	54.6	32	7.4	41.5	.....	0.0	.....	360	67	6
Nelson	238	21.3	201	84.4	27.6	31	13.1	9.9	6	2.5	7.8	.....	0.0	.....	229	9	.....
Totals	1,120	100.0	728	.....	100.0	313	.....	100.0	77	.....	100.0	2	.....	100.0	1,000	103	17
Per cent	100.0	.....	65.0	.....	.....	27.9	.....	.....	6.9	.....	.....	0.2	.....	.....	89.2	9.2	1.6
Ten-year average, 1955–64	1,963	.....	1,186	.....	.....	531	.....	.....	190	.....	.....	56	.....	.....	1,734	127	102
Per cent	100.0	.....	60.4	.....	.....	27.0	.....	.....	9.7	.....	.....	2.9	.....	.....	88.3	6.5	5.2
Railroad-tie fires	365	.....	365	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Excludes 248 railroad-tie fires.
[2] Excludes 117 railroad-tie fires.

(113) ANALYSIS OF SUPPRESSION-CREW FIRE-FIGHTING ACTIVITIES, 1964

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)	112	106	6	—	—	—
Over ¼ acre and up to 1 acre	30	3	19	8	—	—
Over 1 acre and up to 5 acres	20	—	—	18	2	—
Over 5 acres and up to 50 acres	10	—	—	1	9	—
Over 50 acres	1	—	—	—	—	1
Totals	173	109	25	27	11	1

(114) DAMAGE TO PROPERTY OTHER THAN FORESTS, 1964[1]

Forest District	Forest Products Cut, Logs, Lumber, etc.	Buildings	Railway, Logging, and Sawmill Equipment	Miscellaneous	Total	Per Cent of Total
Vancouver	$4,857	$10	$20,000	$5	$24,872	16.4
Prince Rupert	—	1,200	—	—	1,200	0.8
Prince George	68,000	—	35,000	—	103,000	68.1
Kamloops	14	230	21,200	530	21,974	14.5
Nelson	92	—	—	200	292	0.2
Totals	$72,963	$1,440	$76,200	$735	$151,338	100.0
Per cent	48.2	1.0	50.3	0.5	100.0	—
Ten-year average, 1955–64	$86,334	$31,967	$175,034	$23,753	$317,088	—
Per cent	27.2	10.1	55.2	7.5	100.0	—

[1] Does not include intentional slash burns (for this item *see* Table No. 108).

(115, Part I) DAMAGE TO FOREST-COVER CAUSED BY FOREST FIRES, 1964—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	60	133	100	1,000	13	673
Prince Rupert	14	44	11	949	15	506
Prince George	13	37	—	655	234	5,559
Kamloops	182	83	4	1,167	471	4,700
Nelson	24	9	2	256	128	1,395
Totals	293	306	117	4,027[2]	861	12,833[2]
Per cent	3.8	100.0	38.2	15.6	11.1	49.7
Ten-year average	59,010	82,904	26,984	1,270,914	57,409	1,171,318
Per cent	13.0	100.0	32.5	45.8	12.7	42.3

[1] Does not include intentional slash burns (for this item *see* Table No. 108).
[2] The dollar value of losses in merchantable and immature timber represents only stumpage loss to the Crown. Actual payroll loss to the Province is 10 times these figures.

(115, Part II)

DAMAGE TO FOREST-COVER CAUSED BY FOREST FIRES, 1964—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	74	8	.....	2,013	137	31	91	4	115	29	498	133	3,750
Prince Rupert	5	14	.....	208	2,843	709	53	3	3	1	2,947	44	2,376
Prince George	50	.....	211	1,817	1,057	264	183	9	329	82	2,077	37	8,386
Kamloops	166	24	37	1,840	249	57	564	26	92	20	1,785	83	7,810
Nelson	257	.....	8	1,816	15	3	4	.....	3	1	439	9	3,471
Totals	552	46	256	7,694	4,301	1,064	895	42	542	133	7,746	306	25,793
Per cent	7.1	0.6	3.3	29.8	55.5	4.1	11.6	0.2	7.0	0.6	100.0	100.0	100.0
Ten-year average, 1955–64	12,006	975	23,222	257,881	212,858	53,460	12,022	1,750	75,979	17,109	453,481	82,904	2,772,432
Per cent	2.6	0.2	5.1	9.3	46.9	1.9	2.7	0.1	16.8	0.6	100.0	100.0	100.0

[1] Does not include intentional slash burns (for this item *see* Table No. 108).

(116) FIRE CAUSES, AREA BURNED, FOREST SERVICE COST, AND TOTAL DAMAGE, 1964

Causes	Fire Causes		Area Burned		Forest Service Cost		Total Damage	
	Number	Per Cent	Acres	Per Cent	Cost	Per Cent	Damage	Per Cent
Lightning	277	24.7	530	6.8	$42,528	35.0	$5,633	3.2
Recreational (campers, etc.)	144	12.9	396	5.2	14,564	12.0	856	0.5
Railroads operating[1]	51	4.6	61	0.8	521	0.4	340	0.2
Smokers	129	11.5	702	9.0	15,443	12.7	4,289	2.4
Brush-burning (not railway or right-of-way clearing)	66	5.8	824	10.6	6,670	5.5	4,270	2.3
Range-burning	79	7.1	3,857	49.8	4,144	3.4	3,105	1.8
Road and power-, telephone-, and pipe-line construction	11	1.0	30	0.4	817	0.7	281	0.2
Industrial operations (logging, etc.)	81	7.2	406	5.3	16,841	13.8	152,672	86.2
Incendiary	45	4.0	514	6.6	3,915	3.2	1,050	0.6
Miscellaneous known causes	178	15.9	369	4.8	13,430	11.0	2,490	1.4
Unknown causes	59	5.3	57	0.7	2,772	2.3	2,145	1.2
Totals	1,120	100.0	7,746	100.0	$121,645	100.0	$177,131	100.0

[1] Excludes 365 railroad-tie fires.

COMPARISON OF DAMAGE CAUSED BY FOREST FIRES IN LAST 10 YEARS

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	Total, 10 Years
Total number of fires[1]	1,252	1,855	1,249	3,058	1,474	2,635	3,102	1,536	2,345	1,120	19,626
Area burned (acres)	46,694	469,648	66,724	2,065,423	273,631	285,820	1,227,159	45,617	46,346	7,746	4,534,808
Standing timber destroyed or damaged (M cu. ft.)	886	10,192	1,278	358,149	8,481	122,293	315,532	3,972	7,953	306	829,042
Amount salvable (M cu. ft.)	269	4,564	391	98,517	2,110	40,010	119,223	1,279	3,357	117	269,837
Damage to forests	$90,971	$1,058,469	$123,032	$7,917,235	$1,342,849	$3,725,361	$12,820,694	$311,445	$308,475	$25,793	$27,724,324
Damage to other forms of property	64,153	372,803	130,204	408,183	869,569	299,657	368,476	280,700	225,797	151,338	3,170,880
Total damage	$155,124	$1,431,272	$253,236	$8,325,418	$2,212,418	$4,025,018	$13,189,170	$592,145	$534,272	$177,131	$30,895,204

[1] Excludes 9,394 railroad-tie fires (*see* Table No. 44).

(118) FIRES CLASSIFIED BY FOREST DISTRICT AND COST PER FIRE OF FIRE-FIGHTING, 1964

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[1]	248	7,759	6.4	95.79	67	27.0	6.0	181	73.0	16.2	140	39	1	1	.....
Prince Rupert	77	6,715	5.5	353.42	44	57.1	3.9	33	42.9	2.9	16	16	1	.....	.....
Prince George	124	38,821	31.9	693.23	41	33.1	3.7	83	66.9	7.4	65	10	7	1	.....
Kamloops[2]	433	41,930	34.5	267.07	208	48.0	18.6	225	52.0	20.0	152	67	5	1	.....
Nelson	238	26,420	21.7	264.20	79	33.2	7.1	159	66.8	14.2	100	51	8	.....	.....
Totals	1,120	121,645[3]	100.0	294.54	439	.....	39.2	681	.....	60.8	473	183	22	3	.....
Per cent	100.0	.....	.....	.....	39.2	.....	.....	60.8	.....	.....	42.3	16.3	2.0	0.2	.....
Ten-year average, 1955–64	1,963	1,609,366	.....	.....	707	.....	.....	1,256	.....	.....	720	384	98	21	33
Per cent	100.0	.....	.....	.....	36.0	.....	.....	64.0	.....	.....	36.7	19.5	5.0	1.1	1.7

[1] Excludes 248 railroad-tie fires.
[2] Excludes 117 railroad-tie fires.
[3] Cost correct to date, subject to later revision.
Cost to other parties (326 cost fires), $335,598. Cost to Forest Service (413 cost fires), $121,645.
Detailed final costs are published one year in arrears in the table "Forest-protection Expenditures" in each Annual Report.

PROSECUTIONS, 1964

Forest District	Information Laid	Burning without Permit	Refusing to Render Assistance in Fire-fighting	Contravening a Forest Closure	Failing to Maintain Proper Fire-protection Equipment	Failing to Control and Extinguish Fire	Failing to Fall Snags and Remove Debris in Accordance with Regulations	Miscellaneous Offences	Fines		Served Sentence in Gaol	Suspended Sentence	Cases Dismissed	Cases Withdrawn
									Number	Amount				
Vancouver	3	1	—	—	2	—	—	—	3	$75	—	—	—	—
Prince Rupert	1	—	1	—	—	—	—	—	1	25	—	—	—	—
Prince George	1	1	—	—	—	—	—	—	1	25	—	—	—	—
Kamloops	5	4	—	—	1	—	—	—	5	140	—	—	—	—
Nelson	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	10	6	1	—	3	—	—	—	10	$265	—	—	—	—
Ten-year average, 1955–64	53	18	15	10	6	2	1	1	47	$1,391	1	1	3	2

CONTRACT FLYING, 1964

Fixed-wing Aircraft

Forest District	Base	Type of Aeroplane	Hours Flown
Vancouver	Vancouver	Beaver	272
Prince Rupert	Smithers	Super Cub and various	897
Prince George	Prince George and Fort St. John	Super Cub and Otter	777
Kamloops	Kamloops	Super Cub and Beaver	811
Nelson	Nelson	Beaver	400
Total			3,157

Helicopters

Forest District	Base	Type of Helicopter	Hours Flown
Vancouver	Vancouver and Campbell River	Hillers 12E	305
Prince Rupert	Smithers and Terrace	Hillers 12E	197
Prince George	Prince George and Fort St. John	Hillers 12E	733
Kamloops	Kamloops	Bell 47G3B	422
Nelson	Nelson and Cranbrook	Hillers 12E	500
Total			2,157

Air Tankers

Forest District	Base	Type of Aeroplane	Hours Flown
Prince Rupert	Smithers	Avenger and Cessna	59
Prince George	Prince George	Avenger and Cessna	40
Kamloops	Kamloops	Avenger and Cessna	247
Nelson	Cranbrook	Avenger and Cessna	154
Total			500

(121) USE OF AIRCRAFT IN FIRE-FIGHTING (NON-CONTRACT), 1964

Fixed-wing Aircraft

Forest District	Reconnaissance		Transportation of Men and Supplies		Water Bombing		Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Vancouver	.....	.....	1½	$36	.....	.....	1½	$36
Prince Rupert	.....	.....	.....	.....	.....	.....	.....	.....
Prince George	121	$5,294	125½	$5,560	.....	.....	246½	10,854
Kamloops	.....	.....	.....	.....	.....	.....	.....	.....
Nelson	8	178	.....	.....	31	$2,996	39	3,174
Totals	129	$5,472	127	$5,596	31	$2,996	287	$14,064

Helicopters

Prince George	.....	.....	17	$1,618	.....	.....	17	$1,618

ENROLMENT AT ADVANCED COURSE, FOREST SERVICE TRAINING-SCHOOL, 1964

(131)

Forest District	Forest Assistants, Cruisers, Etc.	Rangers	Acting Rangers	Assistant Rangers	Clerks	Total	Graduations
Class 13							
Vancouver	2	—	—	3	—	5	5
Prince Rupert	1	—	—	2	—	3	3
Prince George	—	—	—	3	—	3	3
Kamloops	2	—	—	3	—	5	5
Nelson	—	—	—	4	—	4	4
Attendance, 1964	5	—	—	15	—	20	20
Attendance, 1963	5	—	—	15	—	20	—
Attendance, 1962	3	—	—	17	—	20	20
Attendance, 1961	3	—	—	17	—	20	—
Attendance, 1960	4	—	—	17	—	21	21
Attendance, 1959	4	—	—	17	—	21	—
Attendance, 1959	—	—	—	21	—	21	21
Attendance, 1958	—	—	—	21	—	21	—
Attendance, 1957	4	—	—	26	—	30	30
Attendance, 1956	4	—	—	26	—	30	—
Attendance, 1956	3	—	—	18	—	21	21
Attendance, 1955	3	—	—	18	—	21	—
Attendance, 1954	—	—	—	20	—	20	20
Attendance, 1953	—	—	—	21	—	21	—
Attendance, 1953	—	—	—	20	—	20	20
Attendance, 1952	—	—	—	20	—	20	—
Attendance, 1951	—	3	3	15	—	21	21
Attendance, 1950	—	3	3	15	—	21	21
Attendance, 1949	—	3	2	16	—	21	—
Attendance, 1948	—	4	2	12	2	20	20
Attendance, 1947	—	8	—	12	—	20	20
Attendance, 1946	—	2	9	9	—	20	20
Total graduates to December 31, 1964	—	—	—	—	—	—	275

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

(132) ENROLMENT AT BASIC COURSE, FOREST SERVICE TRAINING-SCHOOL, 1964

Forest District	Forest Assistants, Cruisers, Etc.	Rangers	Acting Rangers	Assistant Rangers	Clerks	Total	Graduations
Class 3							
Vancouver	—	—	—	3	—	3	3
Prince Rupert	1	—	—	2	—	3	3
Prince George	1	—	—	3	—	4	4
Kamloops	—	—	—	4	—	4	4
Nelson	1	—	—	2	—	3	3
Reforestation	1	—	—	—	—	1	1
Research	1	—	—	—	—	1	1
Surveys	1	—	—	—	—	1	1
Attendance, 1964	6	—	—	14	—	20	20
Attendance, 1963	7	—	—	13	—	20	20
Attendance, 1962	3	—	—	17	—	20	20
Total graduates to December 31, 1964	—	—	—	—	—	—	60

Grand total of graduates, both courses, 335.

(141) FOREST REVENUE, 1960–64

	12 Months to Dec. 31, 1960	12 Months to Dec. 31, 1961	12 Months to Dec. 31, 1962	12 Months to Dec. 31, 1963	12 Months to Dec. 31, 1964	10-year Average, 1955–64
Timber-licence rentals and fees	$363,597.80	$366,600.53	$352,418.29	$357,175.79	$362,707.84	$365,038.94
Timber-berth rentals and fees	18,712.81	21,929.03	19,795.95	17,361.70	15,639.09	19,210.57
Timber-lease rentals and fees	76,493.46	59,071.23	73,139.35	63,629.77	68,446.06	70,182.30
Timber-sale rentals and fees	452,788.69	480,803.23	500,208.12	502,317.68	510,469.54	433,015.47
Timber-stale stumpage	26,374,420.04	24,554,147.30	26,315,940.41	30,199,623.94	37,221,058.19	25,784,850.03
Timber-sale cruising and advertising	277,345.73	377,755.89	346,627.67	386,735.44	487,503.76	310,039.99
Timber royalties	2,281,028.09	2,245,313.71	2,433,175.10	2,499,842.31	2,610,292.87	2,125,327.98
Grazing permits and fees	101,240.36	119,876.87	137,118.26	152,200.70	139,313.50	103,556.43
Forest-protection tax	456,491.27	569,749.95	550,949.16	523,598.00	522,672.70	—
Miscellaneous	121,461.72	134,824.47	161,447.52	173,192.07	210,330.47	145,283.03
Totals	$30,523,579.97	$28,930,072.21	$30,890,819.83	$34,875,677.40	$42,148,434.02	$29,356,504.74

AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, 1964

District	Royalty	Miscellaneous	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Silviculture Fund	Forest Development Fund	Total
			Scaling Expenses	Scaling Fees					
Vancouver	$1,795,982.24	$4,093.67	$266,457.01	$1,038,819.46	$19,478,750.55	$434,202.46		$181,855.21	$23,200,160.60
Prince Rupert	295,842.00	1,791.99	24,876.61	102,502.44	3,617,112.50	180,405.59		76,912.49	4,299,443.62
Prince George	105,938.82	645.00			4,684,646.16	251,747.54		257,799.17	5,300,776.69
Kamloops	238,686.31	1,816.54			7,453,684.87	307,855.98		211,096.81	8,213,140.51
Nelson	152,692.94	1,410.75			3,558,850.65	207,670.39		36,788.39	3,957,413.12
Totals, 1964	$2,589,142.31	$9,757.95	$291,333.62	$1,141,321.90	$38,793,044.73	$1,381,881.96		$764,452.07	$44,970,934.54
Totals, 1963	$2,399,042.45	$11,244.13	$243,745.53	$922,206.05	$30,470,629.50	$1,258,855.66		$651,863.83	$35,957,587.15
Totals, 1962	$2,331,987.94	$8,727.97	$255,562.68	$1,006,764.72	$26,467,054.86	$1,224,600.21		$543,310.69	$31,838,009.07
Totals, 1961	$2,135,102.82	$19,504.27	$219,118.42	$995,399.98	$23,463,080.72	$1,235,002.32		$753,233.75	$28,820,442.28
Totals, 1960	$2,384,420.55	$10,724.64	$248,440.15	$1,259,004.69	$27,664,393.40	$1,103,354.27		$294,341.53	$32,964,679.23
Totals, 1959	$1,883,849.42	$10,321.39	$208,296.71	$1,013,297.52	$23,129,628.91	$1,020,645.57		$198,716.67	$27,464,756.19
Totals, 1958	$1,656,522.86	$13,720.12	$169,517.28	$788,929.53	$20,385,679.74	$970,108.77		$139,091.73	$24,123,570.03
Totals, 1957	$1,888,013.14	$15,930.85	$212,273.83	$909,138.97	$26,163,387.79	$939,036.10		$131,384.09	$30,259,164.77
Totals, 1956	$2,153,863.65	$12,007.20	$216,050.36	$779,104.15	$28,828,870.26	$915,277.46	$316,796.43	$182,552.57	$33,404,522.08
Totals, 1955	$2,352,634.46	$11,024.73	$176,151.17	$452,171.32	$19,950,410.73	$817,677.77	$891,076.65	$71,861.56	$24,723,008.39
Ten-year average, 1955-64	$2,177,451.96	$12,296.33	$224,048.97	$926,733.88	$26,531,618.06	$1,086,644.01		$373,080.85	$31,452,667.37

(143) AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, FISCAL YEAR 1963/64

District	Royalty	Miscellaneous	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Silviculture Fund	Forest Development Fund	Total
			Scaling Expenses	Scaling Fees					
Vancouver	$1,635,240.96	$3,366.24	$219,240.63	$841,914.58	$13,550,555.62	$393,035.74		$103,258.53	$16,746,612.30
Prince Rupert	318,791.78	2,051.46	24,517.68	92,024.89	2,943,633.27	188,144.45		52,147.30	3,621,310.83
Prince George	100,015.23	1,724.00			3,933,779.51	248,386.49		275,479.90	4,559,385.13
Kamloops	180,995.47	2,015.00			7,978,234.74	278,425.49		156,083.28	8,595,753.98
Nelson	162,649.60	946.32			3,153,165.57	163,240.22		54,361.14	3,534,362.85
Totals, 1963/64	$2,397,693.04	$10,103.02	$243,758.31	$933,939.47	$31,559,368.71	$1,271,232.39		$641,330.15	37,057,425.09
Totals, 1962/63	$2,334,087.65	$10,478.79	$255,471.80	$1,001,506.52	$27,535,735.53	$1,215,900.43		$663,849.93	$33,017,030.65
Totals, 1961/62	$2,249,635.97	$18,336.53	$230,395.08	$1,006,719.97	$23,748,697.80	$1,256,074.86		$703,412.40	$29,213,272.61
Totals, 1960/61	$2,259,260.15	$11,752.91	$229,465.79	$1,174,335.71	$25,525,797.36	$1,123,343.86		$294,095.37	$30,618,051.15
Totals, 1959/60	$2,090,089.97	$10,073.48	$222,233.43	$1,097,022.68	$25,972,797.12	$1,027,388.60		$276,543.16	$30,696,148.44
Totals, 1958/59	$1,724,335.77	$10,278.72	$189,733.59	$857,356.03	$21,039,523.86	$980,609.33		$139,682.23	$24,941,519.53
Totals, 1957/58	$1,876,624.77	$18,418.04	$200,348.04	$890,547.82	$24,860,333.41	$930,780.33		$137,679.66	$28,914,732.07
Totals, 1965/57	$2,100,595.60	$12,817.18	$223,110.65	$825,245.69	$29,544,636.65	$917,775.18		$176,767.56	$33,800,948.51
Totals, 1955/56	$2,283,321.72	$10,578.36	$176,432.52	$461,466.54	$21,285,022.76	$903,301.94	$1,114,131.62	$115,441.08	$26,349,696.54
Totals, 1954/55	$2,316,736.11	$11,205.86	$151,213.86	$550,878.38	$15,774,317.46	$609,994.41	$1,018,909.39	$46,371.75	$20,479,627.22
Ten-year average, 1954/55 to 1963/64	$2,163,238.07	$12,404.29	$212,216.31	$879,901.88	$24,684,623.07	$1,023,640.13		$319,517.33	$29,508,845.18

(144) FOREST REVENUE, FISCAL YEAR 1963/64

		Ten-year Average
Timber-licence rentals and fees	$358,075.60	$370,825.61
Timber-berth rentals and fees	17,723.05	17,905.65
Timber-lease rentals and fees	62,780.14	69,899.02
Timber-sale rentals and fees	504,985.86	403,056.95
Timber-sale stumpage	31,916,392.53	23,063,281.68
Timber-sale cruising and advertising	415,614.50	277,623.17
Timber royalties	2,535,088.43	2,164,659.17
Grazing permits and fees	158,621.97	89,000.37
Forest-protection tax	527,461.69	(1)
Miscellaneous	186,567.84	134,100.23
	$36,683,311.61	$26,590,351.85

1 Formerly credited to Forest Protection Fund.

(145) FOREST SERVICE EXPENDITURES, FISCAL YEAR 1963/64

Salaries	$3,498,366
Expenses	1,124,116
Reforestation and forest nurseries	583,981
Forest management	679,594
Forest research	220,186
Public information and education	111,726
Forest Service training-school	115,030
Grant to Canadian Forestry Association	15,000
Office furniture and equipment	25,327
Engineering services	533,198
Forest-development roads	2,748,143
Forest protection	3,630,532
Fire suppression	430,873
Forest surveys	1,188,023
Silviculture	1,530,681
Grazing Range Improvement Fund[1]	55,143
Peace River community pastures	6,536
	$16,496,455
Less contribution from Federal Government	1,831,428
Total	$14,665,027

1 Statement provided elsewhere.

(146) SCALING FUND

Surplus, April 1, 1963	$148,721.69
Collections, fiscal year 1963/64	1,208,571.23
	$1,357,292.92
Expenditures, fiscal year 1963/64	1,385,281.27
Deficit, March 31, 1964	$27,988.35
Collections, nine months, April to December, 1964	1,075,970.68
	$1,047,982.33
Expenditures, nine months, April to December, 1964	1,151,335.72
Deficit, December 31, 1964	$103,353.39

(147) GRAZING RANGE IMPROVEMENT FUND

Deficit, April 1, 1963	$17,287.15
Government contribution (section 13, *Grazing Act*)	67,871.59
	$50,584.44
Expenditures, fiscal year 1963/64	55,119.52
Deficit, March 31, 1964	$4,535.08
Government contribution (section 13, *Grazing Act*)	79,310.98
	$74,775.90
Expenditures, nine months, April to December, 1964	41,080.18
Surplus, December 31, 1964	$33,695.72

(148) PEACE RIVER POWER TIMBER SALVAGE

Expenditures, fiscal year 1963/64	$870,794.47
Recovered from British Columbia Hydro and Power Authority	870,794.47
Balance	*Nil*

(151) DISTRIBUTION OF PERSONNEL, 1964

Personnel	Vancouver	Prince Rupert	Prince George	Kamloops	Nelson	Victoria	Total
Continuously Employed							
Deputy Minister, Chief Forester, and Assistant Chief Foresters	----	----	----	----	----	4	4
Division Foresters	----	----	----	----	----	8	8
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 and Foresters-in-training	14	9	12	13	11	94	153
Agrologists and Agrologists-in-training	----	----	2	5	2	----	9
Engineers and Engineers-in-training	----	----	----	----	----	38	38
Forest Protection Officers	3	2	2	1	2	4	14
Supervisors of Rangers	3	2	3	3	3	----	14
Rangers—Grades 1 and 2	31	18	24	30	31	----	144
Superintendent of Scaling and Assistants	12	2	3	3	3	----	23
Scalers, Official	76	----	----	----	1	----	77
Scalers, Official, temporary	87	3	9	14	----	----	103
Comptroller, Accountant, and Audit Assistants	----	----	----	----	----	7	7
Engineering, Mechanical and Radio	4	4	4	4	3	83	102
Technical Forest and Public Information Assistants	6	7	9	13	7	37	79
Reforestation, Research, and Survey Assistants	----	1	1	1	1	53	57
Nursery Superintendents	----	----	----	----	----	4	4
Draughtsmen and Mapping Assistants	5	4	5	5	3	31	53
Clerks, Stenographers, and Messengers	99	26	32	30	22	120	329
Superintendent and Foremen, Forest Service Marine Station	----	----	----	----	----	6	6
Mechanics, Carpenters, and Technicians	5	1	5	2	3	38	54
Launch Crewmen	18	7	----	----	----	3	28
Assistant and Acting Rangers	47	33	48	51	49	----	228
Dispatchers	18	9	12	19	12	----	70
Cruisers, Compassmen, and Silviculture Crewmen	25	18	59	57	24	10	193
Truck, Tractor, and Equipment Operators	6	1	1	----	2	12	22
Foremen	1	----	3	----	----	36	40
Miscellaneous	----	25	2	----	2	53	82
Totals, continuous personnel	462	174	238	253	183	646	1,956
Seasonally Employed							
Assistant and Acting Rangers	7	----	9	1	1	----	18
Patrolmen	----	1	2	2	6	----	11
Lookoutmen	38	20	29	33	40	----	160
Dispatchers, Radio Operators, and Clerks	9	1	4	5	10	----	29
Fire-suppression Crewmen	52	----	----	63	45	----	160
Reforestation—Snag-fallers, Planters, etc.	3	----	20	20	----	213	256
Cruisers and Compassmen	----	----	2	----	6	----	8
Truck, Tractor, and Equipment Operators	----	5	5	6	30	27	73
Student and Survey Assistants and Engineering Aides	----	----	----	----	----	170	170
Silviculture Crewmen	----	----	2	----	----	3	5
Foremen	12	1	3	3	1	15	35
Miscellaneous	15	11	33	11	77	66	213
Totals, seasonal personnel	136	39	109	144	216	494	1,138
Totals, all personnel	598	213	347	397	399	1,140	3,094

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