PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF LANDS AND FORESTS

HON. R. G. WILLISTON, *Minister* R. G. McKEE, *Deputy Minister of Forests*

REPORT

of

THE FOREST SERVICE

YEAR ENDED DECEMBER 31ST

1959

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1960

VICTORIA, B.C., March, 1960.

To Group Captain the Honourable FRANK MACKENZIE ROSS, C.M.G., M.C., LL.D.,
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 and Forests for the calendar year 1959.

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

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

SIR,—There is submitted herewith the Annual Report on activities of the Forest Service during the calendar year 1959.

R. G. McKEE,
Deputy Minister of Forests.

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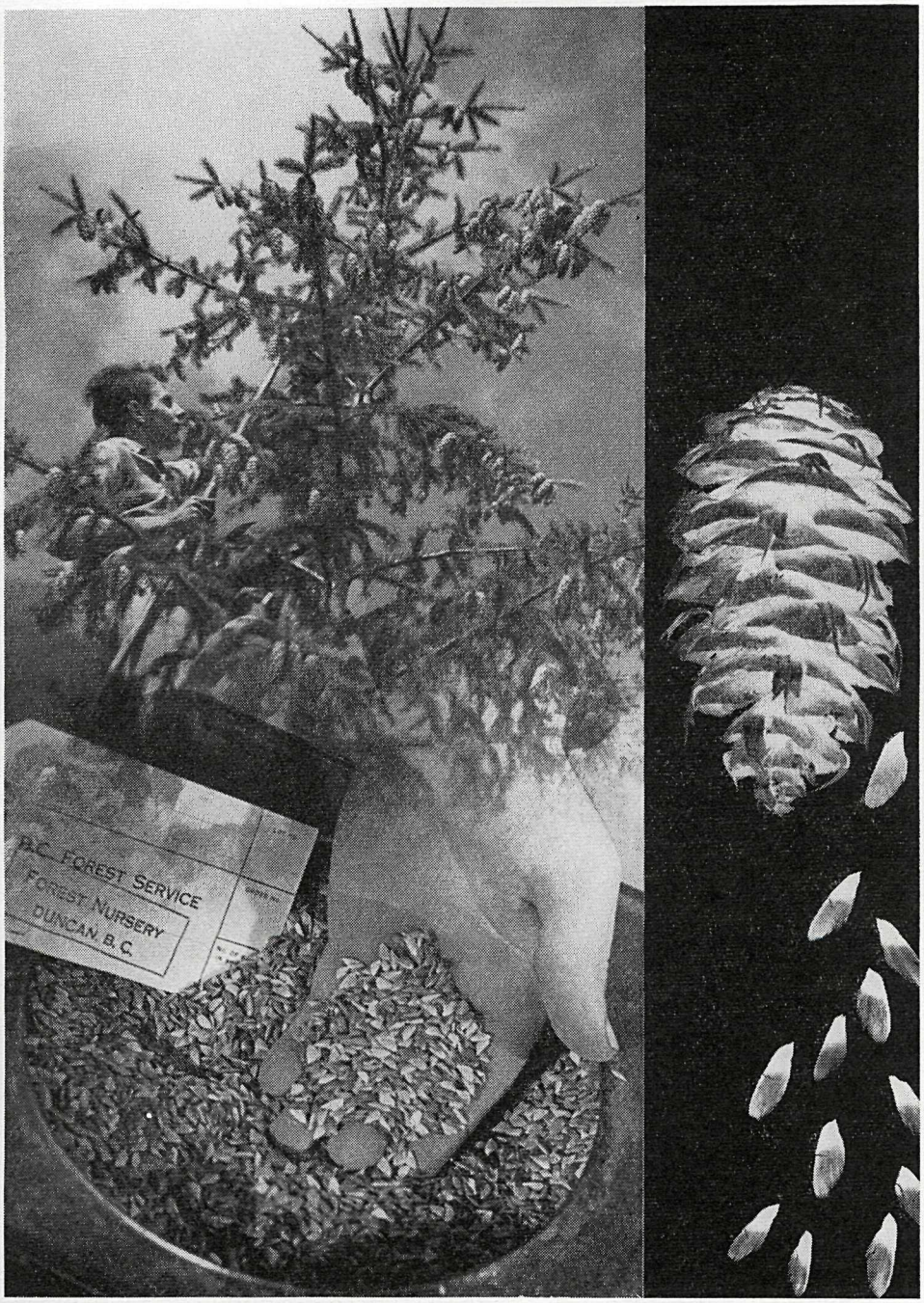


The highlight of 1959 was the heaviest Coastal seed-crop in twenty-two years and a bumper crop throughout the rest of the Province, with a seed yield averaging over 0.60 pound per bushel.

REPORT OF THE FOREST SERVICE, 1959

CHIEF FORESTER'S SUMMARY

Introduction and Legislation

Although the 1959 amendments to the *Forest Act* were of an incidental nature, there were three phases of the legislation of public significance.

The section dealing with farm wood-lot licences—that is, section 19—was amended to require that the sum of $100 be deposited, and the former scheme of depositing $50 and then collecting an amount with the stumpage for the deposit was discontinued.

On the death of the Honourable Mr. Sloan, the section dealing with tree-farm licences was amended to permit the Minister to hold hearings and consider proposals which would have been considered by the Forest Adviser as part of the procedure on the application for a tree-farm licence.

The part of the Act dealing with forest protection was amended to allow equipment required for forest-fire suppression to be requisitioned by any officer of the Forest Service. The rates to be paid for the use of such equipment are to be fixed by regulation.

Provision for the charging of forest-protection tax was amended to provide for computing the rates on the certification of a tree-farm under the *Taxation Act* where the product grown is Christmas trees.

Early in the year, all regulations under the *Forest Act* and the *Grazing Act* were revised and published in one issue of The British Columbia Gazette under the *Regulations Act*.

Surveys and Inventory

The Division completed the second of the ten-year maintenance inventory programme with continued financial assistance from the Government of Canada under provisions of the *Canada Forestry Act*. Forest classification and sampling crews covered 25,715,954 acres during the year, with over 50 per cent of the work being concentrated in the Prince Rupert Forest District.

Increased use of modern radio facilities improved communications between field parties and headquarters. Of the 1,111 hours of flying-time logged by survey crews, 85 per cent of it was in helicopters.

An intensive forest-cover mapping of the Cape Scott Public Working Circle was completed, and one set of these maps was produced in colour, on an experimental basis. Over 13,300 maps were distributed to the public during the year.

Sample plots were established on 4,476 sites, and reconnaissance surveys covered 46,960 acres of logged and burned land. In the Yale Sustained-yield Unit, 22,660 acres of productive forest land were examined, as were 22,829 acres in the Babine Public Working Circle.

Work continued in the fields of photo mensuration, growth studies, volume tables, loss factors, and depletion projects. Efforts to bring surveys of all Crown forest units up to an acceptable standard were limited due to lack of funds.

Forest Research

Three major studies were instituted during the year as a result of the opportunity afforded by the record Coastal cone production—the biggest in twenty-two years.

The selection of " plus " trees for a high-elevation seed-orchard was greatly assisted by the Plus-tree Board, a sub-committee of the Tree Farm Forestry Committee, which promoted industrial co-operation in the search for outstanding trees.

This marked the first full year in which a permanent Research Officer operated in the Prince Rupert Forest District, and several projects were initiated there as a result.

A comprehensive report on the work of the Division is to be found in the Forest Research Review, published annually.

Reforestation

The year was marked by the heaviest Coastal seed-crop in twenty-two years and a bumper crop throughout the Province. The Service collected 9,575 bushels of cones; the forest industry, 5,000 bushels; and an estimated 100,000 bushels were harvested by commercial seed-dealers.

The remodelled seed-extraction plant at the Duncan nursery worked well, processing 300 bushels of wet cones in forty-eight hours.

Although heavy spring rains caused severe losses of one-year stock in the Green Timbers and East Kootenay nurseries, total production of field planting stock from all Forest Service nurseries amounted to 8,250,700 seedlings during the year.

The total area planted throughout the Province by all agencies using seedlings raised in Service nurseries amounted to 18,607 acres.

Pilot tests on costs of brush-clearing were carried out in the Robertson River valley, with interesting results.

Working Plans

Three new sustained-yield units and nine tree-farm licences were approved or awarded during the year. As a result, there are now in operation thirty-six tree-farm licences, sixty-four sustained-yield units (including public working circles), thirty-six *Taxation Act* tree-farms, and fifty farm wood-lot licences.

Total area now under management amounts to 41,212,700 acres, with a total allowable annual cut of 677,540,000 cubic feet, equivalent to 64.5 per cent of the total Provincial scale for 1959.

Public Information and Education

The facilities of the Division were tested severely to meet the continued high public demand for forestry information. Staff and financial limitations of the Division became increasingly noticeable.

The volume of still photographic production by the Division rose 100 per cent over the previous year, and more than 1,500 prints were supplied to the press, trade journals, and television stations. There was also an increase in specialized photography of all types.

A total of 123,179 persons saw films from the Divisional Film Library, and the commercial-theatre audience seeing the special protection trailer was estimated at 305,000.

The publication, editorial, and printing volume was maintained to the limit of facilities available, as was the regular radio flash campaign during the fire season.

The school lecture programme was active in all forest districts and covered 314 schools, with 394 lectures to 58,507 students.

A mobile exhibit was designed and circulated throughout various fall fairs in the Interior with good results.

Twenty new sites were added to the " Keep B.C. Green—Use Your Ashtray " highway sign coverage. There are now 225 of these signs on the black-topped highways throughout the Province.

Forest Management

Despite the ten-week strike in the Coastal industry during the summer, the total value of all forest products set a new record high of $637,715,000 during 1959, over $6,000,000 more than the previous record year of 1955, and $94,927,-573 over 1958. Lumber, at $291,500,000, continued to lead in the individual value categories, followed by pulp and paper with $234,529,000 and plywood at $75,500,000.

Compared with 1958, lumber value was up $65,873,139; pulp and paper, up $43,778,583; and plywood value, down $14,500,000, although production of plywood was down less than 1 per cent.

A measure of the degree of industrial recovery over the depressed years of 1957 and 1958 is shown by an increased weighted average price of $5.34 per thousand board-feet over 1958 for all species shipped by the Interior. A decline was noted, however, in the last quarter of the year.

The 1959 total cut of 1,049,145,125 cubic feet was up 15 per cent over 1958 and only 2 per cent less than the record-cut year of 1956. Of the total scale, 574,451,278 cubic feet originated on the Coast and 474,693,847 cubic feet from the Interior. This was a new record high for the Interior, exceeding its previous high in 1956 by 54,000,000 cubic feet.

Douglas fir's 369,832,059 cubic feet maintained it as the principal species cut, followed by hemlock (201,225,091 cubic feet), spruce (182,481,529 cubic feet), and cedar (140,110,952 cubic feet). It is significant, however, that the Coastal hemlock cut exceeded that of Coastal Douglas fir by over 7,500,000 cubic feet.

Water-borne lumber shipments amounted to 1,197,653,000 board-feet, down 116,708,000 board-feet from 1958. Shipments to the United Kingdom were the lowest since 1950. Fifty per cent of all water-borne lumber volume went to the United States.

Competitive bidding on timber sales was the most active on record, with 243 sales being bid over the upset price. At the end of 1959 there were 7,139 timber sales active, a reduction of 444 from 1958. Security deposits held by the Service amounted to $15,150,213, some $400,000 more than at the end of the previous year.

Silvicultural activity increased noticeably during the year, with 823 timber sales receiving stand treatment over an area of 207,528 acres, some 66,000 acres more than in 1958.

Scaling supervision in the Interior was intensified, with scaling examinations being held in forty-seven centres and 1,058 candidates participating, of which 394 were successful in passing the exams.

Grazing

A dry spring, following the drought conditions of 1958, resulted in poor forage production in the north. In the south, forage production ranged from average to above average.

The drop in the number of sheep using Crown range is a reflection of the rising costs and inadequate returns which are forcing many sheep-ranchers out of business.

Weighted average prices for cattle were $17.52 per hundredweight, as against $19.57 in 1958. Lamb prices were also down, but total shipments of cattle were up 4.5 per cent over the previous year.

Live-stock losses were higher than normal, with hunting accidents and suspected theft in a number of cases contributing seriously toward losses.

A total of 420,720 acres were covered by range surveys during the year, and some $49,000 was spent on various range improvements.

Close co-operation continued during the year between the Forest Service and the fifty-three livestock associations approved under the *Grazing Act*.

Although the grazing personnel establishment was brought up to full strength for the first time in two years, the continually increasing work load resulted in much necessary field work remaining undone.

This year, 1,683 grazing permits were issued for the depasturing of 124,425 cattle, 4,377 horses, and 20,604 sheep on Crown range—an increase in all categories but sheep, now at their lowest number since 1928.

Engineering Services

Forest-development road work continued, with a high level of activity in such aspects as engineering investigations, route reconnaissance, location, and construction. Considerable work was done on forest-protection access-road construction, assisted in part by the Federal-Provincial agreement for cost-sharing.

During 1959 a total of 604 miles of reconnaissance survey was carried out on all types of forest roads; 237.4 miles of potential road was located; and 68 miles of new road constructed.

Designs were completed for six creosoted " glue-lam " girder bridges, one of which is the first designed for Coastal loading conditions. The construction of two " glue-lam " bridges in the Chilliwack Public Working Circle was completed, and they contain the largest glue-laminated wood girders ever constructed in Canada.

Motor-vehicle purchases amounted to 105 units, of which 102 were replacements for worn-out units. Eight light-weight portable tank-and-pump protection units were built and tested, with good results.

The major building construction undertaken during the year was the erection of the new seed-extraction plant at the Duncan nursery. A matter of interest was the testing of two Fiberglas protection lookout cupolas obtained from the Alberta Forest Service.

A total of sixty-four marine overhauls were completed during the year, and considerable repowering of operational craft was carried out. One outboard cruiser and eight river-boats were built, and the prefabrication of a new 100-foot float and ramp for the Echo Bay Ranger Station continued.

Radio field work continued apace. One hundred and thirty-eight new units, A.M. and F.M., were purchased throughout the year, and sixty-two sets were written off, leaving a net increase of seventy-six serviceable units.

Forest Protection

Fire occurrence was above normal for the first half of the 1959 fire season but below normal for the last half.

A total of 2,010 forest fires burned over 273,631 acres and caused damage estimated at $1,342,849. Forest Service fire-fighting costs amounted to $768,084.

Although operating railways continued to be the principal cause of fires (31 per cent of the total), they burned over only 243 acres, cost the Forest Service $1,057, and did $1,470 damage. Camper- and smoker-caused fires burned over

36,678 acres, cost the Forest Service $81,912, and did $254,090 damage. Even so, the heaviest fire-suppression cost (54.5 per cent of the total cost) was attributable to range-burning activities in the Cariboo and Peace River areas, costing $418,360 and causing $955,062 damage.

The Canada Forestry Branch, Fire Research Section, completed field studies for the development of a fire-danger rating system for the Province. In co-operation with this Service, trials were carried out in various parts of the Province.

Experiments with various chemical fire-retardants continued during the year.

Forest Biology

After five years of heavy defoliating activity in the Lillooet and Fraser Valley areas, the outbreak of one-year-cycle spruce budworm collapsed during the year.

Early counts indicated that the two-year-cycle budworm larvæ population at Babine Lake was as heavy as any previously recorded, and that defoliation of the current year's growth averaged about 75 per cent.

The black-headed budworm outbreak on the Queen Charlotte Islands increased to heavy proportions, and the known range of the balsam woolly aphid spread significantly during the year.

The Douglas fir bark-beetle is currently the most serious insect pest of that tree species in the Interior of the Province.

Needle-blight of pine continued at a high level in the Kamloops, Clinton, and Merritt areas, and the incidence of Douglas fir needle-blight north of Cranbrook was responsible for considerable depreciation of Christmas-tree stock.

Severe die-back and top-kill of pole-sized to mature Douglas fir, as a result of 1958 drought conditions, was observed on Vancouver Island and in lodgepole pine near Prince George and Vanderhoof. Yellow pine near Clinton and western red cedar throughout the Interior Wet Belt were also affected.

A disease study within a 15-year-old Douglas fir plantation on Vancouver Island shows 25 per cent of the trees were infected with root-rot, the most severely infected fir plantations yet encountered in sampling.

Forest Ranger School

During the year the tenth Ranger School class graduated in the spring and the eleventh class was enrolled in September. This latter class of twenty-one men will graduate in December, 1960.

There were no major changes in the curriculum, but the constant revision of the subject-matter of the courses continued in order to keep pace with changes of Service policy.

Accounting

Due to the increase over the previous year in the total Provincial scale of all forest products, Forest Service billings against logging operations were up 13.8 per cent to $27,464,756.19 and direct Forest Service collections were up 7.8 per cent to $26,843,188.71. Despite the Coast industry strike during the summer, the Coastal forest districts contributed considerably to these increases.

Timber-sale stumpage, the largest single revenue class, was up 8.1 per cent, and timber royalty increased by 9.9 per cent. Grazing revenue from permits and fees was up 18.3 per cent, primarily due to an increase in fees, but miscellaneous collections were off 8.7 per cent from 1958.

There were 279 active log-salvage permits in effect at the end of 1959, five more than in 1958.

PERSONNEL

A major change in Forest Service organization became effective on April 1st, with the appointment of Mr. F. S. McKinnon as Chief Forester and the formal division of responsibilities between the Deputy Minister and the Chief Forester.

All five forest districts changed District Foresters during the year, and two new Ranger districts were set up at Chetwynd and Bella Coola.

An increase of fifteen personnel in the establishment of the Service brought the total to 832 positions, twenty-eight less than in 1957. Permanent-staff turnover averaged 10.3 per cent, ranging from 29.1 per cent at Prince George to 2.6 per cent at Nelson.

A general salary revision averaging 8 per cent was granted, effective April 1st.

F. S. MCKINNON,
Chief Forester.

FOREST SURVEYS AND INVENTORY

INTRODUCTION

The Division completed the second year of the ten-year maintenance inventory programme. Financial assistance was continued by the Government of Canada according to the agreement for inventory implemented under the *Canada Forestry Act*. This assistance is limited to surveys at the Provincial inventory level, and it is becoming increasingly evident that further assistance is required to facilitate the carrying-out of intensive management surveys in Crown forest units. Sustained-yield forestry practice is highly dependent on the availability of reliable information concerning the lands and forests within public and private sustained-yield units. Intensive management surveys are required to provide this information.

Forest classification and sampling were carried out over an area of 25,715,954 acres in the five forest districts, as detailed below:—

Forest District	Acres
Vancouver	3,301,562
Prince Rupert	13,972,634
Prince George	4,199,057
Kamloops	2,831,358
Nelson	1,411,343
Total	25,715,954

OPERATIONS

As in previous years, the work of survey crews was supervised from field headquarters in each forest district. A modern radio network between crews and headquarters provided rapid communication and essential control of the work. Radio equipment included 59 S.P.F. units, 11 Model B sets, 14 Mobile sets, 3 marine radios, and 12 L.R.T. units. Two new Marconi CM 85 transmitters were installed on forest survey launches.

Two specially designed field-office trailers, equipped with radio units, proved invaluable to forest classification crews working with helicopters over large regions. Two field-kitchen trailers, constructed from portable buildings, were used extensively in conjunction with the office trailers. Three forest survey launches provided bases for numerous crews working on the west and east coasts of Vancouver Island and on the Mainland.

During the year, forest survey crews flew a total of 1,111 hours, of which 85 per cent was in helicopters.

Two " trouble-shooting " mechanics travelled 17,000 miles carrying out inspections and repairs on vehicles and other units in use by survey crews throughout the Province.

FOREST CLASSIFICATION

During the year, 10,500,000 acres were examined and classified by two parties of foresters using two Bell helicopters and one party using one De Haviland Beaver aircraft. The amount of flying-time logged in the helicopters and Beaver aircraft was, respectively, 853 and 113 hours. Sixteen hours of this were used in assisting forest districts and the Engineering Services Division. In this work the crews recorded detailed observations of forest and land, with the aid of tape recorders, at 15,403 individual locations throughout the Province. The cost for this aerial classification averaged 2 cents per acre in the areas intensively examined.

FOREST MAPPING

In 1959, plotting of forest-cover and topographic detail from aerial photographs on to maps provided a total of 275 completely checked large-scale maps. A further 151 maps were plotted, and are currently undergoing final checking. In the maintenance inventory-mapping programme, forty-three maps of the new 1-inch-to-1-mile forest-cover series were completed.

A particularly significant achievement was the completion of very intensive forest-cover mapping of the Cape Scott Public Working Circle, where a complete set of 1-inch-to-1-mile forest-cover maps was published. As an experiment in the production of coloured lithographed maps, a set of the Cape Scott maps was coloured by means of transparent zipatone, cut out to fit the map detail. These sheets are currently being photographed, using a colour separation process, after which metal master plates will be made and coloured map-prints produced on an offset press.

During the year, 13,382 maps were distributed at the request of various public and private agencies. This was an increase of 7 per cent over the 1958 volume of maps distributed.

FOREST SAMPLING

Provincial Inventory Maintenance

In the second year of Provincial inventory maintenance, 4,476 sample plots were established in the programme to provide more reliable estimates of forest area and volume throughout Crown forests. Sampling crews achieved good coverage with the aid of helicopters and a Beaver float-plane, in which a total of 145 hours were flown.

Regeneration Surveys

Reconnaissance surveys were carried out over 46,960 acres of logged, burned, and logged-and-burned land. The purpose of this work was to investigate the adequacy of restocking on designated areas.

In the Yale Sustained-yield Unit, 22,660 acres of productive forest land were examined, bringing the total area examined in a two-year study of this unit up to 36,590 acres. Analysis of the data showed that 58 per cent of all quadrats examined were not stocked. When these data were interpreted in the light of the Reforestation Division standards, it was estimated that 16,460 acres were not satisfactorily stocked out of the total area of 36,590 acres.

Examination of 22,829 acres of disturbed forest land in the Babine Public Working Circle indicated that 15,492 acres were not satisfactorily stocked. A regeneration survey in the Giscome burned area, east of Prince George, was terminated before completion due to lack of funds and time. Data collected in this project provided an assessment of 2,300 acres.

In the Sechelt Public Working Circle, an examination was made of the Brittain River burned area. The results of this work are currently being analysed.

Sampling of Marked Forest Stands

Seven timber-sale areas, on which the timber was marked for selective cutting, were sampled systematically before logging commenced. On these areas, totalling 2,120 acres, 261 plots were established. Remeasurement of the plots will be carried out subsequent to logging.

Fourteen timber-sale areas, in which the marked trees had been felled and removed, were sampled systematically. A total of 1,039 plots was examined in a total timber-sale area of 4,975 acres during the course of this project.

Data collected in the twenty-one timber sales are currently being analysed and a report will be issued early in 1960.

Photo Mensuration

An aerial-photo stand volume table was developed for South Central British Columbia (Zone 5). This table was constructed by least-squares solution of a linear regression of the form—

$$V_{11} = b_0 + b_1 H + b_2 D$$

where—

V_{11} is gross cubic-foot volume per acre, close utilization standard, live merchantable trees 11.1 inches d.b.h. and over. Determined by ground sampling.

H is average height of dominants, measured with a parallax bar on aerial photographs.

D is crown density, expressed as a percentage of ground covered by tree crowns, as determined from aerial photographs in comparison with a crown density "scale."

b_0, b_1, and b_2 are coefficients derived from the data by the least-squares method.

Values of the regression coefficients and other pertinent statistics concerning this work are shown in the following table:—

Zone 5 (South Central Interior)	Mature Coniferous	Immature Coniferous	Lodgepole Pine and Deciduous Species
Regression constant, b_0	−1,144	−1,988	−2,112
Coefficient of height, b_1	+31.98	+35.38	+39.16
Coefficient of density, b_2	+10.88	+8.01	+4.88
Multiple correlation coefficient, R_{VHD}	.48	.56	.84
Number of double samples	42	28	27

The new aerial-photo stand volume table was used to determine volume estimates on 1,570 photo samples established in twenty-three compartments of Sub-zone 965, Zone 5 (South Central Interior). Five hundred and twenty-eight samples were also established in Sub-zone 971, Zone 6 (South-east Interior). An L.G.P. 30 computer programme developed to compute the volume of a photo sample was invaluable in these projects.

Growth

Permanent Growth and Yield Plots

Stand tables were constructed for 1,599 permanent plots. All existing data on these plots, many of which have been established for twenty years or more, were recompiled by use of the latest standard cubic-foot volume tables.

During the year, fifty-four permanent plots were remeasured in Lower Coastal areas.

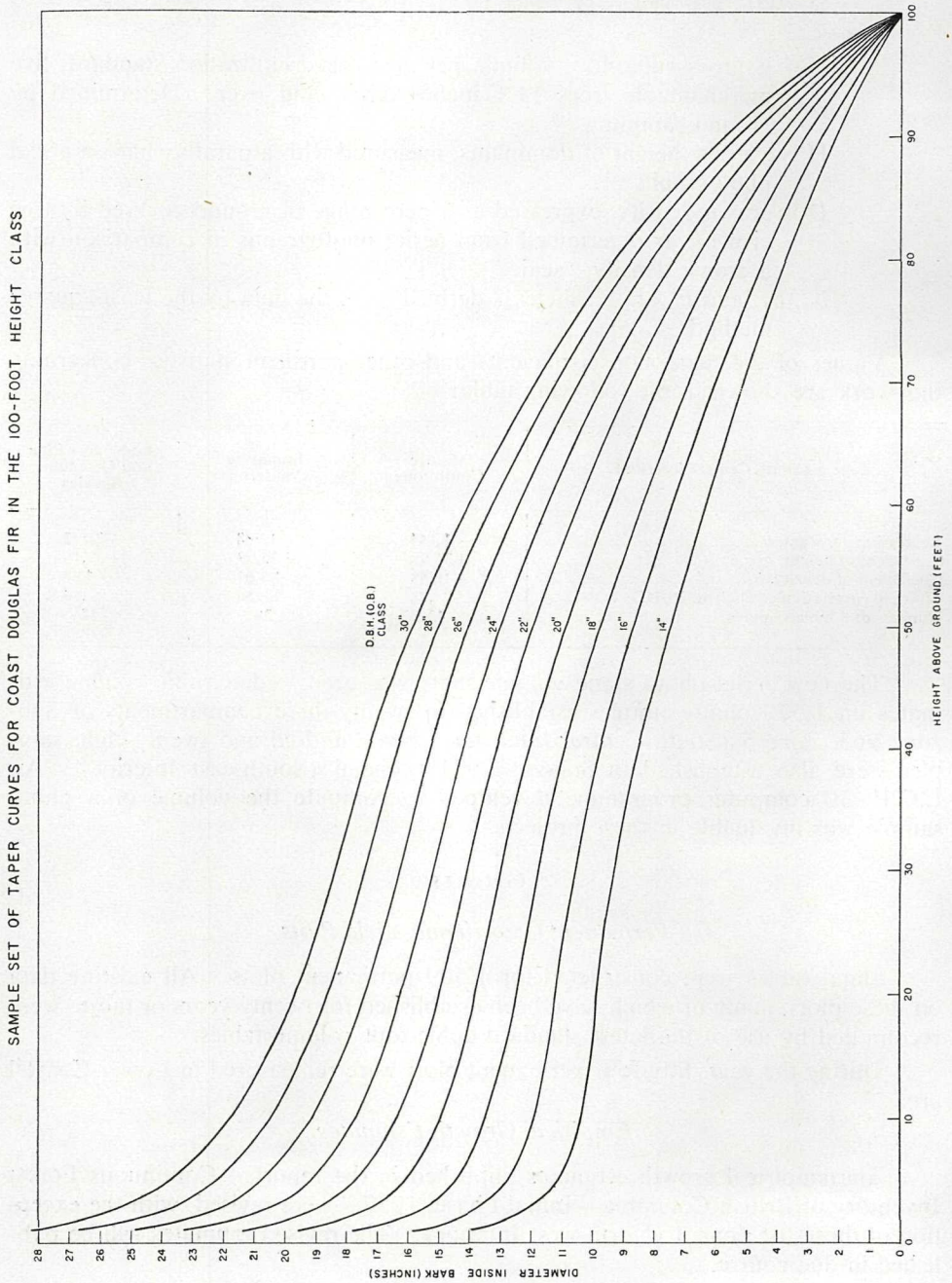
Empirical Growth Estimates

The empirical growth estimates published in the report, "Continuous Forest Inventory of British Columbia—Initial Phase, 1957," were revised, with the exception of those for Zone 3 (North-west Interior). The revised estimates will be published in due course.

Volume Tables, Loss Factor, and Depletion Projects

Volume Tables

During the year, emphasis was placed on recompiling the tree measurement data on file, with the object of producing revised standard cubic-foot volume tables and cull factors for the commercial tree species of British Columbia. A close re-examination of all data available netted 32,105 tree measurements suitable for the



volume table and approximately 26,000 for the cull factors. Modern data-processing equipment has facilitated an otherwise laborious process. It is expected that the revised volume tables and cull factors will be available for distribution by 1961. The new volume tables will include tables for yellow cedar and broadleaf maple, heretofore excluded for lack of sufficient data.

During the year, taper curves were prepared for the following Coast species: Douglas fir, western red cedar, balsam, and Sitka spruce. These curves show average diameters inside bark at various points above ground for trees in each 2-inch d.b.h. class and 10-foot-height class. The curves were drawn to meet an increasing demand from forest officers and industrial foresters for taper information throughout the entire length of the tree. With the increasing interest in quality cruising, taper tables provide the basis for estimates of log volume for specified grades. A sample of a set of taper curves for Douglas fir in the 100-foot-height class is shown on page 20. Taper curves for other commercial tree species will be prepared as time permits.

Logging Studies

Logging studies were continued during the 1959 field season. These studies were carried out on typical Coast and Interior logging operations to provide realistic reduction factors applicable to gross volume summaries, to account for losses attributed to defect, breakage, and utilization practices. In addition, estimates of the volume and condition of logging residues were made and appraisals of the damage to residual stands were obtained. The field procedure for these studies involved a detailed 100-per-cent cruise of a sample area equalling approximately one-half the area of the logging setting; the measurement of all felled and bucked trees to determine gross, net, and breakage volumes; the measurement of all breakage incurred in the cold-decking, yarding, and loading operation; and, finally, a re-examination of the sample area to determine the volume and condition of logging residues and the condition of residual stems. During the 1959 field season, four studies were carried out—one on the South Coast and three in the Southern Interior. Compilation of the data gathered is proceeding, and the results obtained will be incorporated in the revised cull factors.

Forest Depletion

To provide the estimates of annual forest depletion necessary for continuous inventory, estimates of annual cut, disease losses, and fire losses were prepared for each sub-zone, region, and compartment.

As in previous years, a number of requests for information and advice with regard to cull factors and volume tables were answered. Liaison was also maintained with the Western International Forest Disease Work Conference.

SURVEYS IN CROWN FOREST UNITS

Continued efforts were made to bring surveys of all Crown forest units up to an acceptable standard. Due to financial limitations, only two units—Sechelt and Chilliwack Public Working Circles—received the required additional field work to bring them up to a management survey standard. In the Sechelt unit, this work involved the establishment of 174 samples, while in the Chilliwack unit the entire area was reclassified, or " retyped," using 1:15,840-scale aerial photographs, taken in 1959. The latest forest-cover maps and statistics for these units will be issued in due course.

Forest Resources Bulletins, which, with the exception of Bulletin No. 12, were based on Provincial inventory data, were issued for the following units during 1959:—

Bulletin No. 12—Cape Scott.
Bulletin No. 20—Quesnel Lake.
Bulletin No. 21—Similkameen.
Bulletin No. 22—Nicola Lake.
Bulletin No. 24—Big Bar.
Bulletin No. 26—Salmon Arm.
Bulletin No. 29—West Lake.
Bulletin No. 34—Williams Lake.
Bulletin No. 38—Lac la Hache.
Bulletin No. 42—Upper Kootenay.
Bulletin No. 45—Babine Lake.
Bulletin No. 46—Stuart Lake.
Bulletin No. 51—Burns Lake.

Bulletin Nos. 24, 38, and 51 were first issues for the units concerned, while the remaining bulletins were amendments to previously issued reports.

CONTINUOUS FOREST INVENTORY

The comprehensive report " Continuous Forest Inventory of British Columbia—Initial Phase, 1957," provided a datum for Provincial forest statistics at the start of the second phase of continuous inventory in 1958. Maintenance inventory work carried out in the second phase is providing the basis for revising the existing forest statistics. Revised statistics for six sub-zones examined in 1958 were compiled during 1959.

A set of statistical tables supplementing the " Continuous Forest Inventory of British Columbia " report was published. These tables, known as the V-18 series, present sound-wood cubic-foot volumes reduced for waste and breakage to a rough utilization standard by species, age-class, accessibility, and three d.b.h. limits. These statistics apply to all commercial forests regardless of site, and are broken down by major geographic divisions, known as " zones." Two other series of tables, V-19 and V-20, were completed during the year and are currently being printed.

COMPUTATIONS OF STATISTICS

Fifty-four requests were received for statistical summaries on designated areas. These summaries were mostly utilized for management planning and the development of access roads in key areas. The speed at which compilations were completed is evidenced by the fact that the requests involved a total area of 27 million acres, mature forest area of 10 million acres, and timber volume of more than 33 billion cubic feet.

Late in the year, an L.G.P. 30 electronic computer and supplementary processing equipment became available for use in solving a variety of complex analyses of data. It is quite clear that equipment of this nature is essential to meet the continuing demand for rapid and detailed answers on forest resources. The trend for several years has been that increasingly intensive forest management has necessitated increasingly reliable and detailed statements of forest resources in specified areas. Without high-speed computing equipment, the demand cannot be satisfied.

Numerous requests were received for a further breakdown of statistics presented in the report " Continuous Forest Inventory of British Columbia—Initial Phase, 1957." One of these requests involved a presentation of cedar-pole resources by forest districts, and another a summary of the forest resources of the Prince Rupert Forest District.

A paper entitled " Forestry in the North " was prepared for the Twelfth Natural Resources Conference. The statistics compiled for this paper provided some interesting information on the potential sustained productive capacity of the northern half of the Province.

LIAISON WORK

The Forest Service Work Committee continued to provide useful liaison between this Division and other public agencies. In addition, several projects were completed, as follows:—

(1) Fire-hazard and fuel-type maps were prepared for six Crown forest units.
(2) Cutting priority analyses were made in six Crown forest units.
(3) A key map was prepared, showing the latest information on status within the boundaries of the Esquimalt and Nanaimo Railway Grant.
(4) Operational maps showing the nature and location of the field projects of six Government agencies were made for forest district use.
(5) Key maps were prepared depicting the current 8-inch focal length aerial-photography programme in an area totalling 28,000 square miles.

FOREST RESEARCH

Technical details of research projects are published annually in the Forest Research Review, hence this is a very brief statement of the activities of the Division during 1959.

COWICHAN LAKE EXPERIMENT STATION

During the past year, 20 acres were logged. The slash and debris are now being piled and burned prior to using the area for the planting of select genetic stock. A thinning in 30 acres of 47-year-old Douglas fir was completed. A number of sample plots in areas previously thinned were remeasured.

During March, research officers met at the station for a three-day discussion of current projects and the co-ordination of future programmes.

ALEZA LAKE EXPERIMENT STATION

The Aleza Lake Station was opened in May and remained in operation until the end of the year. The facilities were again used for a period of a week for the training of district silvicultural crews. There was an unusually high number of visitors this year, due to the annual meeting of the Canadian Institute of Forestry being held at Prince George.

As in previous years, the main emphasis was on developing access to different parts of the station. On the West Branch Road, a further three-quarters of a mile of rough grade was constructed. This extends the grade to the nursery-site. Unfortunately, the summer was extremely wet and it was impossible to gravel any of the new construction. During the winter, 3 miles of right-of-way of the East Branch Road were logged and 1 mile was cleared. Logging was restricted to cleaning up previously awarded sales. A new sale in the Long-term Selection Working Circle is being prepared for auctioning this winter.

FIELD PROGRAMME

Possibly as a result of 1958's dry summer, there was a good cone-crop in most species throughout the Province. Douglas fir cone production on the Coast was the largest in twenty-two years of record. This fact enabled studies on cone-crops and seed to be actively pursued, and plans are being made to study next year the natural regeneration resulting from this seed-fall. One of these studies was initiated on the west coast of Vancouver Island to determine seed-fall distance and direction in relation to weather conditions and seedling survival on a variety of sites and seed-beds. Another study was concerned with methods of determining seed maturity so that timing of cone-collecting may be most effective. A third study concentrated on the problems associated with the storing of cones and the extraction of seed. Some very interesting information on pollen dispersion was gathered this year. This was a result of developing equipment for sampling and recording pollen dispersion on a continuous basis.

Thinning on the East Thurlow Island experiment forest was renewed and, currently, 160 acres in a 60-year-old hemlock stand is being thinned as a commercial venture. A number of sample plots previously thinned to various densities were remeasured.

The selection of " plus " trees for the high-elevation seed-orchard occupied much of the year. The work was greatly assisted by the Plus-tree Board, a sub-committee of the Tree Farm Forestry Committee, which promoted industrial co-operation in the search for outstanding trees.

In the Kamloops Forest District, a number of studies were maintained but no new ones initiated. It is disappointing to find that regeneration of logged spruce-alpine fir types in a number of cases is still unsatisfactory, seven years after logging. It is, of course, too soon to evaluate the current seed-fall in terms of stocking.

The most interesting development in the research programme in the Nelson Forest District is the effect of peat-moss dressings on the rate of " damping off " in the East Kootenay nursery. Dressings of peat-moss applied to the " beds " at the time of sowing resulted in both increased germination and decreased mortality.

This was the first full year in which a Research Officer has been assigned to the Prince Rupert Forest District. A number of projects were started. A plantation of white spruce, Douglas fir, and European larch was established at Tachek Creek. Adjoining this, spacing trials with white spruce were established. Initial spacings of 4′ x 4′, 8′ x 8′, 12′ x 12′, and 16′ x 16′ were made.

An ecological study of lodgepole pine site types was extended from the Southern Interior to the Bulkley Valley. A new site type, *Pinus contorta-Lathyrus,* was distinguished, as were possible other sub-types of those previously defined.

In Prince George, ecological studies of cone production and seed of northern conifers were continued. New trials of direct seeding to obtain regeneration were made. Several plantations of white spruce were established—one to determine the feasibility of planting throughout the whole of the growing season, and another consisting of a spacing trial. Ten additional scarification trials were conducted and a detailed study of scarified seed-beds continued.

The following is a tabulation of projects active in 1959:—

Tabulation of Active Research Projects, 1959

Experimental Project No.	Title	Region
226	Cone production in immature stands of Douglas fir	Vancouver Island.
274	Cone production in mature stands of Douglas fir	Vancouver Island.
296	Effect of selective logging on wind-throw, growth, and reproduction in spruce-alpine fir	Kamloops.
297, 298	Effect of selective logging on wind-throw, growth, and reproduction in ponderosa pine-Douglas fir	Kamloops.
368	The adaptability of tree species to forest sites	Vancouver Island.
370	Partial cutting study, Interior Wet Belt	Nelson.
373	Ecological investigations in spruce-alpine fir forests	Prince George.
384, 385	Lodgepole pine thinning	Nelson.
388	Commercial thinning in hemlock	Thurlow Island.
392	Field survival of experimentally treated nursery stock	Vancouver Island.
418	Douglas fir thinning in plantations	Vancouver Island.
428	Plantation trials	Kamloops.
435	Yellow pine thinning	Nelson.
438	Effects of slash-burning on forest soils and tree growth	Vancouver Island.
442	Planting trials	Prince George.
449	Yellow pine thinning	Nelson.
458	Seed production and dispersal under various stand conditions in the spruce-alpine fir type	Prince George.
459	Seed production of spruce in relation to its morphological characteristics in the spruce-alpine fir type	Prince George.
460	Seed production of conifers in relation to climate	Prince George.
463	Seed-fall and regeneration study	Nelson.
465	Plantation of exotic species in the Southern Interior	Kamloops.
467	Regeneration studies in the spruce-alpine fir type	Kamloops.
468	Cone-crop studies	Kamloops.
474	Inbreeding experiments with Douglas fir	Vancouver Island.
477	Study of phenotypes in Douglas fir	Vancouver Island.
478	Phenotypic selection in open-grown Douglas fir	Vancouver Island.
479	Plus-tree selection for Douglas fir seed-orchards	Vancouver Island.
480	Co-operative seed provenance study of Douglas fir	Vancouver Island.
482	Climate and the altitudinal distribution of conifers	Vancouver Island.
483	Record of plantations of exotic species throughout British Columbia	

Tabulation of Active Research Projects, 1959—Continued

Experimental Project No.	Title	Region
485	Classification of lodgepole pine sites on an ecological basis	Central Interior.
487	Studies on seed-dispersal of Douglas fir	Kamloops.
497	Experimental thinning in spruce	Kamloops.
501	Comparative study of scarification equipment	Prince George.
502	Plantation trials	Prince Rupert.
505	Planting of white spruce throughout the growing season	Prince George.
506	A study of microclimate and soil conditions in a thinned and unthinned stand of Douglas fir	Vancouver Island.
510	Planting-stock trials	Nelson.
511	Crop-tree thinning in western larch	Nelson.
512	Seeding and planting trials	Nelson.
513	Planting of exotic conifers for future hybridization	Vancouver Island.
516	Direct seeding of Douglas fir	Vancouver Island.
517	Experimental thinning in ponderosa pine	Kamloops.
521	Experimental seeding of spruce	Kamloops.
522	Experimental direct seeding	Nelson.
523	Seed-bed soil amendment trials	Nelson.
525	Swamp regeneration project	Nelson.
526	Fertilizing a plantation of juvenile Douglas fir	Vancouver Island.
527	Fertilizing a Douglas fir plantation on a recent slash-burned area	Vancouver Island.
528	Influence of time on the effectiveness of scarified seed-beds in spruce-alpine fir	Prince George.
529	Regeneration problems in decadent cedar-hemlock stands	Kamloops.
530	Morphological characteristics of selected trees and their progeny	Vancouver Island.
531	Anatomical characteristics of selected trees	Vancouver Island.
533	Scarification trials in spruce-alpine fir	Kamloops.
537	Spacing trials	Prince Rupert.
538	Seed dissemination and the influence of weather conditions	Vancouver Island.
539	Studies in the improvement of cone-handling and seed-processing	Vancouver Island.
540	Cone maturity and seed-ripening study	Vancouver Island.
541	Natural nurseries	Prince Rupert.
544	Spacing and growth studies of white spruce	Vancouver Island.

RESEARCH PUBLICATIONS, 1959

Forest Research Review for the year ending March, 1959.

Warrack, G. C.: Forecast of Yield Related to Thinning Régimes in Douglas Fir. B.C. Forest Service Technical Publication T 51, 1959.

Warrack, G. C.: Crown Dimension, Initial Diameter, and Diameter Growth in a Juvenile Stand. Forestry Chronicle, Vol. 35, p. 150, 1959.

Orr-Ewing, A. L., and Prideaux, D. C.: Grafting Methods for the Douglas Fir. Forestry Chronicle, Vol. 35, p. 192, 1959, reprinted as B.C. Forest Service Technical Publication T 52.

REFORESTATION

FOREST NURSERIES

Heavy rains in the early spring, followed by clear, frosty nights, caused severe losses in one-year seedlings at Green Timbers and East Kootenay nurseries. Seedlings were either "heaved out" or, where roots were too well developed to permit heaving, the bark at the root-collar stripped. The bark of large numbers of two-year-old seedlings was lacerated at the root-collar by ice crystals in the surface soil or winter mulch. The root systems of numerous other seedlings were severely deformed by partial frost heaving. At Duncan, cool, moist spring weather caused an outbreak of grey mould twig-blight (*Botrytis cinerea* Fries), which killed or damaged 10 per cent of the second-year seedlings before the onset of dry, warm weather stopped the disease. Treatment with 4–4–50 Bordeaux solution appeared to have little effect.

The three Coast nurseries shipped out 6,797,050 two-year seedlings and 803,925 other classes. The East Kootenay nursery produced 649,725 seedlings, mainly two-year-olds. Total production of field planting stock was 8,250,700 seedlings. An additional 781,125 seedlings were transplanted at Duncan, Green Timbers, East Kootenay, Hixon, Telkwa, and Okanagan Mission. Two-year spruce, growing at Green Timbers, did not reach plantable size and will be held over for a third year, when a sufficiently high percentage should be of good size.

A very wet spring delayed completion of sowing at some nurseries until June 18th. A total of 1,925 50-foot seed-beds were sown, including seventy-seven beds of Interior spruce at Green Timbers. The use of raised beds seems to have promise in preventing frost-heaving in this species. A new type of sprinkler, which throws a finer spray in a rectangular pattern, has also given good results.

Preliminary trials of fall-sown Douglas fir for the purpose of producing a better class of one-year planting stock have indicated that a much sturdier seedling can be produced. Fall sowing of hemlock in raised beds has also given encouraging results, and little frost-heaving is evident to date.

This year's seed-beds now contain an estimated 13,000,000 seedlings, most of which are destined to be planted out as two-year root-pruned seedlings. This total is made up of seventy different seed-lots.

SEED AND EXTRACTION

The highlight of the year was the bumper cone-crop over the whole of the Province for most commercial species, with the possible exception of ponderosa pine. On the Coast the cone-crop on Douglas fir was the best since 1937, and crops of well-filled cones occurred up to the top elevation-range of the species. Cool damp weather from September on prevented cones from drying out and dropping their seed. Samples of Douglas fir collected at the end of the year contained up to one-half pound of seed per bushel of cones, which augurs well for a good catch of reproduction in the spring. Similar conditions existed throughout the Interior forest districts.

In the collection of cones, the principles of the tree-seed improvement programme were adhered to as closely as possible. On the Coast, many young stands which, due to age and stocking, were deemed good potential cone-producers were examined for cone yield and stand quality and periodically for seed count and development. Actual picking on Vancouver Island was done by high-school students under supervision of Reforestation Division staff.

In the Chilliwack Public Working Circle, an excellent job of collecting was done by inmate crews of the Attorney-General's Department, who secured nearly 1,800 bushels of cones. In the Vancouver Forest District, 8,919 bushels of Douglas fir and 92 bushels of other species were collected. In the other forest districts, collections were made or supervised by members of the stand-treatment crews. In the Kamloops District, the cool, damp, late summer so retarded spruce cone development that collections were not made until after the first snowfall. In the Prince George and Prince Rupert Districts, spruce cones were heavily infected by a seed-destroying cone-rust, *Chrysomyxa pyrolata* Winter. In spite of these difficulties, 425 bushels of spruce and 139 bushels of Douglas fir were collected in districts other than Vancouver. In all, the Forest Service collected 9,575 bushels of cones. Approximately 5,000 bushels were collected by the forest industry and an estimated 100,000 bushels by commercial tree-seed dealers.

All Forest Service cones are extracted in the remodelled seed-extraction plant at the Duncan nursery. The new oil-fired hot-water-heated Moore kiln worked well, processing 300 bushels of wet cones in forty-eight hours.

In the past, it has always been the practice of the Service to either sun-dry Douglas fir cones before sacking or to store green cones in well-ventilated trays 3 to 5 inches deep. In 1959 the practice of leaving green cones in sacks was used extensively. Due to a cool, wet fall, cones from sacks were still extremely wet when extraction commenced (95 per cent moisture content in some cases). While most lots were quite mouldy, it was found that this mould was mostly superficial. On the whole, seed yield was very good from sack-stored cones, averaging over 0.60 pound per bushel. The average yield of all Coast Douglas fir collections since 1944 was 0.44 pound per bushel of dried cones. This increase can be attributed partly to easier and more complete extraction and partly to careful examination of cones for filled-seed count and selection of only well-formed stands with a high percentage of filled seeds.

Germination tests on some of the first lots extracted were completed before the end of the year. These averaged approximately 90 per cent. In all, over eighty routine germination tests were carried out during the year.

RECONNAISSANCE AND SURVEY WORK

Reconnaissance and survey work were kept to a minimum on the Coast during the 1959 field season. Early in the spring, it was evident that a bumper cone-crop was on the way, and personnel ordinarily employed on regeneration surveys were switched to cone-crop reconnaissance, supervision of collections, etc. One reconnaissance, covering 2,000 acres, was carried out in the Sechelt Peninsula, and a very small survey covered 260 acres on the Gordon River area, Vancouver Island.

For the third year, a reforestation crew under the supervision of the Forest Surveys and Inventory Division conducted fairly general surveys to secure basic information on restocking in certain areas. Work begun the previous year in the Yale Sustained-yield Unit was completed with the survey of 27,660 acres. An analysis of figures for the complete survey covering 36,590 acres of larger cut-over types indicates 16,460 acres (46 per cent) not satisfactorily restocked. Natural restocking is expected to take place eventually on 53 per cent of this. Of the balance, 4,051 acres (25 per cent) is plantable and 3,656 acres (22 per cent) not plantable, due to unfavourable surface conditions. This party spent the latter part of the season in the Prince Rupert District, where 22,000 acres were examined in the Babine Public Working Circle. The season was finished doing a more intensive survey of 2,300 acres of the Giscome burn in the Prince George District.

In the East Kootenay, site classification of not satisfactorily stocked pine sites continued. Of thirteen examined, a total of six, covering 10,000 acres, were assessed as having an apparent site index over 65. These will be given first priority in planting plans.

A preliminary reconnaissance was carried out on two areas in the Kootenays, totalling 4,500 acres. These will be mapped in detail later as the greater part of the acreage involved requires restocking.

PLANTING

Planting commenced at lower elevations on the southern part of Vancouver Island in mid-January and was somewhat hampered by snow. At higher elevations, planting commenced in mid-February and crews had to fight snow throughout the operation. In the Campbell River area, planting was started on February 2nd, but, after three days, heavy snow forced crews to discontinue until February 23rd. During the spring, Reforestation Division crews planted 1,246 acres of Crown land and 3,016 acres of private lands under contracts mainly required under section 167 of the *Forest Act*. The forest industry and others planted 7,754 acres, mainly on tree-farm licences.

In the fall, the Division completed one project of 266 acres on the Coast. Industry planted a total of 4,880 acres.

In the Southern Interior, Reforestation crews planted 625 acres in the East Kootenay and 436 in the Christina Lake region, near Grand Forks. Stand-treatment crews planted another 10 acres in the Nelson District and 15 in the Kamloops District. Spruce seedlings grown at the Green Timbers nursery were planted on 110 acres in the Prince George District and 49 acres in the Prince Rupert District.

In the Southern Interior, two companies planted 72 acres on their tree-farm licences. Several companies also undertook pilot-scale plantings on 24 acres in the northern districts.

The Forest Service carried out only one small project of approximately 12 acres in the Kamloops District during the autumn.

Total planting in the Province for the year by all agencies amounted to 8,250,700 trees on 18,607 acres (*see* Table 2 of Appendix for statistics of planting over the past ten years).

Periodic plantings to test the feasibility of cold storage of seedlings and use of one-year seedlings were repeated with promising results. Since 1959 was a comparative cool, moist year, results cannot be deemed conclusive, and tests are to be repeated for several years.

Plantation Improvement and Maintenance

The cultural practice of removing competing brush and weeds from young plantations was carried on at Green Timbers during the slack season. Approximately 10 acres were cleaned during the year. The programme of road maintenance in plantations was continued. A total of 160 miles of road was graded and, where necessary, ditches were improved and brush cut out.

In the East Kootenay, a further 66 acres of young overstocked ponderosa pine stands were thinned during the winter months, to bring the total area thus treated to 377 acres.

Preparation of Planting-sites

In line with the policy of carrying on pilot-scale tests of various means of brush eradication to secure information on feasibility and costs, a 10-acre block of vine

maple in the Robertson Valley was cleared, using Rowco Brushking saws. Deciduous cover was classed as heavy to medium (60 to 80 per cent of area covered). It was found that this type of stand, with stems from 1 to 3 inches in diameter, could be cut down for $14.80 per acre. However, the accumulation of slash on the ground was too dense to permit planting, and windrowing this material by hand raised the cost to $93.59 per acre. Tests carried out by other agencies indicate that caterpillar tractors of the D-8 class or better with the right equipment can do this same job for $20 to $25 per acre.

Inmate crews from the Attorney-General's Department hand-cleared the brush from 10 acres in preparation for planting.

Reforestation crews felled snags on 4,184 acres which are to be planted or are adjacent to planting sites.

PERMANENT IMPROVEMENTS

Remodelling of the seed-extraction plant was completed. A new pump-house was built at Mesachie Lake, and an electric pump and underground pipes were installed for a permanent fire-protection system. A new pump-house was built and an electric pump installed for nursery irrigation at the Campbell River nursery. Similarly, at the East Kootenay nursery a new electric pumping system was installed to bring irrigation-water from Perry Creek. Eight acres were also cleared on the upper field, which is of a better soil type. At the Duncan nursery, grading of some land which was formerly too low lying for seed-beds has reclaimed sufficient area to sow 100 additional beds.

WORKING PLANS

INTRODUCTION

There are now in operation, thirty-six tree-farm licences, sixty-four sustained-yield units*, thirty-six tree-farms (under the *Taxation Act*), and fifty farm wood-lot licences. The combined productive area of these management units, committed to continuous forest production, is 41,212,700 acres. Their total current allowable cut of 677,540,000 cubic feet is equivalent to 64.5 per cent of the total 1959 Provincial scale. The future potential of these lands is much greater than this.

As a result of present Government policy, the award of further tree-farm licences will be confined to a relatively few special cases. This will permit personnel of this Division to devote the greater part of their time to work related to the initiation of new sustained-yield units and management planning on units already established.

Of particular interest during the year was the preparation, by Working Plans staff, of a stand-treatment plan for the immature stands and inadequately restocked cut-over lands in the Chilliwack Public Working Circle. The available working force of prisoners from the Provincial gaol at Oakalla will make it possible to carry out the plan at minimum cost to the Government. The lessons in practical forestry learned here will be of immeasurable value in the development of workable plans for the many other sustained-yield units in the Province.

SUSTAINED-YIELD UNITS*

New units approved during the year were the Granby, Kitimat, and Monkman. Five existing units—the Lac la Hache, Longworth, Nicola, Parsnip, and Quesnel Lake—were enlarged and allowable annual cuts revised. Improved inventory data also permitted allowable-cut reviews for a number of other units.

There are now sixty-four approved sustained-yield units in operation, comprising a total productive forest area of 34,606,543 acres and a combined allowable annual cut of 418,620,000 cubic feet. They are listed below by forest districts.

Vancouver Forest District

Name of Sustained-yield Unit	Productive Area (Acres)	Annual Allowable Cut (M C.F.)
Barclay	47,665	2,500
Broughton	355,421	13,000
Cape Scott	104,873	2,250
Chilliwack	73,023	3,000
Harrison	164,653	6,400
Kyuquot	362,635	19,650
Redonda	257,099	17,000
Sayward	111,876	3,500
Sechelt	304,881	15,000
Seymour	224,815	4,200
Soo	214,799	8,300
Yale	402,726	20,000
Totals	2,624,466	114,800

* Forests, including public working circles, which are managed by the Forest Service.

Prince Rupert Forest District

Name of Sustained-yield Unit	Productive Area (Acres)	Annual Allowable Cut (M C.F.)
Babine	1,010,961	6,900
Burns Lake	1,024,791	5,500
Graham Island	585,882	8,600
Hecate	862,782	15,500
Kitimat	305,875	4,400
Kitwanga	529,416	3,000
Morice	778,957	7,000
Ootsa	1,720,969	9,300
Rivers Inlet	374,041	7,500
Smithers	506,810	4,500
Terrace	220,175	6,400
Totals	7,920,659	78,600

Prince George Forest District

Name of Sustained-yield Unit	Productive Area (Acres)	Annual Allowable Cut (M C.F.)
Big Valley	353,179	6,000
Bowron	376,247	8,000
Carp	1,237,389	6,600
Cottonwood	412,367	5,350
Crooked River	604,231	8,740
Longworth	646,247	9,200
Monkman	581,575	4,950
Narcosli	1,136,526	4,000
Naver	302,217	6,720
Parsnip	980,922	7,000
Purden Lake	154,562	2,500
Robson	581,466	7,000
Stuart Lake	723,847	7,500
Westlake	595,570	6,000
Willow	259,446	7,000
Totals	8,945,791	96,560

Kamloops Forest District

Name of Sustained-yield Unit	Productive Area (Acres)	Annual Allowable Cut (M C.F.)
Barriere	137,830	1,800
Big Bar	1,488,311	12,000
Botanie	462,852	5,600
Eagle	228,862	2,600
Lac la Hache	1,492,729	13,000
Nehalliston	355,529	2,000
Nicola	714,060	7,000
Niskonlith	219,700	2,350
North Thompson	219,975	3,000
Quesnel	1,249,189	14,900
Salmon Arm	85,311	1,760

Kamloops Forest District—Continued

Name of Sustained-yield Unit	Productive Area (Acres)	Annual Allowable Cut (M C.F.)
Similkameen	706,403	3,000
Spallumcheen	561,428	9,700
Stum	994,430	3,000
Taseko	2,006,885	4,200
Williams Lake	741,645	6,300
Yalakom	425,515	3,000
Totals	12,090,654	95,210

Nelson Forest District

Name of Sustained-yield Unit	Productive Area (Acres)	Annual Allowable Cut (M C.F.)
Arrowhead	129,072	2,000
Creston	568,018	6,000
Edgewood	214,205	2,800
Granby	491,290	3,000
Kettle	679,011	5,750
Nakusp	64,946	2,200
Slocan	188,852	2,500
Upper Kootenay	186,506	4,700
Windermere	503,073	4,500
Totals	3,024,973	33,450
Grand totals	34,606,543	418,620

TREE-FARM LICENCES

Nine tree-farm licences were awarded during the year, bringing the total number in operation to thirty-six. One existing licence, No. 13 (Bull River), was extended. The new licences and the extension were recommended for award by the late Commissioner Sloan in his 1956 Report. Listed below are the licences awarded in 1959:—

Tree-farm Licences Awarded, 1959

T.F.L. No.	Forest District	Name of Licence	Licensee	Productive Forest Area (Acres)	Annual Allowable Cut (M c.f.)
13	Nelson	Bull River[1]	Galloway Lumber Co. Ltd.	38,860	1,100
28	Prince George	Shelley	Shelley Development Ltd.	81,270	2,800
29	Prince George	Eagle Lake	Eagle Lake Sawmills Ltd.	96,820	2,000
30	Prince George	Sinclair	Sinclair Spruce Lumber Co. Ltd.	71,090	1,073
31	Prince George	McGregor	Upper Fraser Spruce Mills Ltd.	42,530	1,038
32	Kamloops	Bolean	Vernon Box & Pine Co. Ltd.	31,320	550
33	Kamloops	Sicamous	Shuswap Timbers Ltd.	14,840	385
34	Prince George	Seebach	Church Sawmill Ltd.	42,070	822
35	Kamloops	Jamieson Creek	B.C. Interior Sawmills Ltd.	97,240	1,170
36	Vancouver	Cordero	F. & R. Logging Co. Ltd.	13,390	870

[1] Amended to include extension area.

The thirty-six tree-farm licences in operation have a combined productive forest area of 5,851,980 acres and a total allowable annual cut of 226,140,000 cubic feet.

TREE-FARM LANDS

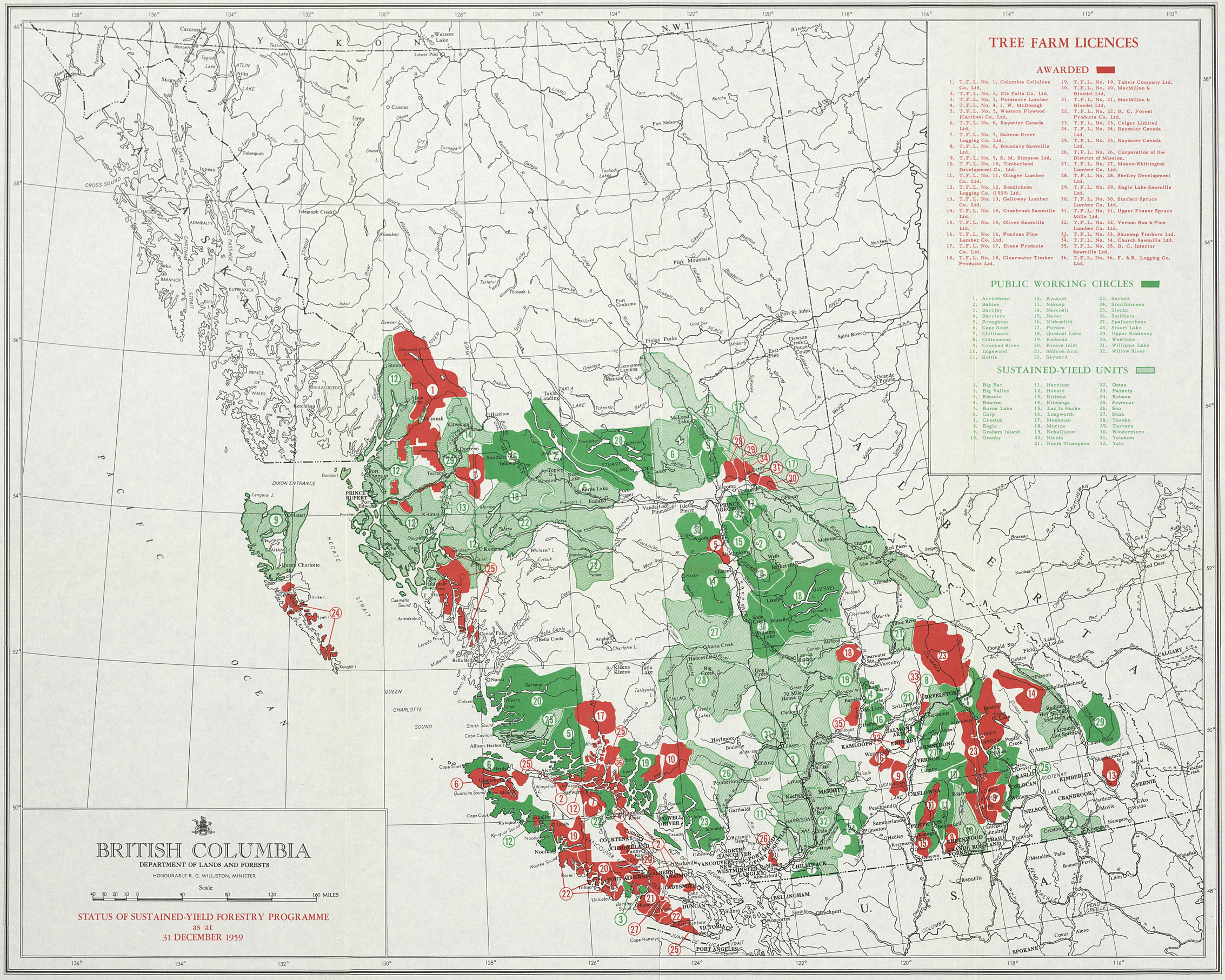
No new tree-farms under the *Taxation Act* were certified in 1959, although approximately 4,000 acres were certified for addition to existing tree-farms, bringing the total productive area under this classification to 742,120 acres with a combined allowable cut of 32,460,000 cubic feet plus 387,000 Christmas trees.

FARM WOOD-LOT LICENCES

The processing of farm wood-lot licence applications, including the preparation of working plans, is now the responsibility of the districts rather than the Working Plans Division. This Division will continue to receive and recommend for approval those plans submitted by district staff and will be responsible for the preparation of licence documents.

Only one new wood-lot licence was awarded during the year, and, as one was also cancelled, the number in good standing remains at fifty. However, thirty-one new applications were received in 1959, and, even allowing for a number of the applicants not having the necessary qualifications, this represents a considerable increase in interest over the preceding year.

Due to the greater priority of work related to the establishment and management of sustained-yield units, the activities of wood-lot personnel have had to be redirected, in part, to this phase of the Division's work.


TREE FARM LICENCES
AWARDED
1. T.F.L. No. 1, Columbia Cellulose Co. Ltd.
2. T.F.L. No. 2, Elk Falls Co. Ltd.
3. T.F.L. No. 3, Passmore Lumber
4. T.F.L. No. 4, I. W. McDonagh
5. T.F.L. No. 5, Western Plywood (Cariboo) Co. Ltd.
6. T.F.L. No. 6, Rayonier Canada Ltd.
7. T.F.L. No. 7, Salmon River Logging Co. Ltd.
8. T.F.L. No. 8, Boundary Sawmills Ltd.
9. T.F.L. No. 9, S. M. Simpson Ltd.
10. T.F.L. No. 10, Timberland Development Co. Ltd.
11. T.F.L. No. 11, Olinger Lumber Co. Ltd.
12. T.F.L. No. 12, Bendickson Logging Co. (1939) Ltd.
13. T.F.L. No. 13, Galloway Lumber Co. Ltd.
14. T.F.L. No. 14, Cranbrook Sawmills Ltd.
15. T.F.L. No. 15, Oliver Sawmills Ltd.
16. T.F.L. No. 16, Pondosa Pine Lumber Co. Ltd.
17. T.F.L. No. 17, Evans Products Co. Ltd.
18. T.F.L. No. 18, Clearwater Timber Products Ltd.
19. T.F.L. No. 19, Tahsis Company Ltd.
20. T.F.L. No. 20, MacMillan & Bloedel Ltd.
21. T.F.L. No. 21, MacMillan & Bloedel Ltd.
22. T.F.L. No. 22, B. C. Forest Products Co. Ltd.
23. T.F.L. No. 23, Celgar Limited
24. T.F.L. No. 24, Rayonier Canada Ltd.
25. T.F.L. No. 25, Rayonier Canada Ltd.
26. T.F.L. No. 26, Corporation of the District of Mission.
27. T.F.L. No. 27, Moore-Whittington Lumber Co. Ltd.
28. T.F.L. No. 28, Shelley Development Ltd.
29. T.F.L. No. 29, Eagle Lake Sawmills Ltd.
30. T.F.L. No. 30, Sinclair Spruce Lumber Co. Ltd.
31. T.F.L. No. 31, Upper Fraser Spruce Mills Ltd.
32. T.F.L. No. 32, Vernon Box & Pine Lumber Co. Ltd.
33. T.F.L. No. 33, Shuswap Timbers Ltd.
34. T.F.L. No. 34, Church Sawmills Ltd.
35. T.F.L. No. 35, B. C. Interior Sawmills Ltd.
36. T.F.L. No. 36, F. & R. Logging Co. Ltd.
PUBLIC WORKING CIRCLES
1. Arrowhead
2. Babine
3. Barclay
4. Barriere
5. Broughton
6. Cape Scott
7. Chilliwack
8. Cottonwood
9. Crooked River
10. Edgewood
11. Kettle
12. Kyuquot
13. Nakusp
14. Narcosli
15. Naver
16. Niskonlith
17. Purden
18. Quesnel Lake
19. Redonda
20. Rivers Inlet
21. Salmon Arm
22. Sayward
23. Sechelt
24. Similkameen
25. Slocan
26. Smithers
27. Spallumcheen
28. Stuart Lake
29. Upper Kootenay
30. Westlake
31. Williams Lake
32. Willow River
SUSTAINED-YIELD UNITS
1. Big Bar
2. Big Valley
3. Botanie
4. Bowron
5. Burns Lake
6. Carp
7. Creston
8. Eagle
9. Graham Island
10. Granby
11. Harrison
12. Hecate
13. Kitimat
14. Kitwanga
15. Lac la Hache
16. Longworth
17. Monkman
18. Morice
19. Nehalliston
20. Nicola
21. North Thompson
22. Ootsa
23. Parsnip
24. Robson
25. Seymour
26. Soo
27. Stum
28. Taseko
29. Terrace
30. Windermere
31. Yalakom
32. Yale
BRITISH COLUMBIA
DEPARTMENT OF LANDS AND FORESTS
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 1959

PUBLIC INFORMATION AND EDUCATION

INTRODUCTION

The demand for forestry information by the news media, schools, industry, and the general public continued on a high level. The ability of the Division to meet this demand satisfactorily was hampered by lack of funds and field personnel. Every effort was made with the resources available to meet the need, principally by greatly expanding the duties and responsibilities of the school lecturers and certain clerical staff.

The Service's prime need in its information programme continues to be the establishment of information officers at the forest district headquarters level. In addition, assistance in the editorial and writing phases of the work is becoming a serious requirement.

PHOTOGRAPHY AND MOTION PICTURES

The photographic laboratory processed and printed 180 rolls of black-and-white film for other divisions of the Forest Service during the year. A certain amount of negative colour material is also now being used by some divisions. The photographic staff took a total of 656 black-and-white and 81 colour negatives, and over 2,500 black-and-white negatives and 200 35-mm. colour slides were added to the files. This represents a 100-per-cent increase over last year, and the encroachment of storage space on the studio working area, which has long been a problem, is now reaching an acute stage.

In the early summer, several visits were made to logging settings to increase the variety and up-date the selection of logging photographs. Due to the industrial strike, however, this project was not completed. Complete coverage was provided by a photographer-writer team for an experimental burn conducted in the Kamloops Forest District. A set of colour slides was also taken for the Kamloops protection section to illustrate sawmill waste-disposal methods.

Over 2,548 8- by 10-inch photographic prints were produced, an increase of over 1,000 over 1958. Approximately 1,500 of these prints were supplied to the press and periodicals for use with news and feature articles. With the steady increase of this type of work, existing equipment is rapidly becoming inadequate and breakdowns are more frequent.

In April the Division's 16-mm. sound, colour production "Mark of Progress" was shown for the first time at a public "forestry forum" held in Prince George and attended by over 800 members of the public. The film is now receiving good circulation through the film library.

Primarily due to shortage of funds and writing staff, new motion-picture footage this year was limited to coverage of a helicopter air-lift of a prefabricated lookout to Mount Artaban, in the Vancouver Forest District.

Some new projects were undertaken this year. A total of 157 metalphotos were made for use as placards in exhibits and for the use of Engineering Services Division. The bulk were required for the newly designed Christmas-tree scaling-stick.

Several Forest Service exhibits were supplied with design layouts and photographs, the most notable being the mobile trailer exhibit which toured fall fairs in the Nelson and Kamloops Forest Districts. Thirty-eight large exhibition prints were provided in various sizes, including a 30- by 30-inch colour print to the Surveys and Inventory Division. There is a need for the precision photographic equipment to be brought up to date in order to meet the growing demand for quality work.

Filmstrips

A copy of each of the three filmstrips produced last year has been placed with the Canadian Forestry Association, and copies have also been placed with both Victoria and Vancouver visual education departments for circulation through the schools.

A colour filmstrip on cone collection, seed extraction, and planting is being produced for the Reforestation Division. To date, forty colour photographs have been taken, and it is hoped to have the strip completed by late spring.

Art work for filmstrips and exhibit displays required 137 individual drawings to be made.

Commercial Theatres

For the fifth consecutive year a 35-mm. forest-protection trailer was circulated through the commercial theatres in the Province. Exterior shooting was carried out by Divisional photographers. This trailer was shown for one week in each of seventy-one theatres during July and August, to a total estimated audience of 305,000.

FILM LIBRARY

During the year, a total of 123,179 individuals viewed Forest Service films. This figure includes attendances of schools serviced by the Division's lecturers. The film library started the year with eighty-three individual subjects; ten were withdrawn during the year; and nineteen new subjects were added, making a total of ninety-two subjects available at the year's end (*see* Table 55 of Appendix).

Television use of library films is steadily increasing, and loans were extended to organizations in many parts of the world. British Columbia House, London, England, continues to make good use of Service films on deposit there.

Amongst the more interesting additions to the library was a series of four films devoted to the proper use of fire-fighting hand tools, produced co-operatively by this Service and a United States agency.

During the year, seventy-seven special evening programmes were given by Division staff members. The demand for this type of showing has greatly increased during the past two years.

Greater use of Divisional motion-picture equipment was made by other members of the Service. A total of 103 individual loans to authorized personnel were made. This increase was a contributing factor in the greater cost of operation and maintenance of these units.

PUBLICATIONS AND PRINTING

The 1958 Annual Report of the Forest Service was edited, synopsized, its printing supervised, and distributed. Other major printing projects included 76,000 school scribblers, 31,000 calendars for 1960, two issues of Protection bulletins, the 1959 " Research Review," and two technical publications—T.51 " Forecast of Yield in Relation to Thinning Régimes in Douglas Fir," by G. C. Warrack, of the Research Division, and T. 52 " Grafting Methods for Douglas Fir," by A. L. Orr-Ewing and D. C. Prideaux, Research Division, reprinted from The Forestry Chronicle, September, 1959. A special Christmas edition of the Forest Service news-letter was authorized this year and distributed throughout the Service.

Eight publications were reprinted during the year in order to keep up with the demand, but is was not possible to reprint one major item because no funds were available. Three lay bulletins were reprinted twice during the year. The demand

for forestry lay and technical printed information far outstrips the supply and the Division's resources available to meet the demand. As in the past few years, more and more funds are being devoted to purely maintaining the supply of existing material, leaving no margin for development of sorely needed new media.

The Division distributed Survey Note No. 2, "Helicopter Use in Forest Surveys," maintained the supply of display posters, decals, and minor materials, and produced and distributed a personnel directory for use in the field.

To assist in the dissemination of factual up-to-date forest policy and general forestry information throughout the Service field staffs, a new medium of mimeographed information items was distributed from time to time during the year to all Rangers, the Ranger School, and district headquarters staffs. This programme appears to be filling a real need if reactions from the field are to be any guide.

RADIO AND TELEVISION

The annual forest-protection and educational radio campaign was maintained during the year. With the exception of radio stations CBU (Vancouver) and CFPR (Prince Rupert), all stations in the Province carried thirty-two 15-second flash announcements and sixteen 1-minute spot announcements for a period of eight weeks during the 1959 fire season. A pattern of twenty-four 45-second spot announcements was broadcast on C.B.C. stations at Vancouver and Prince Rupert and over thirty-one repeater stations.

It was noted that greater use was made by most forest districts of the special hazard flashes available to each District Forester or Forest Ranger over local stations during periods of serious fire-hazard.

All copy for the radio series was written and scheduled by members of the Division.

Members of the Division also participated in and arranged for several special radio programmes dealing with such items as the school lecture programme and general forestry matters. Radio station CKDA (Victoria), with the co-operation of this Division, broadcast four 15-minute programmes on reforestation and forest research.

No funds were available for commercial use of television. However, the Division did participate in several public service programmes and supplied the stations with video material.

NEWS MEDIA LIAISON

The volume of news and informational press releases, articles, and the supplying of background material to daily and weekly press, radio, television, and trade journals remained at a high level.

The school lecture staff participated in this work for the first time this year and with satisfactory results. While working in the various districts, they acted, in part, as district information personnel and worked to assist in liaison with local news media.

For the first time, a record was maintained of the results of the Division news and information releases. This record, from March to December only and covering but eight daily newspapers, showed that the sixty-two individual press releases made by the Division during the period resulted in 6,150 column inches of space in these principal dailies. No record was kept of trade journal, radio, or television coverage. Considerably better coverage could have been obtained had the staff been available to produce it.

Two special press tours were arranged by the Division during the year. A group including both press representatives and cattlemen was conducted on a visit to planting areas in the East Kootenay region. During the early part of the fire season, a tour was made of Forest Service and industrial protection and research facilities on Vancouver Island for a group of press and radio representatives.

New forest fire hazard rating sign.

SIGNS AND EXHIBITS

With the exception of Scotchlite " Prevent Forest Fires " design, all sign requirements were filled through the services of the Forest Service Marine Station. The demand for Scotchlite " Prevent Forest Fires " signs again far exceeded the supply. The design and production of this sign were revamped during the year to use facilities of the Department of Public Works sign-shop, and the results were very worth while. Eight pilot models were distributed throughout the Province.

Sixty fire-hazard rating signs were constructed and erected at various Ranger stations throughout the Province as a public information media indicating the degree of fire-hazard existing in each locality.

The placement and repainting of the " Keep B.C. Green—Use Your Ashtray " signs was continued. To date, 225 such signs have been placed on black-topped highways.

During the year, an attempt was made to meet the demand from exhibition organizations for this Service to enter displays in their fall fairs and conventions. With this in mind, the new highway sign-crew trailer was designed so as to be suitable for conversion into a mobile display unit. The interior of the trailer contained material depicting the major phases of Forest Service work. In addition,

provisions were made for the showing of motion-picture films to an audience gathered under a large awning extending from the roof of the trailer. The unit visited fairs at Chase, Grand Forks, Nelson, Creston, and Castlegar. Records show that approximately 12,000 people visited the unit.

Special exhibits were placed in Teacher Federation conventions at Prince George, Fort St. John, and Courtenay.

The permanent Forest Service exhibit located in the British Columbia Building, Pacific National Exhibition grounds, Vancouver, was completely redesigned.

Surveys and Engineering Sections of the mobile trailer unit exhibit.

SCHOOL LECTURES

Two school lecturers were active during the school terms January to June and September to December. For the third time since its inception, the lecture programme covered all five forest districts in one calendar year. Coverage in the districts was as follows:—

Forest District	Number of Schools Visited	Number of Lectures	Attendance
Vancouver	108	162	35,082
Kamloops	47	49	5,420
Prince George	76	82	5,600
Prince Rupert	21	25	5,135
Nelson	62	75	9,972
Totals	314	393	61,209

LIBRARY

The forest library experienced a year marked by staff changes. In May the librarian for the past seven years resigned, and the present librarian did not assume her duties until September. During this four-month hiatus, the library was administered by the first assistant.

In addition, a reorganization of functions in the library and throughout the Division permitted the library staff to be reduced by one clerical position late in the year.

Each month, 321 accession lists, which give a complete record of all publications entering the library, are circulated throughout the Forest Service. An average of 110 titles per month were circulated within and without the Service during the year.

The domestic-subject catalogue was closed down at the end of 1958, and information is now traced by subject through cards classified according to the Oxford decimal classification (ODC) and which are prepared and distributed from Oxford.

A collection of books in the Reforestation Division was classified according to the ODC and indexed by subject and author.

A limited (Russian and German) translation service for technical titles is now available through the library, and a considerable amount of use was made of this service during the last four months of the year.

CO-OPERATION

The commercial radio and television stations, and their agencies, and all segments of the press continued to offer a high degree of co-operation. Their support of the Service's information programme is again gratefully acknowledged.

The Department of Education continued its active support, for the eighth consecutive year, of the Service school lecture programme.

The Division and the Service as a whole continued to co-operate closely with the Canadian Forestry Association (British Columbia Branch) in the organizing of Forest Conservation Week and the Annual Fire Control Courses.

A member of the Division co-operated with the Girl Guide Association headquarters in presenting three six-week courses leading to qualification for the Guides' woodsman's badge. A total of 132 Guides participated.

A Division lecturer, on request, presented a week-long series of forest fire-fighting lectures to the regular forces of the Canadian Army at Work Point Barracks, Victoria.

FOREST MANAGEMENT

GENERAL

Despite the ten-week strike which curbed production on the Coast from July 6th to September 13th, the total estimated value of production of all forest products reached $637,715,000, surpassing the previous peak year of 1955 by over $6,000,000.

The value of lumber products maintained its leading position, accounting for $291,500,000, 46 per cent of the total value. Pulp and paper products valued at $234,529,000, comprised 37 per cent of the total, while plywood and shingles accounted for 12 and 3 per cent of the total value respectively. The value of pulp and paper production represented a 23-per-cent increase over 1958, while total pulp production of 1,875,236 tons showed an increase of 32 per cent over the previous year. It is estimated that one-third of the total pulp production came from 1,457,015 units of wood-chips made from mill residues. In addition, 260,529 units of chips were exported from the Province. Comparable figures for 1958 were 1,816,753 units with 404,049 units exported. Plywood production was down by less than 1 per cent, but lower prices reduced its total value to $75,500,000 from the $90,000,000 estimated for 1958.

On the whole, the industry had a good year, with the weighted average lumber price for all species shipped from the Interior of the Province about $5.34 per thousand board measure higher than that for 1958, but the decline in prices in the fourth quarter may portend a more difficult year in 1960.

The total cut for the Province amounted to 1,049,145,125 cubic feet. This showed an increase of 15 per cent over 1958, but was almost 2 per cent less than the record volume cut in 1956. Of this scaled volume, 574,451,278 cubic feet was cut from the Coast region, while 474,693,847 cubic feet originated in the Interior. The Coast scale of all products was 72,000,000 cubic feet higher than the 1958 total, but was still 81,000,000 cubic feet lower than in 1955. By contrast, the total Interior scale attained a new record, surpassing the 1956 peak by 54,000,000 cubic feet.

For the Province as a whole, Douglas fir still ranked first, with a total cut of 369,832,059 cubic feet. It is of major significance, however, that, for the first time, the volume of hemlock cut on the Coast exceeded that of Douglas fir. The total volume of hemlock scaled on the Coast was 182,881,206 cubic feet, compared with 175,376,885 cubic feet for Douglas fir. The scale of fir has been diminishing on the Coast since 1953, while the hemlock production has fluctuated from year to year. In the Interior, the scale of spruce continues to rank second to that of Douglas fir. The order of volume scaled for the entire Province continues to be Dougals fir, hemlock, spruce, and cedar, with these four species accounting for 85 per cent of the total cut.

On the basis of land tenures of origin, 832,964,602 cubic feet, or 79 per cent, came from Crown lands and, of this total, 562,504,152 cubic feet, or 68 per cent, came from timber sales, while 80,006,821 cubic feet, or 10 per cent, originated on the portions of tree-farm licences not previously alienated under some other form of tenure.

Water-borne lumber shipments for 1959 amounted to 1,197,653,000 f.b.m. This volume was almost equal to the average for the last ten years but was 116,708,000 f.b.m. lower than the 1958 total. Shipments to the United Kingdom declined to 267,363,000 f.b.m., the lowest volume since 1950. Water-borne ship-

ments to the United States accounted for 595,170,000 f.b.m., being almost equal to the 1958 volume and accounting for 50 per cent of all water-borne shipments.

Awarded during 1959 were 2,160 timber sales, containing a total estimated volume of 739,347,750 cubic feet of saw-timber. Comparable figures for 1958 were 2,145 sales with 682,221,469 cubic feet. The total estimated revenue from 1959 sales is $29,823,289.07; this value is 45 per cent greater than the 1958 total, reflecting higher stumpage rates as a result of improved market conditions, but is considerably lower than the record value of 1956 sales. The decline in the number of timber sales in the last few years may be attributed to several factors: a more liberal policy in granting extensions of time to existing contracts, resulting in fewer resales; a trend toward larger sales; the existence of tree-farm licences where timber is sold on a cutting-permit basis rather than by timber sale; and regulation of cut in fully committed sustained-yield units where the volume of timber sold is limited to the allowable cut.

Competitive bidding on timber sales offered for public auction showed a marked increase in 1959, surpassing the 1956 record. Stumpage rates higher than the upset prices were bid on 243 sales, or 12.6 per cent of all sales other than cash sales. These competitive sales comprised 28.3 per cent of the total sawlog volume. In the case of 104 sales containing 13.6 per cent of the total volume, the final stumpage rates bid were more than double the upset rates. Most of the competitive bidding occurred in the Nelson and Vancouver Forest Districts.

At the end of 1959, there were 7,139 timber-sale contracts in existence, the number having been reduced by 444 during the year. The total amount of security deposits held under timber-sale contracts increased to $15,150,213 from the $14,710,518 held at the close of the previous year.

MARKET PRICES AND STUMPAGE TRENDS

Lumber Prices

The Department relies upon the Interior dressed-lumber shippers to provide data regarding their sales and, as in previous years, co-operation has been excellent. These prices are necessary to determine stumpage rates and also provide the basis of stumpage adjustments under sliding scale. Three-month average prices f.o.b. car are used, as in past years, as well as seasonal corrections to fir-larch and spruce prices. There are now five lumber-price zones in effect since the Peace River Zone has been included in the Prince George-Blue River Zone.

The seasonally corrected fir-larch price and the cedar and yellow pine prices rose during the first half of the year and fell in the second half. The seasonally corrected spruce price and the white pine price were relatively stable. Uncorrected quarterly average prices for the Interior are shown below.

1959 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	146,229	$57.87	200,078	$65.99	200,500	$64.26	145,929	$55.77
Spruce	164,044	58.93	226,122	64.71	247,541	62.10	177,584	57.92
Cedar	5,398	54.70	8,280	60.83	6,713	65.86	5,309	58.28
White pine	3,698	93.41	6,524	97.33	7,238	96.53	3,522	99.21
Yellow pine	2,034	60.27	7,479	66.17	5,810	62.28	2,046	61.99

Log Prices

With the exception of hemlock and balsam prices, which remained at the low 1958 level, log prices generally were moderately higher during 1959. Fir and spruce prices rose throughout the year, whereas cedar and white pine prices rose and fell again toward the end of the year. Quarterly average prices for log sales reported to the British Columbia Loggers' Association are shown below.

1959 Quarterly Average Log Prices per M B.M. (Lower Coast)

Species	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.
Fir	$58.01	$59.96	$63.53	$64.46
Cedar	48.28	51.30	50.03	47.10
Hemlock	38.67	40.57	42.21	42.92
Balsam	36.88	36.94	39.69	39.23
Spruce	40.93	42.51	43.60	45.90
White pine	53.22	60.29	58.56	58.46

Stumpage Prices

Stumpage rates for timber on unalienatd land, or on land not held under other tenure within tree-farm licences, are determined by Forest Service appraisal. Timber-sale stumpage rates are established by bid, and the bid rates may not be less than the appraised rates. A brief description of the general appraisal method is contained in the 1957 Report of the Forest Service.

Stumpage rates for fir, larch, and spruce were higher than in 1958. The rates for cedar, hemlock, balsam, and yellow pine were the same, or only slightly higher, than their 1958 values. White pine stumpage was lower. These figures reflect improved log and lumber prices for the year.

The average bid prices for all species was $3.88 per hundred cubic feet for 1957, $2.98 for 1958, and $4.03 for 1959. For detailed figures *see* Tables 20 and 21 of the Appendix to this Report.

Sliding-scale Adjustments

There were 6,400 sliding-scale adjustments of stumpage rates during 1959. Most of these resulted in stumpage increases. This compares to 3,877 adjustments, mostly downwards, in 1958. The general application of the sliding-scale method to timber sales, without the option of reappraisal, was made in 1958.

All tree-farm licence cutting permits issued after January 1st, 1959, were made subject to stumpage-rate adjustment under sliding scale during the periods between the normal reappraisal of stumpage values. Previously, sliding scale had been included at the option of the licensee when each permit was issued.

Stumpage-appraisal Cost Studies

The field party with headquarters at Vernon completed time studies on five logging operations, four sawmilling operations, and one planer-mill operation. Lumber recovery studies were undertaken at three sawmills.

ADMINISTRATION OF MANAGED UNITS

Three new sustained-yield units were set up, to bring the totals to thirty-two public working circles and thirty-two sustained-yield units, or a total of sixty-four publicly managed areas, from which a cut of 310,000,000 cubic feet was recorded.

Work is progressing on plans to bring the publicly managed units on to the established licensee priority system for administrative purposes. This system is based on the premise that applications for further timber will be accepted only from the licensees of expiring timber sales. It has been found necessary to insert restrictive-cut clauses in timber sales to allow this system to work effectively.

SILVICULTURE

The programme implemented during 1959 included stand treatment, silvicultural studies, working-circle planning, and road location in public working circles and sustained-yield units.

The main effort during the year was centred on stand treatment. The Interior districts were again active in this field, and some 823 timber sales received stand treatment. This involved treating some 207,528 acres, as compared with 141,577 acres in 1958. For the most part, sales are treated to attain either increment or natural regeneration. The methods most commonly employed are single-tree selection in the case where increment is the objective and strips, blocks, patches, or single seed-trees where natural regeneration is desired. Of the 207,528 acres treated in 1959, 24,936 were marked under single-tree selection; 62,961 were laid out in blocks, strips, or patches; and 119,631 acres were marked for either single or groups of selected seed-trees.

Where natural regeneration is desired, it is often necessary to prepare a satisfactory seed-bed. This is often accomplished by either burning or scarification. Since 1956 the Forest Service has been developing a scarification programme as a means of obtaining natural regeneration in certain types of stands. In 1959 some twenty-two timber sales were scarified, involving approximately 1,757 acres.

In the 1958 Report, mention was made of the proposed developments in respect to planting. Planting was carried out during 1959 in all Interior districts. Altogether, some 200,000 trees were planted, which included the following species: Larch, yellow pine, spruce, and Douglas fir.

In order to develop the planting programme, considerable effort was expended in collecting suitable seed. This will be needed for future planting stock and also in connection with the direct-seeding programme which will be developed in the near future. In 1959, some 350 bushels of cones were collected and shipped to the Reforestation Division for extraction.

In addition to the cone-collecting programme, the stand-treatment crews, in conjunction with Reforestation Division, developed and maintained a number of small nurseries at different locations throughout the Interior, principally at Telkwa, Hixon, and Creston.

Of the many technical problems on which work was carried out during the year, the most significant was the preliminary work done in connection with second-growth management on the Lower Coast. Co-operative studies were also undertaken with several different agencies. Among the more noteworthy were the logging damage survey in the Prince George District and the Douglas fir bark-beetle survey of the damage to selected seed sources in the Cariboo.

SCALING

Scaling supervision in all Interior forest districts was intensified during the year, with field time apportioned among check scaling and investigations, instructional classes in preparing candidates for scaling examinations, and holding examinations. Scaling examinations were held at forty-seven centres throughout the

Interior, with 1,058 candidates sitting for the examinations. Three hundred and ninety-four candidates were successful in passing. In preparation for the examination, 193 instructional classes in scaling were held, each class being of two hours' duration.

Mill checks and investigations carried out during the year resulted in twenty-five prosecutions under Part VIII of the *Forest Act*. It was also necessary to suspend the licences of fifteen scalers because of scaling irregularities.

GRAZING

GENERAL CONDITIONS

The winter of 1958/59 was mild, with snowfall lighter than usual in the northern areas and about average in the south. At low elevations, snow melted early in the spring but subsequent cool weather retarded plant growth, and the range was not ready for use until considerably later than normal. Supplies of hay were generally good, and there was no undue hardship caused by the late forage development.

With the exception of the south-easterly portion of the range country, drought conditions prevailed until early August. Thereafter, precipitation was extremely heavy throughout.

The dry spring, following the drought conditions of 1958, resulted in poor forage production on both grassland and forest ranges in the north. Ranges in this area did not respond to the late summer rains due to relatively low temperatures and the advanced stage of growth which had been reached before the rains came. In the south, and particularly the south-east, forage production ranged from average to far above normal. Stock came off the range in generally good condition.

Hay production was light in many areas due to dry, cool conditions early in the growing season and also as the result of severe kill of alfalfa due to late winter icing conditions. Following the onset of heavy rains in August, haying conditions became extremely difficult. In many areas very little hay could be harvested, and much is of very poor quality. There is a general shortage of hay throughout most of the ranching area. This, combined with the early onset of winter conditions in all except the south part of the Kamloops District, has forced many stockmen to reduce their herds.

Rising costs and inadequate returns are causing many sheep-ranchers to go out of business or convert to cattle. This is reflected in the drop of sheep numbers on Crown range.

The trend toward the sale of calves and yearlings, rather than 2-year-olds, continues. This is resulting in a higher percentage of mature cows on the Crown range. Thus, forage demands are also increasing apart from the influence of stock numbers.

Markets and Prices

Cattle prices remained relatively steady until early in October, when some weakness in the market developed due to heavy shipments and a reduced demand on the part of the United States buyers. Weighted average prices received by cattlemen through the British Columbia Livestock Producers' Co-operative Association were $17.52 per hundredweight, compared to $19.57 in 1958. Lamb prices were also lower than the previous year. Total shipments of cattle were 4.5 per cent higher than in 1958.

Live-stock Losses

Losses of stock on the range appeared to be higher than normal in 1959. Although natural causes, such as poisonous plants, predatory animals, and severe weather conditions in the late fall, took their toll, artificial hazards were more important. Hunting accidents were particularly serious, and theft was suspected in a number of cases of unexplained loss. Losses due to highway traffic and rail traffic were also reported.

RANGE MANAGEMENT

Range-management plans must be revised to meet constantly changing conditions. During 1959, special attention was given to minimize any possible effects of the yellow pine planting programme on grazing interests in the East Kootenay Valley.

Forage-yield studies were intensified to determine the productive capacity of various sites. A variety of range-improvement techniques were also applied on a trial basis to find ways of increasing forage production.

Studies were also continued to determine the type of management required to maintain and improve forage production on suitable areas in the Peace River District. These lands revert to brush, and ultimately, if untreated, to a forest type without under-story forage. Special techniques, including the use of fire, herbicides, and rough cultivation, appear to be necessary.

Range Surveys

Range inventories provide the resource manager with information which enables him to develop a range-management programme which will lead to the best use of the forage. In 1959, a total of 440,720 acres were covered by grazing surveys, as follows:—

	Acres
Fernie and Elk Valley Stock Ranges	38,240
Hawkins Creek unit of Creston Stock Range	80,480
Upper Cache Creek Stock Range	100,000
Westwold Stock Range	202,000
Total	420,720

From 1945 to 1959, a total of 9,399, 885 acres have been covered by range surveys and resurveys. The resurveys are necessary to keep the range inventory information up to date.

Range Improvements

During the year, $48,760.70 was spent from the Range Improvement Fund. In addition, material to the value of $1,428.72 on hand at the end of 1958, was assigned to projects during 1959. The following work was completed:—

One stock-bridge	$200.00
Fourteen cattle-guards	6,170.01
Thirty-one drift-fences	10,514.38
Seven experimental plots	185.32
One hazard-removal	17.15
Four holding-grounds	374.62
Two mud-hole fences	850.00
One hundred and twenty-one range seedings	5,593.67
Twenty-eight stock-trails	8,090.43
Nineteen water developments	2,031.00
Wild-horse disposal	453.50
Machinery and equipment (purchase)	225.61
Maintenance and operation of equipment	1,009.48
Material purchased but not assigned to projects	3,188.70
Supervision, surveys, and technical studies	11,285.55

In addition to the costs charged to the Range Improvement Fund, range-users made considerable contributions of labour to a number of the above projects. Also, a number of these projects were constructed or repaired by fire-suppression crews and other Forest Service personnel without cost to the Range Improvement Fund.

Authority was also extended to permittees to construct and maintain, at their own expense, one breeding-pasture, two cattle-guards, five corrals, twelve drift-fences, two grazing-enclosures, one holding-ground, two horse pastures, one stock-trail, and two water developments.

Range seeding was reduced in 1959, due mainly to the fact that no major fires occurred which were suitable for seeding. Some 17,150 pounds of seed were used in 1959, compared to 21,615 pounds in 1958. The seeding of logged forest range and other similarly disturbed areas was at about the same level as the previous year. Fall seeding was curtailed due to unsuitable weather conditions. One prescribed burn in the Peace River area was seeded from the air. The costs reported previously covered only the cost of seed and other supplies. Labour, which is a major cost in seeding, was supplied by stockmen and Forest Service personnel.

Steel-rail decks were installed on ten cattle-guards on heavily used roads. Experience to date indicates that maintenance costs for this type of deck should be considerably less than that for wooden decks. One painted cattle-guard was installed across an asphalt highway in 1959, and preliminary results indicate that this new type of guard was relatively successful in holding cattle. Trials with electric cattle-guards were continued, but these guards do not appear to be entirely satisfactory in remote areas where maintenance is difficult.

Seeding grass on logging-roads has produced forage for live stock.

All of the Kamloops Grazing District and the major part of the Nelson Grazing District were closed to horses during the winter of 1958/59. Forty-eight horse-disposal licences were issued and sixty horses were cleared for shipment. Bounties remained at $5 on mares and geldings and $7.50 on stallions. The problem of horses on Crown range is now largely under control. High prices being paid for horses has encouraged horse-owners to take better care of their animals and to round up and ship their own excess horses. However, it is considered necessary to continue horse closures to further ensure that large numbers of useless horses do not again accumulate on Crown range.

During the year, studies were continued on the biological control of goat-weed (*Hypericum perforatum*). The two species of Chrysoline beetles, which were first introduced a number of years ago, are still disappointingly ineffective. However, the beetles continue to survive. The release of *Chrysolina varians,* made in 1958, showed some promise, but it is still too soon to draw conclusions as to the effectiveness of this species.

Range Research

The Canada Range Experimental Farm at Kamloops is responsible for basic range research in British Columbia. Studies were continued on a number of problems of special interest to the Forest Service, including range seeding, timber milk-vetch poisoning, range carrying capacities, and weight gains on forest range. Valuable assistance was obtained from the farm during the year on a wide variety of subjects, including technical guidance in connection with much of the work being done in the East Kootenay area.

Co-operation

Local live-stock associations are the media through which much of the co-operation between ranchers and the Forest Service is achieved. There are now fifty-three such associations approved under the *Grazing Act.* Three new associations were incorporated in 1959. One of these has already been recognized under the *Grazing Act,* and negotiations with the other two are under way. Meetings were held with the North Okanagan ranchers in 1959 to organize local live-stock associations, but no associations have been formed to date. Several recently inactive live-stock associations were reactivated in 1959.

The British Columbia Beef Cattle Growers' Association and the British Columbia Sheep Breeders' Association were active, and several matters of general concern to the industry were referred to them for their consideration.

A total of 124 association meetings were reported, and Forest Service officers attended 115 of these. Fifteen meetings were held with other live-stock and technical groups during the year.

A co-operative arrangement was entered into between the United States and British Columbia Forest Services and affected permittees for the fencing of a part of the International Boundary on Pasayten Mountain where intermingling of stock had become a problem.

Grazing personnel assisted in organizing and participated in several technical meetings during the year. At the instigation of the Forest Service, a short course in range management was arranged by the University. This course was held at the Range Experimental Farm in June and was attended by technical personnel from various agencies interested in range use. Early in the year, the Director of Grazing was appointed to the Beef Cattle Advisory Committee, set up to advise the Government on matters affecting the industry generally.

ADMINISTRATION

For the first time in over two years, the grazing personnel establishment was brought up to full strength, the last vacant position being suitably filled in May. Also, owing to the lighter fire season, the Ranger staff was able to give more attention to grazing work than during the previous year. However, in spite of this more favourable situation, the continually increasing work load resulted in much necessary field work remaining undone.

In 1959, two minor amendments were made to the *Grazing Act* to simplify administration and clarify the application of the Act to certain lands. Revised grazing regulations were published early in the year to meet the requirements of the *Regulations Act*. Grazing district boundaries were also revised to coincide with altered forest district boundaries.

For a number of years, grazing fees have been on a sliding scale, reflecting live-stock prices on the Vancouver market, as reported by the Canada Department of Agriculture. At the end of May, the public stockyards in Vancouver were closed and price reporting on the Vancouver market discontinued. It therefore became necessary to find a new basis for the sliding scale. After considerable research, it was finally determined that live-stock price information available from the British Columbia Livestock Producers' Co-operative Association would be the most suitable basis for the sliding scale.

Although the character of the problem did not change, the pressure of other land uses in the range country continued to grow during the year. Increased efforts were required to minimize conflict between grazing and these other uses. Further, land diverted to home-site, commercial, industrial, and recreational uses results in increased grazing pressure on the remaining range lands. More intensive management is thus required even to maintain total grazing use at its present level without damage to the range.

Logging on forest ranges continued to result in some conflict with grazing. However, this problem is not as acute as it was due to careful supervision by the Forest Service and growing co-operation between the logging and ranching industries.

In some cases, Indians have not been complying with the provisions of the *Grazing Act* in the use of Crown range. This has made proper management of the range difficult and, from time to time, has led to conflict with legitimate grazing permittees, both white and Indian. Special attention was given to these matters during the year and some progress was made.

During the year, a large number of ranches changed hands. This involved a considerable amount of work in connection with the transfer of grazing privileges and the explanation of grazing regulations and management plans to the new operators, many of whom were completely unfamiliar with range practices in this Province.

The growing importance of beef production in the Prince George District, particularly in the Peace River area, necessitated assignment of a Grazing Officer to that district for six and one-half months in 1959. The necessity of administration and range development in additional areas throughout the Peace River area was carefully investigated. Administration was commenced in the Sunset Prairie area. There are now three stock ranges in the Peace River District being managed under the provisions of the *Grazing Act*.

Grazing and Hay Permits

This year, 1,683 grazing permits were issued authorizing the depasturing of 124,425 cattle, 4,377 horses, and 20,604 sheep on Crown range. This represents an increase of 112 permits over 1958. Cattle numbers were up 1,936 head and

horses 208 head over the previous year. Sheep numbers were slightly reduced, being at the lowest level since 1928. (*See* Table 58 in Appendix.)

A total of 164 hay-cutting permits were issued authorizing the harvesting of 1,415 tons of hay and rushes from Crown range. Unfortunately, much of this hay could not be harvested owing to extremely wet weather, and many permits were cancelled. Such hay as could be harvested was of low quality.

A number of special-use permits for hay-cutting and for fenced pastures were issued under the Provincial Forest Regulations.

Grazing and Hay-cutting Fees

Grazing fees are on a sliding scale, based on live-stock prices received by the producers the previous year. Fees per head per month for 1959 were 15 cents for cattle, 18.5 cents for horses, and 3 cents for sheep.

This represents an increase of 3 cents per head per month for cattle and 3¾ cents per head per month for horses, reflecting the considerably higher prices received by stockmen in 1958. Sheep fees remained constant from 1958 to 1959. Hay-cutting fees, which are not on a sliding scale, remained at $1 per ton for wild hay and 70 cents per ton for rushes.

Total billings for grazing and hay-cutting fees were up from the 1958 level due to both increased fees and the larger numbers of stock on the Crown range. Billings exceeded collections, resulting in larger " outstandings " at the end of the year. (*See* Table 59 in Appendix.)

Live-stock Counts

Cattle counts were carried out in four areas where management problems had arisen. Accurate knowledge of the number of stock owned by ranchers is necessary to ensure actual grazing use is in line with permitted use and also as a basis for equitable allocation of Crown range.

Violations and Prosecutions

Several cases of serious violations of grazing permit conditions occurred during the year. Some stock were seized under the provisions of section 17 of the *Grazing Act* for too early turnout on spring range.

ENGINEERING SERVICES

ENGINEERING SECTION

Work continued on forest-development roads with an extensive programme of engineering investigations, route reconnaissance, location, and construction. In addition, work was carried out on a number of access roads required primarily for fire-protection and administrative purposes. Much of this work was undertaken as part of a winter work programme under a Federal-Provincial agreement for sharing the cost of constructing forest roads built during the first six months of 1959. Despite severe winter conditions, both location and construction crews maintained a high level of production during this period. Construction work was scheduled so that right-of-way clearing, rock work, bridge construction, and other operations least affected by winter conditions, proceeded during the worst weather.

Forest-road Programme, 1959

Project	Regulation Unit	Reconnaissance	Location	Construction
Vancouver Forest District		Miles	Miles	Miles
Crawfish Lake T.S. X71949	Kyuquot P.W.C.	14	------	------
Chilliwack River F.D.R.	Chilliwack P.W.C.	------	9.8	5.0
Handy Creek	Barclay P.W.C.	7	------	------
Kingcome River F.D.R.	Broughton P.W.C.	4	21.7	11.0
Mount Bruce Lookout Road	------	------	0.5	0.5
Port Hardy F.D.R.	Cape Scott P.W.C.	------	------	2.5
Skagit River	Yale P.W.C.	13	------	------
Stakawus Creek F.D.R.	Sechelt P.W.C.	------	4.6	------
Soo River F.D.R.	Soo S.Y.U.	------	9.3	------
Thompson Sound	Broughton P.W.C.	13	------	------
Toquart River	Barclay P.W.C.	13	------	------
Prince Rupert Forest District				
Fire Mountain Lookout Road	------	------	1.1	------
Kispiox River	------	68	------	------
Morice River F.D.R.	Morice S.Y.U.	------	------	0.6
Morrison Lake	Babine P.W.C.	15	------	------
Tochcha Lake F.D.R.	Babine P.W.C.	4	16.2	------
Prince George Forest District				
Gregg Creek Road	West Lake P.W.C.	------	2.9	------
Hasler Creek F.D.R.	------	20	3.7	------
Hutchison Mountain Lookout Road	------	------	3.4	------
McGregor River	------	60	------	------
Morkill River	Longworth S.Y.U.	22	------	------
Mountain Creek F.D.R.	------	20	10.7	------
Naver-Ahbau F.D.R.	Naver P.W.C. and Big Valley S.Y.U.	------	------	1.5
Sukunka River	------	100	------	------
Swift River F.D.R.	Cottonwood P.W.C.	16	20.0	8.0
Tzenzaicut Road	Narcosli P.W.C.	------	6.7	------
Willow River F.D.R.	Willow P.W.C.	------	------	3.0
Kamloops Forest District				
Cayoosh-Joffre	Yalakom S.Y.U.	56	------	------
Hendrix Creek F.D.R.	Lac la Hache S.Y.U.	3	34.4	16.5
Lawless Creek F.D.R.	Similkameen P.W.C.	------	------	0.5
Nicoamen-Mowhokam	Botanie S.Y.U.	24	------	------
Slok Creek	Yalakom S.Y.U.	22	------	------
Stein River	------	40	------	------
Nelson Forest District				
Damfino Creek F.D.R.	Kettle P.W.C.	------	22.2	------
Granby River	Granby S.Y.U.	22	------	------
Horsethief F.D.R.	Windermere P.W.C.	8	20.0	0.4
Lodgepole F.D.R.	Flathead S.Y.U.	------	30.4	6.0
White River F.D.R.	Upper Kootenay P.W.C.	40	19.8	12.5
Total 1959 programme	------	604	237.4	68.0
Previous works	------	1,635	474.0	214.3
Totals, forest-road programme, 1950–59	------	2,239	711.4	282.3

F.D.R.=Forest-development road.
P.W.C.=Public working circle.
S.Y.U.=Sustained-yield unit.
T.S.=Timber Sale.

Other activities of the Engineering Section included maintaining 207 miles of previously constructed road; operating highway transport units for moving heavy equipment, Porta-buildings, and other materials to Forest Service installations throughout the Province; and providing professional engineering assistance on problems encountered in the day-to-day operations of the Service.

Development Planning

Development planning continued as an important phase of the Engineering Services programme. Engineering investigations and route reconnaissance in fifteen forest areas encompassing some 2,815,000 acres of productive forest lands, with a current recoverable mature volume of 3 billion cubic feet, were undertaken during the year.

This work was accomplished by three field crews utilizing both the old and the new in personnel transport. During the field season, helicopters were used on a limited basis to check their application to route investigation. General use was made of fixed-wing aircraft, vehicles, boats, and foot in traversing the diversified terrain encountered by the field crews.

In the Prince Rupert Forest District, the proposed developments of the Kispiox River valley and the Morrison Lake area of the Babine Public Working Circle were investigated. Primary field investigations of the Sukunka, Hasler, and Mountain Creek drainages, the McGregor River drainage, and the Morkill River drainage, all in the Prince George Forest District, were completed. Development studies were undertaken for areas in the Quesnel Lake Public Working Circle and the Yalakom and Botanie Sustained-yield Units in the Kamloops Forest District. In the Vancouver Forest District, drainages were studied in the Kyuquot, Broughton, and Barclay Public Working Circles and the Yale Sustained-yield Unit.

Road Location

During the 1959 field season, engineering location was completed on 237.4 miles of forest roads. This programme included the initiation of location work on several new forest-development roads, the extension of existing road systems, and the compilation of road designs and estimates. The analysis of the use of survey data during construction has been continued. The result of these studies is a more flexible application of surveying procedures to the various road classes and design requirements.

Location work was initiated on the Soo River and Stakawus Creek Forest-development Roads, and the Chilliwack and Kingcome River road systems were extended. All these developments were in the Vancouver Forest District. Location work in the Prince Rupert Forest District included the completion of the Fire Mountain Lookout Road and the commencement of the Tochcha Lake road system. In the Prince George Forest District, the Swift River road system was extended, and location of the Hasler Creek and the Mountain Creek roads began. The Hendrix Creek road system in the Kamloops Forest District was extended with the location of both primary and secondary roads. In the Nelson Forest District, the Lodgepole and the Horsethief road systems were extended, and the Damfino Creek Forest Road was initiated.

A note of interest in this year's programme has been the work done on roads required primarily for forest administration and protection. Projects in this classification are the Gregg Creek Road, the Tzenzaicut Road, and the Hutchison Mountain Road in the Prince George Forest District.

Construction

Favourable weather during April, May, and June made possible the attainment of record production figures despite unusually poor weather during the fall. Sixty-eight miles of road was constructed during 1959. This was up 25 per cent from the previous year, and involved the movement of 1,110,000 cubic yards of common material, an increase of 48 per cent over the 1958 figure. Production during the 1959 construction programme also included the clearing and grubbing of 680 acres of right-of-way, movement of 42,000 cubic yards of solid rock, installation of 11,400 lineal feet of culvert pipe, stock-piling of 100,000 tons of crushed surfacing material, and the erection of six creosoted timber bridges.

Two noteworthy, two-lane, almost identical bridges were built over the Chilliwack River in the Chilliwack Public Working Circle. The glued-laminated wood girders in the main spans are 101 feet 9 inches long, 12½ inches wide, and 65 inches deep. They are the largest ever laminated in Canada and rest on reinforced-concrete piers, with 27-foot approach spans from each road embankment.

Another accomplishment was the construction of the Kingcome River Bridge in the Broughton Public Working Circle. Erected in an area accessible only by sea, its 340-foot length is the longest of any Forest Service bridge. The piers are of creosoted fir piling and are protected from debris and ice by pile dolphins and sheathing of wood and steel.

The decks of these and the other three bridges built in 1959 are of the laminated type, consisting of 2-inch planks laid on edge, nailed to each other, and anchored to the girders at intervals by cast aluminum brackets of Forest Service design.

Erection procedures have been designed to reduce to a minimum the number of specialized trades involved, and to use the type of heavy equipment normally available in woods operations. The main girders of the Chilliwack bridges were placed with a logging-arch, logging-donkey, tractors, and truck-mounted cranes. The Kingcome Bridge was erected using a skid-mounted pile-driver on the falsework and permanent piers, with a crawler tractor providing assistance in placing the main girders.

The initiation of construction on the Kingcome River Forest Development Road presented an interesting transportation problem. Access to the job was only possible by boat or aircraft. Two Forest Service self-propelled landing-barges, one of five tons and the other of 25 tons capacity, were used to transport construction supplies and light construction equipment. Heavy construction equipment and supplies were handled by commercial towing companies. A total of over 850 tons of equipment and supplies were moved to the job.

Recent developments in crawler-tractor attachments received considerable study, and both replacement tractors purchased this year were equipped with hydraulic tilting U-blades. By eliminating time-consuming manual blade changes, a considerable increase in productivity may be obtained with these units. One of these machines was also equipped with a hydraulic-controlled ripper, which has been used successfully to break up material which would otherwise have required blasting.

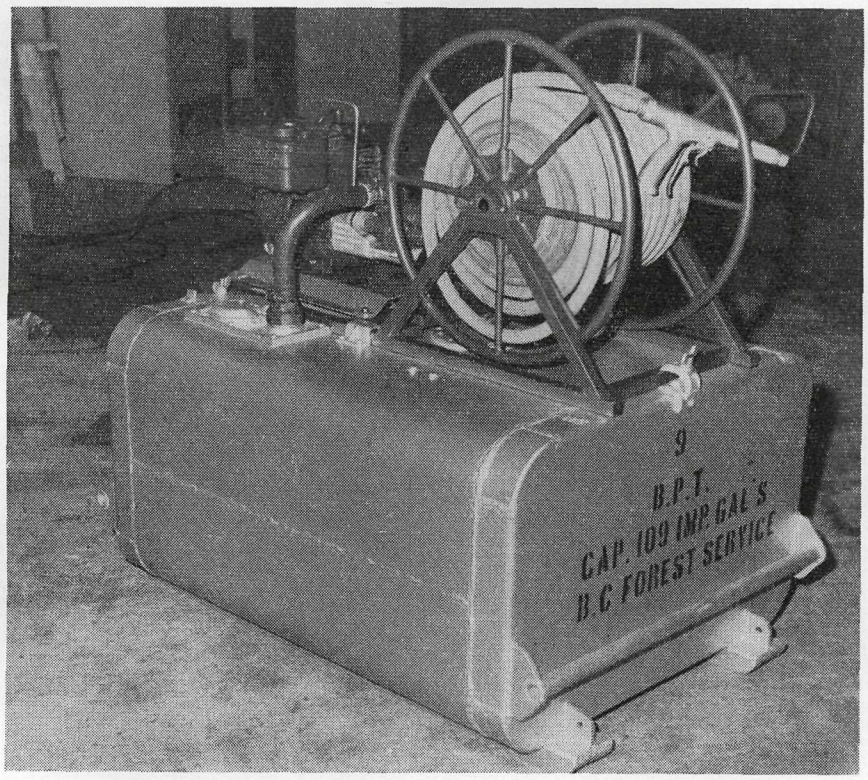
General Engineering

Designs were completed during the year for six creosoted " glue-lam " girder bridges for crossings of Fontaine Creek, Little Swift River, and Swift River on the Swift River Forest Development Road, Boss Creek on the Hendrix Creek Forest Development Road, Willow River on the Naver-Ahbau Forest Development Road, and Kingcome River on the Kingcome River Forest Development Road. The

latter is the largest Forest Service bridge to date, having three main spans of 84 feet each, and 44 feet of approach trestle at each end. This bridge is also the first designed for Forest Service " coastal loading," which consists of frequent crossings of an 83-ton logging-truck or occasional crossings of a 115-ton low-bed vehicle representing a low-bed semi-trailer truck carrying a 2.5-cubic-yard shovel. Preliminary designs and estimates were also prepared for bridges over Morrissey Creek on the Lodgepole Forest Development Road and Atlatzi River on the Kingcome River Forest Development Road.

A soils technician with a trailer laboratory was maintained in the field during the summer to assist the road location and construction crews with soil problems, and laboratory classification tests were carried out on 360 soil samples.

Other work included a pile-foundation design for a freezer building at the Duncan nursery, a field investigation to determine the feasibility of using piling for a wharf and float at Echo Bay, and an analysis of possibilities for improving the performance of the small hydro-electric installation at Thurston Bay.



Hundred-gallon-capacity light-weight portable tank and pump unit used in fire-fighting.

MECHANICAL SECTION

Motor-vehicle purchases were somewhat higher in number than in the previous year, there being 102 replacements and three additions to the fleet. The increased number of replacements was due in part to deterioration of units during the extremely heavy fire season in 1958. Purchases of four-wheel-drive units fell slightly as more two-wheel-drive, limited-slip differential types were put in service. The number of replacement trucks in the 14,000 to 24,000 G.V.W. (2 to 4 tons) class was

one less than last year, but one 35,000 G.V.W. (6 to 8 tons) heavy-duty unit was provided for tractor transport and road gravelling in the Prince Rupert District, replacing a truck-lowbed combination.

Other major expenditures included two heavy-duty (D-8 and D-9) tractors for the Engineering Section and ten dwelling trailers for crew housing in various districts and divisions.

Ten 100-gallon-capacity, light-weight, portable tank and pump units designed by the Mechanical Section and constructed at the Forest Service Marine Station were put into service and given a thorough test. These proved most acceptable to the districts and, with minor modifications, should become a standard piece of fire-fighting equipment.

Forest Service Mechanical Equipment

Type	Total Units, Jan. 1, 1959	Removed from Service	New Purchases	Total Units, Dec. 31, 1959
Sedans, coaches, and coupes	62	19	5	48
Suburbans, station wagons, and sedan deliveries	83	7	13	89
Small-type passenger-vehicles	25	3	3	25
Panel deliveries	49	5	20	64
Four-wheel-drive passenger types	65	9	14	70
Four-wheel-drive ¾-ton-pick-ups, etc.	233	23	27	237
Power-wagons	22	2	1	21
½-ton pick-ups	155	22	9	142
¾-ton pick-ups	38	6	8	40
14,000–24,000 G.V.W. trucks (2, 3 and 4 tons)	51	1	4	54
25,000–40,000 G.V.W. trucks (H.D.)	8	4	1	5
Fire-fighting tank-trucks	10	1	----	9
Total vehicles	801	102	105	804
Tractors	38	3	3	38
Graders	16	1	1	16
Scrapers—self-propelled	4	----	----	4
Shovels—power	2	----	----	2
Loaders—self-propelled	1	----	----	1
Outboard motors	348	20	22	350
Fire-pumps	751	39	3	715
Fire-pumps—portable tanker	8	----	2	10
High-pressure-Bean fire-fighting units	34	----	----	34
Borate mixer pumps	----	----	2	2
Chain-saws	354	29	39	364
Lighting plants	83	3	9	89
Snow-sedan—propeller-driven	1	----	----	1
Speeders—railway	17	----	3	20
Trailers—low-bed and high-bed	10	2	1	9
Trailers—dwelling, bunk-house, etc.	115	1	10	124
Trailers—miscellaneous	145	2	18	161
Air-compressors	4	----	----	4
Gas-powered rock drills	6	1	1	6
Muskeg tractors (personnel carriers)	4	----	1	5
Yarders	1	----	----	1
Crushing plants	1	----	----	1
Mechanical wheelbarrows	22	----	----	22
Welders	9	----	----	9
Cement-mixers	6	----	----	6
Augers—power, planting	3	----	----	3

General supervision and inspection of mechanical units followed approximately the procedures developed in past years, with each piece of equipment receiving at least one check-over. In the case of major units (cars, trucks, etc.), two recorded inspections were completed. Maintenance generally has improved throughout the years and is now of a comparatively high standard.

Surveys and Inventory Division continues to operate mobile inspection and repair crews during the field season and a repair-shop during the winter months. This has resulted in a definite lowering of repair costs to the Division. Engineer-

ing Division set up a small workshop in Victoria and employed four mechanics through the 1958/59 winter months, with satisfactory results.

Short courses in the operation and maintenance of equipment were again held in Victoria for Departmental personnel, and two weeks' theoretical and practical instruction were given at the Ranger School.

Repair costs and time-losses resulting from road accidents are a significant item of expense for the Forest Service fleet each year. Consequently, safety and accident prevention were given special attention in an effort to reduce the accident rate through driver education.

BUILDING DESIGN AND CONSTRUCTION AND MARINE DESIGN

The major undertaking of the Section during the year was the design and building of the seed-extraction plant at the Duncan nursery. The plant has now been in operation since the first of October, and at the end of the year was in full production at a daily rate of 220 bushels. Due to the coincidence of a very heavy cone year and poor pre-drying weather for cones, the plant will be operating well into the new year to extract the seed available. In conjunction with the seed-extraction plant, a combination freezer and cold-storage building is under construction on the same site to (*a*) hold the surplus seed at 0° F. until needed and (*b*) to hold seedlings grown at Duncan at 34° F. for shipment to northern sites when weather permits. The building is expected to be completed in time to receive the bulk of the seed extracted.

Another undertaking of some consequence was an initial survey of the housing needs of the Aleza Lake Experimental Station, and preliminary plans of all phases have been prepared.

This year, two octagonal Fiberglas lookout cupolas were obtained from the Alberta Forest Service for experimental purposes. First reports indicate low erection and transportation costs, but the building is somewhat cramped for space. Currently, an investigation is being made relative to different types of lookouts, with particular emphasis on the suitability of new materials now on the market from the standpoint of both construction and maintenance costs.

Design of specialized trailers required a significant share of the staff time available. Seven such units came off the drawing-boards, together with a modified design for the residential type of Porta-building.

It was rather a quiet year in regard to marine design. Some modifications were made to the design of the high-speed 40-foot Ranger launch. A second craft of the same type as the "Western Hemlock," but powered by a pair of four-cylinder turbo-charged diesel engines instead of a pair of six-cylinder naturally aspirated diesel engines, is destined for service in the Vancouver District.

The problem of providing adequate transportation facilities for road-construction projects located at isolated points on the Coast and large inland lakes received considerable attention. The landing-craft "L.C. 5," which was originally built for military use during World War II and has since spent much of her time on the beach at Great Central Lake, was successfully moved to salt water and utilized for carrying supplies and equipment during construction of the Kingcome Forest Development Road. Modifications to both hull and superstructure should make this craft of even greater use in the future. In addition, tentative design of a scow has been completed which will be capable of transporting a 40-ton bulldozer and can be disassembled into units small enough to be transported by truck and trailer without too much difficulty over secondary roads.

Construction at various points throughout the Province which involved design and building supervision by the Section are detailed in the following table:—

Building and Construction Undertaken during 1959

Location	Project	Construction Agency	Stage of Construction
Carry-over from 1958/59			
Cranbrook	Irrigation pumping system	Forest Service	Completed.
Duncan	Extension, seed-extraction plant	Forest Service	Completed.
Mesachie Lake	Fire-protection system	Forest Service	Completed.
Vancouver	Retaining-works and derrick	Forest Service	Completed.
Various points	Porta-buildings (six)	Forest Service	Completed.
Programme for 1959/60			
Aleza Lake	Experimental-station development	Forest Service	Design proceeding.
Courtenay	Office extension	Forest Service	Completed.
Cranbrook	Office extension	Forest Service	Completed.
Cranbrook	Paving	Contract	Completed.
Chetwynd	Office and stores building	Forest Service	Work proceeding.
Duncan	Freezer and cold-storage building	Forest Service	Work proceeding.
Duncan	Pile foundations	Contract	Completed.
Duncan	Roofing for freezer building	Contract	Work proceeding.
Duncan	Refrigeration for freezer building	Contract	Design proceeding.
Duncan	Electrical for freezer building	Contract	Design proceeding.
Echo Bay	Floats and wharf	Contract	Tenders called.
Likely	Boat-house, ways and tool-cache	Forest Service	Work proceeding.
Slocan City	Three-car garage	Forest Service	Completed.
Smithers	Headquarters warehouse	Forest Service	Design completed.
Various points	Porta-buildings (seven)	Forest Service	Completed.

FOREST SERVICE MARINE STATION

Marine Work

The marine ways were occupied fifty-eight times during the year. Launch overhauls totalled sixty-four, forty-one of which were major overhauls. Ninety small craft, comprised of dinghies, rowboats, outboard cruisers, and river-boats, were repaired, reconditioned, and in some cases rebuilt. Extensive repairs and remodelling were carried out on the 36-foot landing-craft "L.C. 2," and a similar programme has been started on the 50-foot "L.C. 5."

Alterations to and repowering of the "Conifer," started in late 1958, were completed early in the year. The "B.C. Scaler" was repowered with a pair of heavy-duty diesels of 225 horse-power each.

A portion of the crew has been on new construction throughout the year. The 45-foot "Whitesail," designed for Ootsa Lake and started in 1958, was finished and placed in operation. A new 40-foot Ranger vessel is 60 per cent complete. One 23-foot outboard cruiser and eight 30-foot river-boats were built. Four moulded-plywood unfinished hulls were assembled and superstructure completed, and a similar 27-foot hull is 30 per cent complete.

Prefabrication and Carpenter-shop

The major undertaking of the Subsection has been the prefabrication of the new 100-foot float, gangway, and approach ramp which will be installed at the Echo Bay Ranger Station after the structural members have been pressure-treated with preservative. Other important jobs were the construction of four Porta-buildings and a refrigerated seedling-carrier, partial completion of three other Porta-buildings, prefabrication of twelve lookout buildings, and the rebuilding of four old dwelling trailers.

In addition to these major jobs, the carpenter-shop produced many specialty items, such as lookout furniture, fire-finder stands, epidiascope cabinets, fuel-moisture balance boxes, survey rods, and a new instrument—the Christmas-tree scaling-stick. Construction of crates and boxes for pumps, outboard motors, chain-saws, and other small units also absorbed a fair share of the productive time.

MACHINE-SHOP

The machine-shop completed 450 overhauls on pumps, outboards, chain-saws, and lighting plants. Sixty-five new units were tested and numbered prior to shipment to the field. Over 1,500 pieces of pump and hose accessories were machined. Ten fire-finders and forty-five epidiascopes were completed. In addition, numerous pieces of marine hardware were machined and sixteen sets of lookout lightning-arrestor equipment made up.

A new feature was the development of a unit known as the "B.P.T.," which is a light-weight portable 100-gallon tank and pump unit for carrying on the half-ton vehicles. It produces low-density fog, and a trial run of ten units in the field proved very successful.

RADIO SECTION

This year, radio field work was aided by favourable weather and started earlier than usual. Progress was badly delayed later on, however, by the non-delivery of prefabricated repeater buildings as a result of the Coast forest industry strike. Equipment purchases were applied to the completion of frequency-modulated repeaters in the Kootenay area, to replacement of units made obsolete by Federal specification, and to the building-up of depleted stocks of fire and other portable equipment.

New transmitting units purchased during the year totalled 138, and sixty-two sets were written off during the same period.

Radio Purchases and Write-offs, 1959

Model B portable	32	
Ranger station, 80-watt, A.M.	7	
Ranger station, 50-watt, A.M.	2	
Ranger station, 25-watt, A.M.	2	
Marine, 80-watt, A.M.	9	
Marine (lake launch), 25-watt, A.M.	1	
Mobile, A.M.	3	
Total purchases, A.M.		56
Ranger station and repeater, 30–60-watt, F.M.	15	
Lookout and fire portables, F.M.	67	
Total purchases, F.M.		82
Total purchases, all types		138
Written off during year		62
Net increase		76

Department of Transport regulations continue to increase, but some relief from Specification 116 has been obtained as a result of a protest made by the Western Canada Telecommunications Council. The previous implementation date has been

set forward to April 1st, 1960, with a three-year amortization period, thus reducing to a small extent the urgency for replacement of present types of A.M. equipment. All lookout stations appear to fall in the Specification 116 category and, as a solution to this replacement problem, the Model B portable has been specification-approved with one small modification, units complete with modification being already available from at least one manufacturer. Replacement of nine marine units brought complete modernization closer but, at the present rate of replacement, it is unlikely that the entire fleet will be refitted in time for the expiry of Specification 112.

An important regulation is now being enforced requiring the operator of a Coastal motor-vessel to obtain his radiotelephone operator's restricted certificate. This affects the sea-going Ranger and (or) his engineer, and preliminary steps have been taken to ensure the certification of those concerned.

Although the main point-to-point communication continues to be handled by A.M., a start has been made in the Prince Rupert District to convert the Ranger station-to-lookout circuits to F.M., and results on a small scale have been excellent. Testing was carried out during the summer for a repeater at Smithers, to connect Smithers, Telkwa, and Houston. Plans were also completed for the conversion to F.M. of fourteen lookouts, eight Ranger stations, and one Assistant Ranger station. A second repeater at Burns Lake is at present being tested by commercial interests and is entirely suitable for Forest Service use.

At Prince George, the shortage of fire portables, which was so much in evidence during the 1958 season, has been partly corrected. The F.M. network was completely overhauled in the spring after gradually weakening circuits between repeaters had virtually wiped out normal communications. While operation was restored and has been maintained, the entire F.M. system must be considered as being on a temporary basis while only two repeater sites with power are available. A power-line up Fraser Mountain, planned for the spring of 1959, with four services sharing the cost, failed to materialize, but is still an active project, with a building and equipment in hand for the third repeater out of the five required.

The Vancouver District maintained the *status quo* with the majority of Ranger stations on Vancouver Island and Lower Mainland being served by the F.M. network with almost 100 per cent continuity. Through the new repeater on Mount Bruce, two more voice circuits were added—one to Green Timbers and the Marine Station, and the other between Civil Defence headquarters at Victoria and Abbotsford. A.M. transmission to launches and stations north of Seymour Narrows and to Pemberton proved to be unsatisfactory a good deal of the time, the district frequency being too low for this distance at the present peak of sunspot activity. Tests are being carried out using 5915 kilocycles and three of the older transmitters have been replaced. While the changes have apparently corrected the situation, it must be considered a temporary solution until transmission during the hot weather has been proven.

In the Kamloops District, the year saw extension of the F.M. network to Williams Lake, Horsefly, and Ashcroft, and Protection F.M. to Barriere, Clinton, 100 Mile, and Alexis Creek. Only five Ranger districts are now dependent on A.M., and one of these is in the process of conversion. Silver Star repeater, the key station for the entire area, remains on generator power, but a new power plant and automatic change-over have made this repeater more reliable. Timothy and Greenstone repeater buildings were completed in the late autumn, and the former has now replaced Begbie repeater, with greatly extended range, while at Greenstone adequate space and heating facilities ensure proper operation and improved maintenance.

To complete the F.M. network from the western end of the Nelson District, Red Mountain repeater was set up on a temporary basis in the spring but proved unsatisfactory. All attempts to construct the Santa Rosa repeater in time for summer use were defeated by the industry strike. Both Santa Rosa and the new repeater building at Red Mountain were finally completed in the late autumn and, through the repeater chain, Phoenix-Santa Rosa-Red Mountain-Beasley, the western end of the district was connected with Nelson. In the east, Fernie not included, F.M. reaches to Invermere, with plans already in hand for extension to Golden. Due to the broken terrain throughout the Kootenays, the A.M. portable remained the source of communication for fires. Such F.M. portables as were available were found invaluable on lookouts, aircraft, and for internal use only on large fires.

The Victoria staff, following a complete overhaul and maintenance tour in the Prince George area, constructed the foundations and power wiring at Santa Rosa and Red Mountain during the summer, returning later to complete the buildings and installation of equipment. Extensive propagation testing continued between Mount Bruce and Blackwall Mountain in Manning Park, with the object of further proving the F.M. circuit between Victoria, Kamloops, and Prince George. Tests proved successful, but further information must be obtained before the circuit can be completed. Laboratory work included the almost continuous assembly and modification of F.M. Ranger station units and repeaters, mass production of beam and other types of antennæ, research into inexpensive methods of remote control, and transistorization of the Model B receiver. Maintenance of all installations on Vancouver Island was again a Victoria responsibility, and no significant outage occurred during the year.

FOREST PROTECTION

WEATHER

At the beginning of the fire season, the accumulation of snow was about normal at the higher elevations throughout most of the Province, although snowfalls had been deficient over the Southern Coast and over the north-east corner of the Province.

There was more than normal sunshine over the entire Province during April. However, rainfall, occurring mostly during the last week of that month, resulted in an extremely varied precipitation pattern. Marked deficiencies and excesses were reported in each of the forest districts, with the most pronounced deficiencies occurring in the Kamloops District and adjacent sections of the Nelson District.

Conditions in May were generally close to normal, although the Queen Charlotte Islands and west coast of Vancouver Island generally received less than half the normal rainfall, while parts of the Nelson District received more than twice the normal amount. Early initiation of green growth almost eliminated the early spring hazard, except in the Peace River area and on the Fraser Plateau, where growth was delayed until late in the month.

Sunshine was not far from normal for June, except in the Prince Rupert District, where it was below normal. Rainfall was generally below normal over the three Interior forest districts, but only the western sections of the Kamloops District were without rain for more than one week at a time. On the Coast, rainfall was above normal, with more than twice the long-term average reported in some areas.

Sunshine was again deficient during July in the Prince Rupert District only. Dry conditions over the whole Province during the last three weeks resulted from below normal rainfall, with some sections of the southern forest districts reporting as little as 10 to 20 per cent of the long-term average.

Over the two northern districts and the exposed Southern Coast, the dry spell was ended with general rains early in August, but it continued until the middle of the second week throughout the southern part of the Province. By the end of the month, above average rainfall had been accumulated over most of the Province and sunshine was well below normal. A uniformly dull, wet September made it possible to end the closed season by Order in Council on September 30th.

What lightning there was during the fire season was accompanied by rain or, at least, occurred when the fuels were wet; thus, lightning fires were not a serious problem.

FIRES

Occurrence and Causes

The number of fires was less than 1 per cent greater than the ten-year average, but still there were less than half the number of fires of the record 1958 season. Fire occurrence was above normal for the first three months of the fire season and below normal for the last three months. These conditions follow the general weather pattern for the Province as previously described.

Forest District	Fire Occurrence during Ten-year Period 1950–59	Percentage of All B.C.
Vancouver	7,009	36.0
Prince Rupert	1,000	5.1
Prince George	2,084	10.7
Kamloops	5,820	29.9
Nelson	3,566	18.3
Totals	19,479	100.0

For the fourth consecutive year the principal cause of fires was railway operations, which accounted for 31 per cent of the fires, a slightly higher percentage than last year. Twenty-two per cent of the 1959 fires fell into the " miscellaneous known causes " classification, which includes " range burning."

Cost of Fire-fighting

The cost of fire-fighting in 1959 totalled $768,084, or slightly less than the ten-year average. Further details are available from Tables 37, 50, and 52 in the Appendix.

This year the heaviest fire-suppression cost (54.5 per cent) resulted from range-burning activities in the Cariboo and Peace River areas. Lightning fires dropped from 75 per cent of the total suppression cost in 1958 to 23 per cent in 1959.

Damage

The 273,631 acres burned over in 1959 was 62 per cent of the average burned area for the past ten years. This contrasts with a damage figure of $1,342,849 for 1959, which is almost identical with the average of the past ten years (*see* Table 49 in the Appendix).

FIRE-CONTROL PLANNING AND RESEARCH

Fire Atlas and Statistics Ledgers

The Provincial Fire Atlas has been brought up to date, and fire statistics ledgers and fire classification atlas are currently being brought up to date.

Visibility Mapping and Lookout Photography

Work was concentrated on lookout photography in 1959. Photographs were taken at forty-one lookouts, and fourteen of these photographs were taken on behalf of the National Parks Service.

Fuel-moisture Sticks

Approximately 680 sets of fuel-moisture sticks, or " hazard sticks," were distributed in 1959, with the forest industry absorbing 430 of this number. The cost of preparation of these sets for this season is calculated at $3.79 per set. There has been a steadily increasing demand for these sticks over the past few years, as indicated by a 50-per-cent increase in production from five years ago.

Protection Planning in Public Working Circles and Sustained-yield Units

Preliminary field work, preparatory to drawing up protection plans, was carried out in Arrowhead and Willow Public Working Circles and Eagle and Nicola Sustained-yield Units.

A more intensive examination was made in Hixon Ranger District (Naver Public Working Circle), with a view to preparing a standard outline for more detailed protection plans on such areas.

In the fire-protection access-road programme, work was continued in the Yahk River area in Nelson Forest District. Some 20.5 miles of access road was constructed, and 2 miles of old fire road regraded as part of the road system.

Air-photo Mosaics

The balance of available high-level R.C.A.F. photographs was utilized to increase the coverage in Prince George Forest District.

In order to obtain mosaic coverage of Vancouver Island, B.C. photographs are being utilized at contact size to obtain the standard 1-inch-to-1-mile scale.

FIRE-WEATHER RECORDS AND INVESTIGATIONS

The two field parties from the Canada Forestry Branch Fire Research Section have completed field studies necessary for the development of a fire-danger rating system in the fuel types under investigation. Preliminary trials were made during the latter half of the fire season in the Vancouver Forest District using interim tables and in the north-eastern corner of the Prince George Forest District using the tables developed for Northern Alberta.

Measurement of the moisture content of 3-inch logs was continued by co-operative industrial observers and at one Forest Service lookout on Vancouver Island.

Employment of a student assistant during the summer months made it possible to summarize rainfall and moisture measurements to date in the Vancouver Forest District. This information is available in mimeographed form.

Three years of records of the Model 8 Burning Index rating system from the Nelson District were analysed in terms of fire occurrence and behaviour. The following table gives the rate of occurrence of fires which reached one-quarter acre or more, expressed as number of fires per hundred days per 10,000 square miles, based on 133 man-caused fires and 204 lightning fires which reached this size. The percentage of all fires started by lightning which reached one-quarter acre or more is given in terms of the danger class on the day the fire started.

Danger Class	Low	Moderate	Average	High	Extreme
Man-caused fires	0.8	2.5	8.7	15.6	.....
Lightning fires	1.1	3.5	11.1	19.8	.....
Percentage of all lightning fires reaching ¼ acre	12	29	34	40	.....

Complete results of this analysis are available in mimeographed form.

During the current year, the meteorologist seconded from the Canadian Meteorological Branch has been acting as chairman of an international working group of the World Meteorological Organization charged with the responsibility of summarizing the methods and techniques being used by those countries currently providing specialized fire-weather services. Information has been received from approximately forty countries or territories, about one-third of which provide some form of specialized fire-weather service. Most of the work of the group has been done by correspondence, although it was possible to arrange a meeting in Toronto with the Australian member of the group, Mr. J. W. Lillywhite, during October.

Lectures in fire weather were given at the Northern Interior Fire Control Course at Prince George, and to forestry students at the University of British Columbia. A popular article on the meteorological features of the 1958 fire season has been prepared for publication in the British magazine " Weather."

This year, in addition to his regular duties in the Vancouver Forest District, the weather-instrument checker was able to make a brief trip through the Prince George Forest District. He also spent several days in the Kamloops District setting up weather stations in connection with a sanitation burn and relaying observations

to the Vancouver public weather office, which provided special forecasts on the basis of these observations. Although burning conditions were anything but favorable, the experience gained should be helpful in planning future operations of this type. Several days were also spent at the Forest Service Marine Station making individual calibrations of the fuel-moisture balance manufactured there this season.

FIRE-SUPPRESSION CREWS

Sixteen suppression crews, averaging ten men each, were again employed during the summer for approximately 100 days each. They attended 164 fires, of which 80 per cent were held to a size of 5 acres or less.

The crews at Castlegar and Alexis Creek proved extremely valuable in controlling numerous incendiary and unauthorized range fires in those areas.

Analysis of Suppression-crew Fire-fighting Activities

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)	96	92	2	2	----	----
Over ¼ acre and up to 1 acre	20	----	16	3	1	----
Over 1 acre and up to 5 acres	25	----	----	15	4	6
Over 5 acres and up to 50 acres	21	----	----	----	13	8
Over 50 acres	2	----	----	----	----	2
Totals	164	92	18	20	18	16

AIRCRAFT

Protection flying was continued under contract with Pacific Western Airlines Limited, who supplied six float-planes. A total of 2,469 flying-hours were logged throughout the Province during the period April 15th to November 15th under the contract, as follows:—

Forest District	Base	Type of Aeroplane	Hours Flown
Vancouver	Vancouver	Beaver	341
Prince Rupert	Lakelse Lake	Beaver	343
Prince George	Prince George	Beaver	592
Kamloops	Kamloops	Beaver (2)	677
Nelson	Nelson	Beaver	516
			2,469

One helicopter, under a four months' contract, was used for a total of 382 flying-hours. It was used in cargo-hauling, reconnaissance, ferrying, and fire patrol.

In addition to these machines under contract, limited use was made of both fixed-wing aircraft and helicopters on fire-suppression work. Two hundred and eighty-seven hours were logged on fixed-wing and 158 hours on helicopters in addition to the contracts.

Water bombing was carried out on only a few fires this year, as these specially fitted aircraft were not always available when they could have been used to advantage. The water bombing that was done was effective because pilots are gaining in experience, and the Junkers and Avengers aircraft proved most suitable.

Helicopters were not used to water-bomb fires as no large types were available.

Sodium calcium borate was used in limited quantities only. A sanitation burn was carried out in the Kamloops District, using the borate, but the weather was not conducive to good burning, with the result that the experiment was only considered a limited success. It is proposed to continue experiments with borate and a substance called " bentonite " during the coming year. Both of these products have apparent merits, but the difficulties of mixing and applying will tend to limit their use in fire suppression.

ROADS AND TRAILS

The Service continued to maintain and add to the network of roads and trails throughout the Province, as shown in the table below:—

Construction of Protection Roads and Trails

	Light	Medium	Heavy	Total
	Miles	Miles	Miles	Miles
New road construction	72.0	87.0	55.5	214.5
Road maintenance	816.0	508.0	105.5	1,429.5
Total road construction and maintenance	888.0	595.0	161.0	1,644.0
New trail construction	94.5	39.5	37.0	171.0
Trail maintenance	387.0	208.0	71.5	666.5
Total trail construction and maintenance	481.5	247.5	108.5	837.5

SLASH-DISPOSAL AND SNAG-FALLING

The summer of 1959 was marked by a ten-week strike in the logging industry, ending in early September. There was a heavier than average September rainfall, which meant that if slash-burning was not attempted by early September, it became almost impossible to obtain satisfactory results later.

In spite of these limiting conditions, many operators took advantage of every opportunity to burn early, with the result that the net total was surprisingly adequate.

Snag-falling has proceeded satisfactorily over the whole of the Vancouver Forest District since the elimination of the former " exempt zones."

For statistical data on slash-disposal and snag-falling in Vancouver District, *see* Tables 39 to 43, inclusive, in the Appendix.

In addition to the snag-falling done by the logging industry, Protection Division felled 3,355 acres of snags under contract in 1959, and provided funds for 2,033 acres felled by Reforestation Division snag-falling crews. In addition, Reforestation Division felled snags on 2,151 acres, including a 517-acre area in Nelson Forest District, a 512-acre area in Manning Park, and a smaller area in Prince George Forest District.

FIRE-LAW ENFORCEMENT

Information was laid in a total of thirty-two cases. Two were withdrawn and thirty convictions with fines were obtained. This is far below the ten-year average of fifty-three convictions per season.

FOREST CLOSURES

No regional forest closures were imposed in any section of the Province during the 1959 fire season. Under section 162, subsection (3) of the *Forest Act,* the Horsefly–Quesnel Lake Road was closed on April 5th, 1959, and closure was lifted December 3rd, 1959.

FOREST BIOLOGY DIVISION*

ACCOMMODATION AND FACILITIES

Construction of a new field laboratory for use by the Forest Biology Division, Canada Department of Agriculture, and the Forestry Branch, Department of Northern Affairs and National Resources, was started in December, 1959, at the Cowichan Lake Experiment Station. The building will contain seven private offices, a large laboratory, and basement storage and workshop areas.

FOREST-INSECT INVESTIGATIONS†

Forest-insect Survey

The outbreak of the one-year-cycle spruce budworm in the Lillooet and Fraser River valleys collapsed in 1959, after causing heavy defoliation annually since 1954. Tree recovery appeared to be good. Top-killing was evident, but no tree mortality was recorded.

The two-year-cycle budworm outbreak at Babine Lake was not mapped in 1959 as this was the first year of the cycle and, normally, defoliation is not heavy enough to be detected from the air. Early counts indicated that the larval population was as heavy as any recorded to date. Defoliation of the current year's growth averaged about 75 per cent. There was a small increase in populations in the southern portion of the Prince George Forest District. Moderate to heavy populations were present at Genevieve Lake, Willow River, Strathnaver, Manson Creek Road, Takla Lake, Tudyah Lake, and Silver Sands Creek.

The black-headed budworm on the Queen Charlotte Islands increased to heavy outbreak proportions in 1959. The heaviest defoliation occurred from Cumshewa Inlet south to Jedway. Some hemlock stands have not recovered from the previous black-headed budworm outbreak, which subsided in 1955. Control operations are planned for 1960 on three blocks of timber between Skidegate and Cumshewa Inlets, totalling about 31,000 acres.

The known range of the balsam woolly aphid increased in 1959. Groups of heavily attacked amabilis fir were observed at Dakota Creek, Rainy River, and Potlatch Creek, on the west side of Howe Sound. The insect was also found attacking grand fir in Thetis Lake Park and in Beacon Hill Park, Victoria. A total of 3,900 dead and dying trees was recorded in the Howe Sound, West and North Vancouver areas.

The Douglas fir beetle persisted in the Cariboo region at about the same level as in 1958. Elsewhere in the Province there was an apparent decline.

The mountain pine beetle continued to kill white, ponderosa, and lodgepole pine in parts of the Kamloops and Nelson Forest Districts. A new infestation on lodgepole pine was discovered along a new roadway in the Kettle River valley between Damfino and Winnifred Creeks. The severe outbreak in lodgepole pine along the east shore of Babine Lake and eastward to Takla Lake continued to decline in intensity.

The Engelmann spruce beetle persisted at low levels throughout the sub-alpine forests of the Nelson and Kamloops Forest Districts.

A usually innocuous insect, the western cedar bark-beetle was very conspicuous in cedar stands of the Vancouver Forest District in 1959. Attacks were observed from Cultus Lake northward as far as Lund on the Mainland, on Texada Island,

* Research Branch, Canada Department of Agriculture.
† Prepared by R. R. Lejeune, Forest Biology Laboratory, Victoria, B.C.

and Southern Vancouver Island. Numerous dead trees and heavy top-kill resulted from the attacks.

Although no serious infestations developed in 1959, hemlock looper larvæ were present in Coastal hemlock stands as far north as the Bella Coola Valley. The looper increased in the Interior, but the population is still at a low level. Populations in Stanley Park, Vancouver, were not heavy enough to cause tree mortality, but the æsthetic value of the mature and overmature hemlock warranted control action to prevent possible top-kill. Aircraft sprayed about 550 acres of parkland with DDT on July 23rd.

Projects

The Douglas fir bark-beetle is the most serious insect pest of Douglas fir in the Interior of British Columbia. For several years, intensive studies of attack-patterns, flight behaviour, and factors regulating the insect's population have been in progress in order to explain how and why infestations develop, and to gather information for developing control methods.

It has been demonstrated that four to eight beetle attacks per square foot of cambial surface produce the largest number of progeny per square foot. Below this density, percentage survival of progeny is higher, but total productivity lower. Above this density, both percentage survival and total productivity decrease. At attack densities of twelve to sixteen per square foot, the percentage of progeny surviving about equals the original parent population. Beyond that density, the population begins to decline. In the field, variable attack densities ranging as high as twenty-four per square foot are encountered. Under conditions of continuous logging in time and place, Douglas fir beetle infestations seldom develop. It is believed that beetles tend to remain in the logged areas, being attracted by the green slash, which they attack in densities high enough to prevent population increase.

Douglas fir beetles prefer to attack freshly felled trees. However, overflow populations drawn to this material may attack and kill near-by green trees. This characteristic of their behaviour was used in a co-operative pilot control project near Quesnel. In an area heavily infested with beetles, freshly felled " attractor " trees were placed in strategic accessible locations in the spring of 1959 before beetle attacks took place. Supplementary measures involved the removal of the beetle-infested trees and cull logs of 1958 and the peeling of stumps during the winter of 1958/59. When the 1959 attack flights took place, beetles were drawn to the " attractor " trees and to adjacent green trees. All the infested material was then removed and utilized to destroy the beetle broods. Comparison with a near-by untreated area indicated that the control measures reduced the loss from an estimated 4,000,000 to 41,000 cubic feet.

Experiments were carried out in 1959 to determine if the spraying with insecticides of logs in the woods by helicopter could prevent attacks by ambrosia-beetles. This was a co-operative project between the British Columbia Loggers' Association, British Columbia Forest Service, and Forest Biology Division. The results were not particularly encouraging, mainly because the spray did not reach the undersides of the logs, which is the area most susceptible to attack. Experiments conducted by the British Columbia Loggers' Association using a helicopter to spray logs in booms were promising, and this technique may be used on an operational basis in 1960. Biological studies carried out in association with the helicopter spraying tests in the woods are expected to yield much more extensive information than hitherto available on the over-wintering sites of the beetles.

Light infestations of Douglas fir by cone and seed insects were anticipated in 1959. This was because the heavy cone-crop of 1959, following a light seed year, was expected to dilute the insect population. As anticipated, infestation by the

Douglas fir cone-moth was very light, but infestation by the Douglas fir cone-midge was surprisingly heavy, comparing in intensity with the severe damage of 1958.

Studies were started on the biology of the poplar and willow borer, *Sternochetus lapathi* (L.). The preferred hosts of this long-established, introduced pest are native willows and black cottonwoods but, in recent years, infestations of exotic poplar plantations in the Fraser Valley have been reported. This borer occurs throughout the Lower Mainland and Southern Interior.

FOREST-DISEASE INVESTIGATIONS*

Publications distributed during the year included the following:—

Bloomberg, W. J.: Root formation of black cottonwood cuttings in relation to region of parent shoot. For. Chron. 35 (1): 13–17. 1959.

Molnar, A. C., and Silver, G. T.: Build-up of *Pullularia pullulans* (deBary) Berkhout within a severe spruce budworm infestation at Babine Lake, British Columbia. For. Chron. 35 (3): 227–231. 1959.

Parker, A. K.: An unexplained decline in vigor of lodgepole pine. For. Chron. 35 (4): 298–303. 1959.

Ziller, W. G.: Studies of western tree rusts. IV, *Uredinopsis hashiokai* and and *U. pteridis* causing perennial needle rust of fir. Can. J. Bot. 37 (1): 93–107. 1959.

Ziller, W. G.: Studies of western tree rusts. V, The rusts of hemlock and fir caused by *Melampsora epitea*. Can. J. Bot. 37 (1): 109–119. 1959.

In addition, six multigraphed reports were prepared for regional distribution. These reports referred to forest-disease sampling studies in Douglas fir plantations, observations of a condition of sun-scald in Douglas fir, methods of fungus and bacterial isolation from tree roots, a condition of die-back and canker on young Douglas fir following low-temperature injury, and the collection of forest fungi in the Victoria herbarium. Contributions to the bi-monthly progress report dealt with observations on pole blight and climate, the appraisal of nematodes in some forest and nursery soils, high-temperature damage to Douglas fir seedlings, and a study of canker disease in native and exotic poplar.

A co-operative study to prepare an ecological classification for white pine forests in the Interior region of British Columbia was continued. This study, sponsored by the Forest Biology Division, was carried out under the direction of Dr. V. J. Krajina, Department of Biology and Botany, University of British Columbia.

FOREST-DISEASE SURVEY

Collections of forest-disease specimens submitted during 1959 by co-operators, Forest Biology Rangers, and other laboratory personnel totalled 2,419. Included in this number were eight fungi listed for the first time in the forest-disease herbarium and six fungi recognized as having a more extensive host range or geographical distribution than previously believed.

Needle-blight of pine, caused by *Elytroderma deformans* (Weir) Darker, continued at a high level of infection in yellow and lodgepole pine in the Kamloops, Clinton, and Merritt areas. Several new areas of moderate to severe infection were noted. Mortality of lower branches in heavily infected stands was common and small trees showed a marked decline in vigour. The incidence of Douglas fir needle-blight, caused by *Rhabdocline pseudotsugae* Syd., continued at a high level in the East Kootenay region north of Cranbrook and was responsible for considerable depreciation of Christmas-tree stock.

* Prepared by R. E. Foster, Forest Biology Laboratory, Victoria, B.C.

Further observations were made of a condition of decline in vigour with attendant mortality in Douglas fir in Interior Wet Belt forests.

Damage resulting from the 1958 summer drought was reported from several regions of the Province. Severe die-back was observed in western hemlock reproduction on Vancouver Island. Die-back and top-kill of pole-sized and mature Douglas fir were observed on Lower Vancouver Island and near Lillooet, in lodgepole pine near Prince George and Vanderhoof, in yellow pine near Clinton, and in western red cedar generally throughout the Interior Wet Belt region. Hail injury was reported in the Prince George Forest District; in one local area, alder and aspen suffered 80 per cent defoliation.

Thirty-nine additional plantations of exotic forest tree species were brought to the attention of the laboratory during the year, bringing the total number registered to 157. Infection centres of the root-rot fungus *Armillaria mellea* (Vahl ex Fr.) Quél. were recorded in plantations of European larch, Scots pine, and red pine on Vancouver Island. Yellow leaf-blister, caused by *Taphrina populina* Fr., was reported for the first time on two varieties of hybrid poplar.

Diseases of Immature Forests

Damage from damping-off remained at endemic levels at the Cranbrook, Green Timbers, and Duncan nurseries. Late damping-off was moderately severe at Quinsam, where up to 25 per cent of 1–0 stock in some beds was damaged. Grey mould blight, caused by *Botrytis cinerea* Pers. ex Fr., resulted in slight damage within the more densely stocked beds of 2–0 fir at Green Timbers and in losses of up to 14 per cent at Duncan.

Studies of the distribution of disease within Douglas fir plantations were continued on Vancouver Island, with the total enumeration of a 15-year-old population of 3,670 trees on 4.32 acres near Buckley Bay. Conditions encountered, in descending order of their frequency of occurrence, were sun-scald, root-rot, frost lesions, and terminal leader injury. Approximately 25 per cent of the fir were infected with root-rot caused by *Armillaria mellea*. This latter condition is noteworthy in that it constitutes the most severely infected Douglas fir plantation yet to be encountered in sampling.

Studies of Poria root-rot of Douglas fir were postponed pending the return from educational leave of the research officer responsible for this phase of the laboratory programme.

Investigations of pole blight of western white pine were continued. Permanent plots in the Arrow Lakes region were remeasured and further evidence of partial recovery recorded. Bioclimatological studies were undertaken to assess the temperature and drought tolerance of pine and associated species, and a survey of the incidence and severity of pole blight in relation to an ecological site classification was continued.

Investigations of a canker disease in native and exotic *Populus* spp. were continued. These studies, largely confined to the Lower Fraser Valley area, have demonstrated a correlation between susceptibility to this disease and moisture status of the host. Anatomical differences have been noted between certain species and hybrids that may serve to explain differences in water economy and thus differences in resistance.

Diseases of Mature Forests

Preliminary analysis of data was carried out on two projects, field sampling of which was completed in 1958—deterioration of wind-damaged spruce and alpine fir (Prince George Forest District) and deterioration of killed Douglas fir (Kamloops

Forest District). During 1959, a study was initiated to assess the importance of logging scars in Douglas fir (Kamloops Forest District) as avenues of entrance for wood-destroying and wood-staining fungi. A preliminary analysis of data indicates considerable differences in the incidence of infection between different localities. Volumes of decay were negligible in scars of the oldest age sampled, namely, 8 years.

FOREST RANGER SCHOOL

The tenth class, consisting of twenty-one men, graduated in April, 1959. The eleventh class, also made up of twenty-one, was enrolled in September, 1959, and is due to graduate in December, 1960.

While there were no major changes in the curriculum, the work of revising the subject-matter of various courses was continued in order to keep pace with changes in policy and technical developments throughout the Forest Service.

Subjects given during the year were as follows:—

Third Term, Tenth Class, Spring Term, 1959

Subject	Days Allotted
Management Policy and Procedures	16
Ranger District Organization	8
Silviculture	9
Mechanical Course	11
Stumpage Appraisal	6
Public Speaking	4
Written Expression (Business English)	4
Fire Marshal	3
Examinations, visitors, and field-trips	10
Total days	71

Typing, 4 to 5 p.m., two days per week.

First Term, Eleventh Class, Fall Term, 1959

Subject	Days Allotted
Construction (Road, Trail, Telephone)	5.5
Survey and Mathematics Review	15
Fire Marshal	3
Forest Protection Policies and Procedures	15
Botany-Dendrology-Wood Technology	6
Public Speaking	4
Pathology	3.5
Entomology	3.5
Ranger District (Organization) Mapping	2
National Film Board (Projectors)	1
Civil Defence	0.5
Examinations, visitors, and field-trips	5
Total days	64

EXTRA COURSES

A five-day course for lookoutmen followed the spring term. Fourteen men completed the course and were appointed to stations in the Vancouver Forest District.

ACKNOWLEDGMENTS

Thanks are due to speakers and lecturers provided by the following agencies: National Film Board; Forest Biology Laboratory; Canada Department of Agriculture; Office of the Fire Marshal; R.C.M.P. Cloverdale Detachment; Magistrate of Cloverdale; Municipal Prosecutor, Cloverdale; Lumber Manufacturers' Association; Superannuation Commissioner; as well as lecturers from other divisions and districts of the Forest Service.

A field-trip was arranged through the co-operation of Canadian Forest Products Limited.

ACCOUNTING

FISCAL

This Division experienced another very active year during 1959. Unlike 1958, when the record fire season and depressed lumber-market prices curtailed woods operations, there were no forest closures in 1959 and lumber prices improved substantially.

In spite of a strike lasting forty-nine working-days in the Coast forest industry, the total Provincial scale of forest products was greater by 15.2 per cent than that of 1958. As a result, total Forest Service charges against logging operations increased by 13.8 per cent, to a value of $27,464,756.19 and, of this total, direct Forest Service collections increased 7.8 per cent to $26,843,188.71. These were the third highest totals of these items on record, being exceeded only in 1956 and 1957. Detailed tables of these and other accounting items appear in the Appendix (Tables 28 to 36, inclusive). It is interesting to note that the Coast forest districts contributed materially to the increase in charges in spite of the loss in man-hours due to the strike.

Timber-sale stumpage, the largest single revenue class, was up 8.1 per cent to $23,092,737.28, with increases also being recorded in the related items of timber-sale rental and fees, and cruising and advertising charges. Timber royalty increased somewhat surprisingly by 9.9 per cent to $1,890,590.96, reversing a steady decline since 1955. Rentals and fees on timber licences, berths, and leases remained almost static, which was to be expected, as these tenures are no longer issued and are gradually dwindling as they become fully logged. Grazing permits and fees increased 18.3 per cent, to $86,506.29, due to an increase in fees, and the only decrease of consequence in any revenue class occurred in miscellaneous collections, which, at $121,287.96, totalled 8.7 per cent less than in 1958.

Tables of forest revenue and expenditure for the fiscal year 1958/59 are to be found in the Appendix (Tables 30, 33, and 34), and details of the latter will be found in the Public Accounts, published annually by the Department of Finance.

ADMINISTRATION

Some changes in staff took place in the Division during the year due to retirement, resignations, and transfer.

With the backlog of accounting for 1958 fire-suppression costs liquidated early in the year, activities in the Expenditure Section of the Headquarters Accounts Office returned to normal. By some revision of procedures and reorganization, it was possible to eliminate two positions in this Section, with casual help to be provided should the fire situation in any year cause undue pressure.

The increased volume of revenue accounting kept the Revenue and Cashier's Section and Timber Sales Records Section fully occupied, with the latter being affected by continued activity in sliding-scale stumpage adjustments due to the improvement in lumber-market prices.

Visits to the district offices for internal audit and procedure inspection by the Chief Accountant and Assistant Accountant were somewhat curtailed due to illness, but these will be resumed on schedule in the future.

In addition to the normal checking of mill records and collection of lumber prices, investigators from the Comptroller's Office assisted the Forest Management

Division in special projects and also collected data for the Grazing Division as a basis for establishing grazing fees.

The improved conditions in the industry contributed to some easing in the collection picture, although continued " tight " financing made close surveillance essential. District office accounting sections continued to be hampered by staff turnover and replacement problems, but reports to headquarters were maintained on a current basis.

Activity in log-salvage permits remained fairly constant, with the 279 active permits as at December 31st being only five more than at the end of 1958.

PERSONNEL

ORGANIZATION

A major change in Forest Service organization became effective on April 1st, with the appointment of Mr. F. S. McKinnon as Chief Forester and the formal division of responsibilities between Deputy Minister and Chief Forester. Under this new organization, the Deputy Minister is responsible to the Minister for the over-all results of Forest Service activities. He is the liaison between the Minister and the Service. In addition, he is the chief liaison between the industry, the public, and the Service. The Chief Forester is responsible for the operation of the Service. The organization chart (*see* page 76) shows the new lines of district and divisional responsibility and the delegation of authority. One of the major changes is that the District Foresters are now responsible directly to the Chief Forester in all matters of general policy. This change in organization, together with numerous organizational and promotional transfers, resulted in a number of senior staff changes. All five forest districts changed District Foresters and two Assistant District Foresters as well. In Victoria, a change took place in the positions of head of the Protection and Management Divisions. At the end of the year, postings were still continuing at the intermediate levels, resulting in the most complete reorganization of personnel since 1952.

A new Ranger district was created with headquarters at Chetwynd and another at Bella Coola by splitting the former Pouce Coupe and Ocean Falls Ranger Districts. Both of the new headquarters had previously been staffed on a full-time basis by Deputy Rangers. The Atlin District was vacated late in the fall and will be staffed for the summer months only until the work load requires a full-time Ranger.

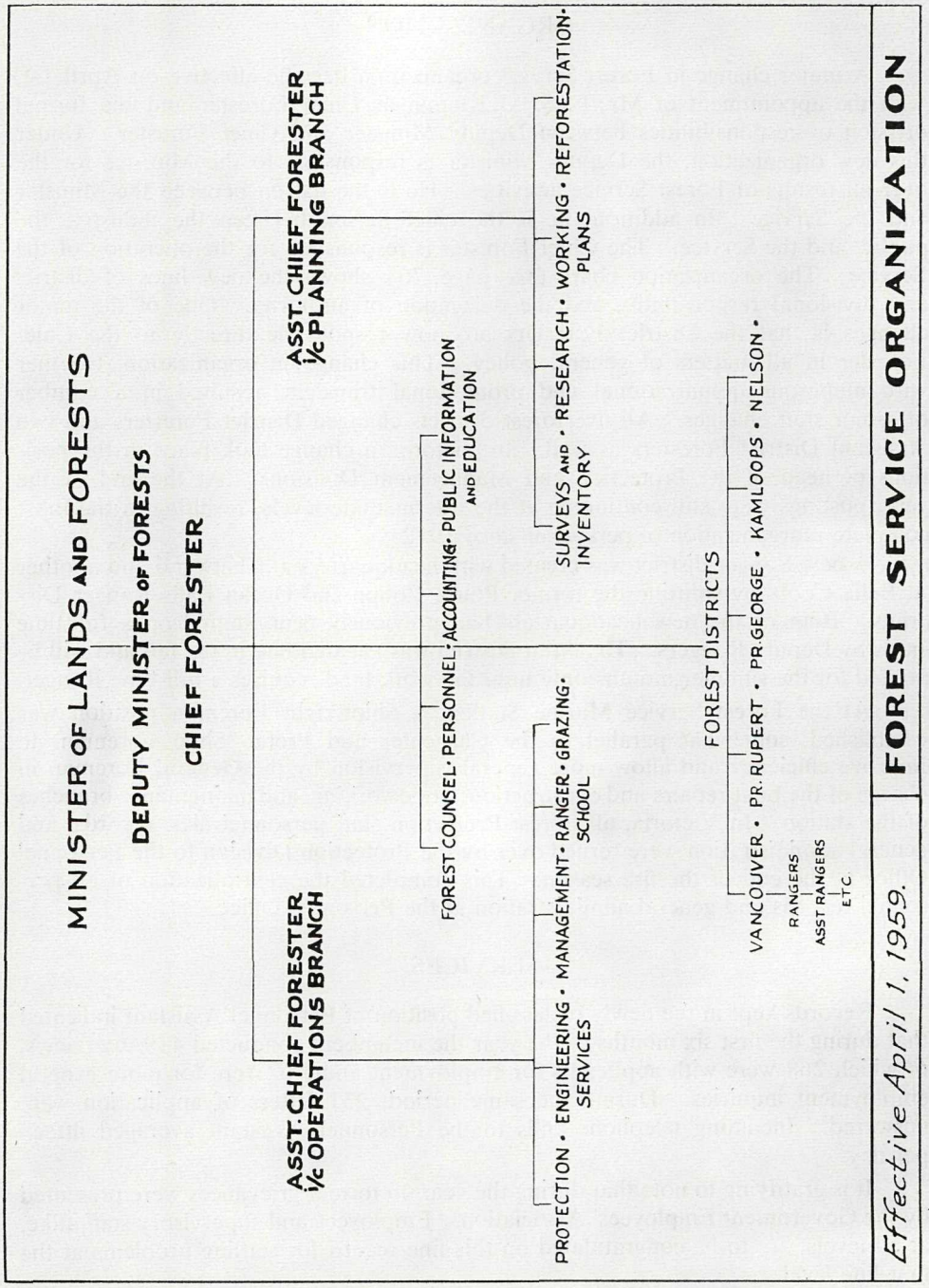
At the Forest Service Marine Station, a Shipwright Foreman position was established, somewhat parallel to the Carpenter and Prefab Shop Foreman, to improve efficiency and allow more general supervision by the General Foreman in charge of the boat repairs and construction, woodworking, and maintenance branches of the station. In Victoria, all Forest Protection staff personnel files, records, and general administration were turned over by the Protection Division to the Personnel Office at the end of the fire season. This completed the centralization of all personnel records and general administration at the Personnel Office.

SERVICES

Records kept in the newly reclassified position of Personnel Assistant indicated that during the first six months of the year the incumbent conducted 419 interviews, of which 268 were with applicants for employment and 150 were for more general employment inquiries. During the same period, 231 letters of application were answered. Incoming telephone calls to the Personnel Assistant averaged fifteen per day.

It is gratifying to note that during the year no formal grievances were presented by the Government Employees' Association. Employees and supervisory staff alike, at all levels, are to be congratulated on this fine record for settling problems at the first-line level.

The Personnel Officer served on a committee, under the Chairman of the Civil Service Commission, studying various proposals for changes in the sick- and vacation-leave regulations. Numerous Forest Service officers also took part in the vocation day programmes at high schools throughout the Province.


MINISTER OF LANDS AND FORESTS
DEPUTY MINISTER OF FORESTS
CHIEF FORESTER
ASST. CHIEF FORESTER
i/c OPERATIONS BRANCH
ASST. CHIEF FORESTER
i/c PLANNING BRANCH
PROTECTION • ENGINEERING • MANAGEMENT • RANGER • GRAZING • SCHOOL
FOREST COUNSEL • PERSONNEL • ACCOUNTING • PUBLIC INFORMATION AND EDUCATION
SURVEYS AND INVENTORY • RESEARCH • WORKING PLANS • REFORESTATION •
FOREST DISTRICTS
VANCOUVER • PR. RUPERT • PR. GEORGE • KAMLOOPS • NELSON •
RANGERS
ASST RANGERS
ETC.
FOREST SERVICE ORGANIZATION
Effective April 1, 1959.

COMMUNICATIONS AND TRAINING

The only Ranger meeting of the year was held in the spring at Prince Rupert. Partly because of the complete change of District Foresters and partly for reasons of economy, no District Forester, Protection, Management, or Silviculture meetings were held during the year.

The Civil Service Commission called three interdepartmental meetings of personnel Officers during the year. The meetings are intended primarily for instruction and discussion of new or amended policies. At one meeting the Personnel Officer was called on to present a paper on " Morale in the Public Service."

In the field of training, eight members of the Forest Service, representing foresters and protection officers in district administration, were selected for the fourth class of the Executive Development Training Plan sponsored by the Government through the University of British Columbia. The course this year was made available to staffs outside the Vancouver-Victoria area, with instruction to take place at Kamloops for one week in the fall and the spring, followed by two weeks at the University of British Columbia in May. Each of the northern and Interior districts were represented. A Forest Service engineer and a forester were among the first graduating class this year. Arrangements were made for two foresters to take part in a two-day Camp Management Training Conference sponsored by the British Columbia Loggers' Association, and for the Forest Service representative on the Provincial Government Safety Committee to attend and report on the British Columbia Safety Council's Fourth Annual Provincial Conference. Twenty-three forest officers attended a one-day training seminar in Human Relations, Communications, Leadership, and Accident Prevention sponsored at several centres throughout the Province by the British Columbia Safety Council and the Department of Extension of the University of British Columbia. The Vancouver and Kamloops Districts set up formal Safety and Accident Prevention Committees. Various in-service training programmes were continued, such as Lookout and Assistant Ranger schools, first-aid courses and field training courses organized by the districts and divisions concerned.

ESTABLISHMENT, RECRUITMENT AND STAFF TURNOVER

The permanent Civil Service establishment approved for the Forest Service by the Legislative Assembly for the fiscal year commencing April 1st, 1959, was 832, an increase over the previous year of fifteen, but still twenty-eight less than the 1957 total of 860. The fifteen new positions were for Rangers—Grade 1, newly graduated from the Ranger School. Nevertheless, in view of the increasing costs of salaries and expenses, the total number of continuously employed staff (*see* Table 1 in Appendix) dropped by sixteen positions, notably in the engineering, survey, and marking crew categories. The number of seasonally employed personnel rose quite sharply, largely due to the employment of some 120 additional reforestation labourers engaged in cone collection and planting.

During 1959, 120 persons received Civil Service appointments and eighty-five left the permanent Service. One 25-year service badge was earned. There were seven retirements during the year. Sixty-three transfers of permanent staff took place. Permanent-staff turnover for the year averaged 10.3 per cent, unchanged from the previous year. This year there were extreme differences between locations, however, ranging from 29.1 per cent at Prince George and 18.6 per cent at Vancouver to only 2.6 per cent at Nelson. Professional-staff turnover was 4 per cent, only one-third of the previous year, and the permanent technical-staff turnover remained steady at 3.1 per cent. The reason for leaving given most frequently by

the professional and technical groups was for better salary. Amongst the office staff, better salary was the reason given by 26.9 per cent, and personal reasons accounted for over 50 per cent. Clerical-, stenographic- and draughting-staff turnover rose somewhat to an average of 22.8 per cent, with Prince George suffering an unprecedented 77.8 per cent turnover of its permanent office staff, followed by Vancouver with 34.2 per cent. Ten graduate foresters and seven engineers left the Service, and fifteen foresters and ten engineers were hired, including eleven forestry graduates from the University of British Columbia.

Some 535 applications for employment, down 6 per cent from last year, were handled by correspondence in the Personnel Office alone, apart from many others handled through divisional and district offices. Written examinations were held for fifteen promotional positions, and oral examinations and panel interviews were employed in filling sixteen other positions. The Personnel Officer and Assistant also participated in making selections for 103 other Civil Service positions.

At the annual spring examinations for Assistant Rangers, 272 candidates sat, of whom 129 passed. As there were only twenty-three vacancies for Assistant Rangers, there was no problem in securing qualified men.

There were no fatal accidents involving Forest Service employees in 1959.

CLASSIFICATIONS, SALARIES, AND WORKING CONDITIONS

Changes were made in the Civil Service classification system affecting eight groups of employees. The classification of Chief Forester was established and, due to resulting organizational changes and the elevation of the Reforestation Division to Forester 6 status, the position specifications were revised for all grades of forester above Grade 3. The specifications for various positions and grades were rewritten in line with current practice.

Numerous individual position classification reviews were carried out. Of the sixty-one which were submitted to the Civil Service Commission, fifty-one were approved, six rejected, and four were undecided at the end of the year.

Effective April 1st, a general salary revision averaging an 8-per-cent increase was granted. Some anomalies occurred affecting Marine Station tradesmen, Assistant Radio Superintendent, Ranger Supervisors, and the various Forest Agrologist categories. Adjustments were made to the Marine Station group, and agreement was reached for future amendment of the other groups, with the exception of Forest Agrologists, whose rates were still under discussion with the Civil Service Commission at the end of the year. Numerous cases of individual salary interpretation and adjustment were settled as they occurred.

There was an increasing concentration and activity on accident prevention following receipt of accident statistics from the Workmen's Compensation Board. Recommendations were placed before the Civil Service Commission for changes in sick- and vacation-leave regulations, special living allowances in northern areas, and a policy of assisting with removal expenses on recruitment when qualified candidates are not available locally. The qualifications for Ranger School entrance were modified, with the addition of a Forest Service general knowledge examination to supplement the mathematics test. A small experimental survey of employee attitudes regarding supervisory attributes was carried out in one Victoria division. Good use was made by Forest Service employees of the facilities provided through the Employee's Occupational Health Office in Victoria for receiving inoculations and vaccinations against the common diseases likely to be contracted in field work. The policy was continued of restricting the employment or re-employment of persons over 65 years of age to a few cases individually approved by Order in Council.

PERSONNEL DIRECTORY, 1960

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. - - - - - - - - - Department Comptroller.
Monk, D. R. - - - - - - - - - Director, Public Information.
Williams, W. J. - - - - - - - - - - - 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 Ranger 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 District

I. T. Cameron - - - - - - - - - - District Forester.
Boulton, L. B. B. - - - - - - - - - Assistant District Forester.

Forest Rangers:

Carr, W. S. (Chilliwack); McDaniel, R. W. (Hope); Wilson, R. (Harrison Lake); Webster, J. B. (Mission); Mudge, M. H. (Port Moody); Henderson, J. E. (Squamish); Chamberlin, L. C. (Sechelt); McKinnon, C. G. (Madeira Park); Hollinshead, S. B. (Powell River); Norbirg, H. (Lund); Gill, D. E. (Thurston Bay East); (vacant) (Thurston Bay West); Bertram, G. D. (Chatham Channel); Thomas, R. W. (Echo Bay); Howard, W. (Alert Bay); Sykes, S. J. (Port Hardy); Ormond, L. D. (Campbell River); Antonelli, M. W. (Courtenay); Glassford, R. J. (Parksville); Haley, K. (Nanaimo); Bell, P. A. (Duncan); Lorentsen, L. H. (Ganges); Jones, R. W. (Langford); Morley, K. A. (Lake Cowichan); Brooks, F. T. (Alberni); McArthur, E. J. (Tofino); Carradice, J. H. (Pemberton).

Prince Rupert District

J. R. Johnston - - - - - - - - - - - District Forester.
Lehrle, L. W. W. - - - - - - - - - Assistant District Forester.

Forest Rangers:

Berard, R. K. (Ocean Falls); Crosby, D. K. (Queen Charlotte City); Brooks, R. L. (Prince Rupert); Lindstrom, W. C. (Terrace); Antonenko, J. (Kitwanga); Petty, A. P. (Hazelton); Mould, J. (Smithers); Clay, W. D. (Telkwa); Keefe, J. J. (Houston); Kullander, M. O. (Pendleton Bay); Mastin, T. (Burns Lake); Hawkins, R. M. (Bella Coola); Pement, A. R. (Southbank); Morris, D. S. (Atlin).

Prince George District

A. H. Dixon - - - - - - - - - - - - District Forester.
Bennett, C. E. - - - - - - - - - - Assistant District Forester.

Forest Rangers:

French, C. L. (McBride); Rohn, K. (Penny); Meents, G. E. (Prince George); Pearce, F. (Prince George); Northrup, K. A. (Fort St. James); Kuly, A. (Quesnel (S.)); Barbour, H. T. (Pouce Coupe); Hamblin, R. A. (Aleza Lake); Graham, G. W. (Vanderhoof); Cosens, A. S. (Fort St. John); Baker, F. M. (Fort Fraser); Waller, T. (Summit Lake); Thornton, S. H. (Quesnel); Flynn, D. (Prince George); Anderson, O. J. (Hixon); Mitchell, B. A. (Quesnel (E.)); Angly, R. B. (Quesnel (N.)); McQueen, L. (Chetwynd).

Kamloops District

W. C. Phillips - - - - - - - - - - District Forester.
McRae, N. A. - - - - - - - - - Assistant District Forester.

Forest Rangers:

Specht, G. H. (Lumby); Williams, R. V. (Birch Island); Bailey, J. D. (Barriere); Hill, A. F. (Kamloops (S.)); Paquette, O. (Chase); Gibson, C. L. (Salmon Arm); Jones, G. G. (Sicamous); Cameron, A. G. (Lillooet); Johnson, M. A. (Vernon); Scott, E. L. (Penticton); Dearing, J. H. (Princeton); Robertson, C. E. (Clinton); Cawston, J. B. (Williams Lake); Bodman, G. F. (Alexis Creek); Hewlett, H. C. (Kelowna); Noble, J. O. (Ashcroft); DeWitt, D. O. (Merritt); Monteith, M. E. (Blue River); Collins, B. G. (Enderby); Janning, H. A. W. (110 Mile (N.)); Weinard, J. P. (Kamloops (N.)); Wittner, D. J. (Horsefly); Hamilton, T. J. (100 Mile (S.)).

Nelson District

P. Young - - - - - - - - - - District Forester.
Bruce, J. B. - - - - - - - - - Assistant District Forester.

Forest Rangers:

Hopkins, H. V. (Invermere); Humphrey, J. L. (Fernie); (vacant) (Golden); Gierl, J. B. (Cranbrook (E.)); Ross, A. I. (Creston); Stilwell, L. E. (Kaslo); Benwell, W. G. (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); (vacant) (Arrowhead); Haggart, W. D. (Edgewood); Hesketh, F. G. (Elko); Reaney, R. J. (Spillimacheen); Bailey, J. F. (Cranbrook (W.)); Ivens, J. H. (Beaverdell); Webster, G. R. (Slocan City); Jackson, R. C. (Revelstoke).

APPENDIX

TABULATED DETAILED STATEMENTS TO SUPPLEMENT REPORT OF FOREST SERVICE

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(1) DISTRIBUTION OF PERSONNEL, 1959

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	11	9	11	13	9	82	135
Agrologists and Agrologists-in-Training	------	------	1	5	2	3	11
Engineers and Engineers-in-Training	------	------	------	------	------	26	26
Forest Protection Officers	3	2	1	1	2	3	12
Supervisors of Rangers	3	2	3	3	3	------	14
Rangers—Grades 1 and 2	32	18	26	31	28	------	135
Superintendent of Scaling and Assistants	11	2	3	3	2	------	21
Scalers, Official	74	2	------	------	------	------	76
Scalers, Official, temporary	38	------	------	3	------	------	41
Comptroller, Accountant, and Audit Assistants	------	------	------	------	------	7	7
Engineering, Mechanical and Radio	4	2	4	4	4	67	85
Technical Forest and Public Information Assistants	7	7	6	14	8	10	52
Reforestation, Research, and Survey Assistants	------	------	1	------	------	77	78
Nursery Superintendents	------	------	------	------	------	4	4
Draughtsmen and Mapping Assistants	6	4	5	5	3	27	50
Clerks, Stenographers, and Messengers	103	29	29	31	22	114	328
Superintendent and Foremen, Forest Service Marine Station	------	------	------	------	------	6	6
Mechanics, Carpenters, and Technicians	------	------	4	------	------	38	42
Launch Crewmen	18	6	------	------	------	3	27
Assistant and Acting Rangers	37	26	30	44	42	------	179
Dispatchers	17	8	10	17	8	------	60
Cruisers, Compassmen, and Silviculture Crewmen	22	33	58	50	23	------	186
Truck, Tractor, and Equipment Operators	------	1	4	------	3	8	16
Foremen	------	------	1	------	------	15	16
Miscellaneous	1	2	1	------	2	20	26
Totals, continuous personnel	389	155	200	226	163	527	1,660
Seasonally Employed							
Assistant and Acting Rangers	19	6	4	7	------	------	36
Patrolmen	------	4	4	3	14	------	25
Lookoutmen	36	22	22	34	41	------	155
Dispatchers, Radio Operators, and Clerks	8	3	2	5	12	9	39
Fire-suppression Crewmen	58	------	------	54	32	------	144
Reforestation—Snag-fallers, Planters, etc.	------	------	------	------	------	370	370
Cruisers and Compassmen	------	------	------	------	------	------	------
Truck, Tractor, and Equipment Operators	4	4	------	5	4	31	48
Student and Survey Assistants and Engineering Aides	------	------	------	------	------	121	121
Silvicultural Crewmen	------	------	------	------	------	------	------
Foremen	8	1	2	6	5	15	37
Miscellaneous	11	8	10	6	10	96	141
Totals, seasonal personnel	144	48	44	120	118	642	1,116
Total, all personnel	533	203	244	346	281	1,169	2,776

(2)

SUMMARY OF PLANTING, 1950–59

Year	Experimental		Forest Service on Crown Land		Private Companies		Community Forests		Private Plantings and Farm Wood-lots		Total	
	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres
Coast												
1959	44.3	65.0	812.2	1,447.0	6,150.7	14,766.0[1]	100.0	177.0	281.5	715.0	7,388.7	17,170.0
1958	24.6	20.0	861.8	1,051.0	7,020.4	13,568.0	38.0	60.0	64.5	69.0	8,009.3	14,768.0
1957	11.7	13.0	294.0	435.0	2,992.5	7,430.0	8.0	10.0	20.4	30.0	3,326.6	7,918.0
1956	30.6	29.0	954.3	1,682.0	1,428.7	3,536.0	1.2	2.0	58.7	90.0	2,473.5	5,339.0
1955	10.0	15.0	2,174.6	3,410.0	4,623.4	7,076.0	40.0	15.0	62.2	80.0	6,910.2	10,596.0
1954	27.5	30.0	5,679.0	7,135.0	3,302.0	5,024.0	59.5	36.0	73.7	72.0	9,141.7	12,297.0
1953	28.5	33.0	2,377.0	2,860.0	2,740.1	3,808.0	25.0	31.0	21.0	6.0	5,191.6	6,738.0
1952	8.1	5.0	4,228.4	4,865.0	1,664.2	2,065.0	137.4	210.0	40.9	15.0	6,079.0	7,160.0
1951	12.0	20.0	5,733.9	6,070.0	1,808.0	2,235.0	110.0	130.0	31.2	25.0	7,695.1	8,480.0
1950	.....	.....	6,261.6	6,670.0	553.1	680.0	52.0	50.0	20.9	.....	6,887.6	7,400.0
Previously planted	728.7	636.7	56,763.5	70,270.0	9,563.3	11,916.3	309.0	322.0	158.1	137.0	67,522.6	83,282.0
Totals to date	926.0	866.7	86,140.3	105,895.0	41,846.4	72,104.3	880.1	1,043.0	833.1	1,239.0	130,625.9	181,148.0
Interior												
1959	10.1	32.2	765.9	1,293.0	76.8	100.0	.....	.....	9.2	12.0	862.0	1,437.2
1958	3.8	5.4	471.4	592.0	70.7	111.0	.....	.....	2.4	2.4	548.3	710.8
1957	31.1	42.0	137.9	179.0	88.8	114.0	20.0	30.0	16.6	17.0	294.4	382.0
1956	34.7	46.0	192.1	259.0	121.4	192.0	.....	.....	16.3	10.0	364.5	507.0
1955	1.5	2.0	215.8	288.0	81.0	105.0	.....	.....	12.2	10.0	310.5	405.0
1954	5.6	8.0	590.9	1,007.0	94.0	109.0	.....	.....	7.2	9.0	697.7	1,133.0
1953	2.0	2.0	282.3	284.0	35.0	47.0	.....	.....	10.4	17.0	329.7	350.0
1952	27.0	38.0	167.2	292.0	2.0	.....	.....	.....	3.1	4.0	199.3	334.0
1951	56.5	78.0	0.2	.....	.....	.....	0.5	.....	1.2	1.0	58.4	79.0
1950	27.2	30.0	.....	.....	.....	.....	.....	.....	0.1	.....	27.3	30.0
Totals to date	199.5	283.7	2,823.7	4,194.0	569.7	778.0	20.5	30.0	78.7	82.4	3,692.1	5,368.0
All planted to date	1,125.5	1,150.4	88,964.0	110,089.0	42,416.1	72,882.3	900.6	1,073.0	911.8	1,321.4	134,318.0	186,516.0
All planted this year	54.4	97.2	1,578.1	2,770.0	6,227.5	14,866.0	100.0	177.0	290.7	727.0	8,250.7	18,607.2

[1] The Forest Service planted 1,575,000 trees on 3,016 acres of private lands under reforestation agreements (*Forest Act*, section 166).

(3) ESTIMATED VALUE OF PRODUCTION, INCLUDING LOADING AND FREIGHT WITHIN THE PROVINCE, 1950–59

Product	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	Ten-year Average, 1950–59
Lumber	$303,384,304	$278,904,266	$280,006,490	$279,979,507	$270,109,948	$348,264,190	$328,262,772	$275,373,764	$225,626,861	$291,500,000	$288,141,210
Pulp and paper	78,739,573	135,167,761	129,238,520	135,871,797	156,178,180	166,902,992	176,295,267	177,431,513	190,750,417	234,529,000	158,110,502
Shingles	37,502,958	32,537,442	23,878,880	26,700,153	28,077,416	29,488,730	24,407,817	18,421,952	19,546,449	19,769,000	26,033,080
Boxes	3,837,067	4,062,133	2,367,450	1,810,376	1,481,051	1,374,984	647,112	1,089,400	854,922	704,000	1,822,850
Plywood	26,250,000	34,500,000	36,572,000	45,240,000	53,000,000	68,000,000	80,000,000	71,845,000	90,000,000	75,500,000	58,090,700
Piles, poles, and mine-timber	5,127,681	5,805,745	9,540,340	8,646,611	5,087,052	6,283,909	9,301,902	12,834,152	5,686,592	4,854,000	7,316,798
Cordwood, fence-posts, and lagging	2,189,249	2,349,720	2,675,870	2,581,806	2,282,996	1,447,950	1,391,960	919,538	765,270	669,000	1,727,336
Ties, railway	281,308	633,089	963,200	669,007	445,777	306,625	615,491	1,068,280	296,919	202,000	548,170
Additional value contributed by the wood-using industry	2,250,000	2,812,500	2,530,000	2,530,000	2,530,000	2,530,000	2,750,000	2,500,000	2,200,000	2,700,000	2,533,250
Laths and other miscellaneous products	1,723,616	1,994,340	2,164,660	2,688,007	1,845,901	1,595,900	1,306,988	986,082	757,058	1,226,000	1,628,855
Logs exported	5,741,784	4,981,597	5,401,410	4,514,777	5,918,306	4,413,508	2,342,700	1,343,090	474,520	1,243,000	3,637,469
Pulpwood exported	741,128	99,375	236,900	37,296	85,716	480	.....	.....	.....	.....	120,089
Wood-chips exported	.....	.....	.....	.....	.....	.....	.....	6,875,000	4,854,232	3,126,000	1,485,523
Christmas trees	583,549	939,390	912,700	999,159	968,047	1,085,045	1,258,443	1,126,918	964,985	1,689,000	1,052,724
Cascara bark	18,925	20,572	18,130	20,160	12,393	5,249	6,511	14,880	9,202	4,000	13,002
Totals	$468,371,142	$504,807,930	$496,506,550	$512,288,656	$528,022,783	$631,699,562	$628,586,963	$571,829,569	$542,787,427	$637,715,000	$552,261,558

(4) PAPER PRODUCTION (IN TONS), 1950–59

Product	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	Ten-year Average, 1950–59
Newsprint	388,191	385,172	428,832	501,083	536,656	560,993	595,717	583,850	608,743	831,355	542,059
Other papers	89,437	99,409	92,777	96,853	110,461	127,880	112,299	157,872	200,406	214,479	130,187

In addition to 1,016,009 tons of pulp manufactured into paper in the Province, 867,790 tons were shipped out of the Province during the year.

(5) WATER-BORNE LUMBER TRADE (IN M B.M.), 1950–59

Destination	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	Ten-year Average, 1950–59
Eastern Canada	----	----	----	6,708	5,670	3,037	4,917	2,102	5,482	10,481	3,840
Australia	90,936	93,566	36,060	89,658	115,464	137,308	99,829	87,213	98,808	80,115	92,896
New Zealand	8,823	13,311	7,839	6,036	13,465	12,588	14,097	11,030	8,397	5,212	10,080
South America	2,227	2,067	2,164	3,924	648	5,756	16,541	25,503	8,816	10,178	7,782
China, Hong Kong, and Formosa	7,087	21,382	7,915	9,206	3,599	1,909	1,275	1,256	597	509	5,473
Japan and Korea	86	101	82	23,742	8,216	10,725	5,852	3,713	999	7,614	6,113
United Kingdom and Continent	243,632	763,267	772,527	502,814	697,298	611,451	320,293	385,237	337,959	267,363	490,184
Africa	89,152	94,412	52,344	123,064	145,308	188,567	145,132	181,560	139,523	94,598	125,366
India	2,621	7,396	1,029	16,695	4,397	1,745	416	468	3,372	27,581	6,572
United States	736,831	71,316	229,809	542,472	509,661	345,694	283,834	275,452	602,427	595,170	419,267
Philippine and Hawaiian Islands	13,112	11,353	9,558	7,577	4,998	12,715	13,183	7,668	3,166	2,133	8,546
West Indies	8,654	9,669	3,404	12,235	12,062	10,516	11,599	12,085	13,492	8,478	10,219
South Sea Islands	7,751	9,917	8,538	8,563	8,402	16,140	15,339	8,147	11,841	8,068	10,271
Mexico and Central America	89	762	463	269	29,192	33,788	41,937	49,885	51,842	62,826	27,105
Egypt, Arabia, and Israel	7,634	22,426	498	2,191	2,368	1,320	1,394	5,766	213	1,340	4,515
Belgium	8,958	(1)	2,390	8,951	4,977	3,121	2,628	5,095	10,790	4,080	5,099
France	----	1,672	1,172	1,382	2,950	2,845	3,191	4,110	3,265	3,184	2,377
Germany	----	291	73	105	15	732	177	169	22	----	158
Holland	1,917	(1)	1,217	4,524	4,123	4,042	3,802	3,552	6,091	4,569	3,384
Italy	549	1,221	637	1,084	2,284	4,349	3,007	6,530	4,560	2,805	2,703
Foreign, unclassified	20,423	13,335	10,107	20,217	4,674	3,603	1,221	2,363	2,681	1,333	7,996
Belgium and Holland	----	7,720	----	----	----	----	----	----	----	----	772
Denmark, Norway, and Sweden	714	1,107	227	247	175	109	----	14	18	16	263
Totals	1,251,196	1,146,291	1,148,053	1,391,664	1,579,946	1,412,060	989,664	1,078,918	1,314,361	1,197,653	1,250,980

[1] Belgium and Holland combined in 1951.

TOTAL AMOUNT OF TIMBER SCALED IN BRITISH COLUMBIA DURING YEARS 1958 AND 1959 IN F.B.M.

(6A) (All products converted to f.b.m.)

Forest District	1958	1959	Gain
Vancouver	2,745,804,238	3,143,091,743	397,287,505
Prince Rupert (C.)	271,497,350	303,615,925	32,118,575
Totals, Coast	3,017,301,588	3,446,707,668	429,406,080
Prince Rupert (I.)	206,677,534	226,334,064	19,656,530
Prince George	661,169,290	839,661,106	178,491,816
Kamloops	972,550,354	1,130,756,141	158,205,787
Nelson	491,808,784	532,738,310	40,929,526
Totals, Interior	2,332,205,962	2,729,489,621	397,283,659
Grand totals	5,349,507,550	6,176,197,289	826,689,739

TOTAL AMOUNT OF TIMBER SCALED IN BRITISH COLUMBIA DURING YEARS 1958 AND 1959 IN CUBIC FEET

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

Forest District	1958	1959	Gain
Vancouver	457,634,040	523,848,624	66,214,584
Prince Rupert (C.)	45,249,558	50,602,654	5,353,096
Totals, Coast	502,883,598	574,451,278	71,567,680
Prince Rupert (I.)	35,943,919	39,362,446	3,418,527
Prince George	114,985,963	146,028,018	31,042,055
Kamloops	169,139,192	196,653,242	27,514,050
Nelson	85,531,962	92,650,141	7,118,179
Totals, Interior	405,601,036	474,693,847	69,092,811
Grand totals	908,484,634	1,049,145,125	140,660,491

(7A)

SPECIES CUT, ALL PRODUCTS, 1959, IN F.B.M.

Forest District	Fir	Cedar	Spruce	Lodgepole Pine	Hemlock	Balsam	White Pine	Yellow Pine	Cypress	Larch	Hardwoods	Cottonwood	Total
Vancouver	1,028,046,083	708,082,132	44,631,620	278,002	973,747,729	334,794,039	19,614,947	1,031,992	22,699,200		5,312,680	4,853,319	3,143,091,743
Prince Rupert (C.)	24,215,228	52,073,400	83,226,170	5,750	123,539,506	11,948,482	5,646		1,367,736		9,499	7,224,508	303,615,925
Totals, Coast	1,052,261,311	760,155,532	127,857,790	283,752	1,097,287,235	346,742,521	19,620,593	1,031,992	24,066,936		5,322,179	12,077,827	3,446,707,668
Prince Rupert (I.)	11,571	8,137,076	88,011,109	44,136,112	51,949,086	32,883,469					23,899	1,181,742	226,334,064
Prince George	126,749,955	1,541,275	555,312,775	139,230,497	2,135	14,042,158					1,545,153	1,237,158	839,661,106
Kamloops	833,047,878	20,257,601	148,722,636	29,932,821	17,202,587	12,576,891	13,367,228	33,572,275		21,710,584	157,919	207,721	1,130,756,141
Nelson	158,307,852	47,219,634	134,691,889	16,072,706	36,323,530	12,592,893	18,734,651	9,270,779		99,256,184	22,490	245,702	532,738,310
Totals, Interior	1,118,117,256	77,155,586	926,738,409	229,372,136	105,477,338	72,095,411	32,101,879	42,843,054		120,966,768	1,749,461	2,872,323	2,729,489,621
Grand totals	2,170,378,567	837,311,118	1,054,596,199	229,655,888	1,202,764,573	418,837,932	51,722,472	43,875,046	24,066,936	120,966,768	7,071,640	14,950,150	6,176,197,289

(7B)

SPECIES CUT, ALL PRODUCTS, 1959, IN CUBIC FEET

(Conversion factor: 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	Hardwoods	Cottonwood	Total
Vancouver	171,341,014	118,013,689	7,438,603	46,334	162,291,288	55,799,006	3,269,158	171,999	3,783,200		885,447	808,886	523,848,624
Prince Rupert (C.)	4,035,871	8,678,900	13,871,028	958	20,589,918	1,991,414	941		227,956		1,583	1,204,085	50,602,654
Totals, Coast	175,376,885	126,692,589	21,309,631	47,292	182,881,206	57,790,420	3,270,099	171,999	4,011,156		887,030	2,012,971	574,451,278
Prince Rupert (I.)	2,012	1,415,144	15,306,280	7,675,846	9,034,624	5,718,864					4,156	205,520	39,362,446
Prince George	22,043,470	268,048	96,576,135	24,213,999	371	2,442,115					268,722	215,158	146,028,018
Kamloops	144,877,892	3,523,061	25,864,807	5,205,708	2,991,754	2,187,285	2,324,736	5,838,656		3,775,754	27,464	36,125	196,653,242
Nelson	27,531,800	8,212,110	23,424,676	2,795,253	6,317,136	2,190,068	3,258,200	1,612,310		17,261,945	3,912	42,731	92,650,141
Totals, Interior	194,455,174	13,418,363	161,171,898	39,890,806	18,343,885	12,538,332	5,582,936	7,450,966		21,037,699	304,254	499,534	474,693,847
Grand totals	369,832,059	140,110,952	182,481,529	39,938,098	201,225,091	70,328,752	8,853,035	7,622,965	4,011,156	21,037,699	1,191,284	2,512,505	1,049,145,125

TOTAL SCALE OF ALL PRODUCTS, 1959, IN F.B.M. (SEGREGATED BY LAND STATUS AND FOREST DISTRICTS)

(8A)

Land Status	Vancouver	Prince Rupert (Coast)	Prince Rupert (Interior)	Prince George	Kamloops	Nelson	Total
Timber licences	669,812,585			1,903,351	8,227,702	21,890,859	701,834,497
Timber berths	104,743,242				10,808,460	12,423,755	127,975,457
Timber leases	83,465,978						83,465,978
Pulp leases	15,511,963	9,679,961					25,191,924
Pulp licences	19,231,302	43,105,474					62,336,776
Hand-loggers' licences	271,429	42,315					313,744
Farm wood-lots	565,378			203,728	256,122		1,025,228
Timber sales	998,803,613	120,263,162	153,469,501	760,294,997	892,628,666	355,566,716	3,281,026,655
Pulp-timber sales		21,959,167					21,959,167
No mark visible	68,937,397						68,937,397
Tree-farm licences	231,552,088	66,244,033	62,273,514	18,953,432	35,010,744	58,413,584	472,447,395
Miscellaneous	10,875,122	4,792,384	1,262,670	15,511,965	8,777,785	4,723,015	45,942,941
Sub-totals, Crown lands	2,203,770,097	266,086,496	217,005,685	796,867,473	955,709,479	453,017,929	4,892,457,159
Federal lands	16,879,256	277,129	95,194		18,021,795	1,623,223	36,896,597
Crown grants—							
To 1887	754,093,480			340,032	39,707,827	2,321,152	796,462,491
1887–1906	73,570,268	13,084,447	95,630	231,475	18,625,360	46,134,350	151,741,530
1906–1914	20,825,599	6,146,636	2,198,779	4,315,422	31,928,235	11,918,192	77,332,863
1914 to date	73,953,043	18,021,217	6,938,776	37,906,704	66,763,445	17,723,464	221,306,649
Totals	3,143,091,743	303,615,925	226,334,064	839,661,106	1,130,756,141	532,738,310	6,176,197,289

TOTAL SCALE OF ALL PRODUCTS, 1959, IN CUBIC FEET (SEGREGATED BY LAND STATUS AND FOREST DISTRICTS)

(8B) (Conversion factor: Coast—6 f.b.m.=1 cu. ft., Interior—5.75 f.b.m.=1 cu. ft.)

Land Status	Vancouver	Prince Rupert (Coast)	Prince Rupert (Interior)	Prince George	Kamloops	Nelson	Total
Timber licences	111,635,431			331,017	1,430,905	3,807,106	117,204,459
Timber berths	17,457,207				1,879,732	2,160,653	21,499,592
Timber leases	13,910,996						13,910,996
Pulp leases	2,585,327	1,613,327					4,196,654
Pulp licences	3,205,217	7,184,246					10,389,463
Hand-loggers' licences	45,238	7,052					52,290
Farm wood-lots	94,230			35,431	44,543		174,204
Timber sales	166,467,296	20,043,860	26,690,348	132,225,217	155,239,768	61,837,690	562,504,152
Pulp-timber sales		3,659,861					3,659,861
No mark visible	11,489,566						11,489,566
Tree-farm licences	38,592,015	11,040,672	10,830,176	3,296,249	6,088,825	10,158,884	80,006,821
Miscellaneous	1,812,520	798,731	219,595	2,697,733	1,526,571	821,394	7,876,544
Sub-totals, Crown lands	367,295,016	44,347,749	37,740,119	138,585,647	166,210,344	78,785,727	832,964,602
Federal lands	2,813,209	46,188	16,556		3,134,225	282,299	6,292,477
Crown grants—							
To 1887	125,568,247			59,136	6,905,709	403,679	133,050,771
1887–1906	12,261,712	2,180,741	16,631	40,257	3,239,193	8,023,365	25,761,899
1906–1914	3,470,933	1,024,440	382,396	750,508	5,552,737	2,072,729	13,253,743
1914 to date	12,325,507	3,003,536	1,206,744	6,592,470	11,611,034	3,082,342	37,821,633
Totals	523,848,624	50,602,654	39,362,446	146,028,018	196,653,242	92,650,141	1,049,145,125

(9) TIMBER SCALED IN BRITISH COLUMBIA IN 1959 (BY MONTHS AND FOREST DISTRICTS)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Vancouver—													
F.b.m.	80,177,705	90,895,904	111,683,124	147,712,180	136,141,233	155,432,737	128,898,105	21,674,526	32,213,492	111,561,862	143,568,007	143,770,313	1,303,729,188
Cubic feet	12,897,552	17,078,530	20,902,295	30,238,147	28,485,159	38,282,361	34,136,351	7,647,578	11,252,853	30,841,058	35,077,884	30,696,646	297,536,414
Lineal feet	445,183	229,774	426,072	551,825	923,756	707,543	597,869	113,837	138,262	562,002	663,962	770,955	6,131,040
Cords	6,111	4,739	6,411	7,305	5,763	8,164	4,663	5,849	4,912	4,511	6,999	8,031	73,458
Hewn ties	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prince Rupert (C.)—													
F.b.m.	3,510,803	4,821,699	2,906,262	6,392,686	13,029,752	18,828,600	11,027,225	7,016,591	3,236,106	9,041,582	20,955,319	13,517,901	114 284 526
Cubic feet	1,441,167	767,740	1,443,396	1,779,797	3,473,711	4,306,478	3,452,426	2,427,608	811,086	3,170,685	4,491,814	3,901,410	31,467,318
Lineal feet	4,270	7,922	500	1,511	21,402	19,552	30,625	11,695	5,800	12,525	29,710	25,510	171 022
Cords	10	.....	.....	.....	.....	12	.....	.....	28	.....	6	.....	56
Hewn ties	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prince Rupert (I.)—													
F.b.m.	358,686	521,957	774,707	1,167,266	317,676	398,389	650,845	1,205,747	834,893	440,932	1,067,755	432,557	8,171,410
Cubic feet	3,855,243	4,093,131	5,046,574	5,602,328	2,352,052	2,422,491	1,589,571	2,152,534	1,781,746	2,399,640	2,892,411	2,534,249	36,721,970
Lineal feet	66,260	80,993	96,095	136,800	134,335	189,931	199,967	189,575	205,394	153,598	180,433	73,506	1,706,887
Cords	50	95	45	58	87	22	37	57	55	217	257	39	1,019
Hewn ties	3,551	.....	2,854	7,503	15,211	634	.....	9,250	5,367	3,732	1,252	.....	49,354
Prince George—													
F.b.m.	3,468,572	6,879,494	4,500,668	6,737,399	4,696,678	3,065,975	3,651,778	4,986,019	7,331,894	4,292,325	2,155,869	4,488,001	56,254,672
Cubic feet	5,235,725	16,007,839	22,994,218	25,774,663	16,717,136	3,935,600	4,137,614	7,335,420	13,434,542	8,026,153	4,982,548	5,880,680	134,462,138
Lineal feet	81,550	42,670	100,670	122,270	158,751	129,658	227,440	177,425	138,101	124,280	62,660	98,160	1,463,635
Cords	112	49	1,029	88	578	291	297	737	4,809	444	57	16	8,507
Hewn ties	195	.....	.....	430	24,911	3,108	9,590	8,299	48	8,118	11,181	6,449	72,329
Kamloops—													
F.b.m.	8,509,073	10,159,988	11,226,712	8,837,547	11,472,659	15,032,552	19,795,150	16,940,016	15,546,259	13,568,128	14,804,532	12,518,164	158,410,780
Cubic feet	12,853,835	15,211,470	16,241,280	12,692,479	8,212,787	10,486,347	14,584,221	17,629,575	16,879,490	14,649,518	14,340,279	12,979,301	166,760,582
Lineal feet	121,070	43,070	80,629	47,163	87,619	111,325	54,980	340,295	487,610	143,040	1,226,679	468,250	3,211,730
Cords	265	189	290	825	682	554	598	1,258	417	374	3,515	326	9,293
Hewn ties	.....	.....	.....	.....	948	.....	.....	.....	.....	.....	.....	.....	948
Nelson—													
F.b.m.	9,250,103	7,285,652	6,183,335	9,210,474	5,817,565	6,356,966	6,745,525	14,108,486	15 038,590	12,610,740	11,186,247	8,509,432	112,303,115
Cubic feet	4,365,627	5,334,254	4,833,916	5,755,537	1,918,248	3,076,468	3,919,112	6,275,867	9,852,473	8,602,260	9,343,265	7,245,083	70,522,110
Lineal feet	304,957	199,990	65,720	42,153	48,587	56,210	208,708	227,972	624,464	576,855	540,308	319,195	3,215,119
Cords	1,512	768	626	1,005	875	1,503	854	1,488	563	1,234	2,015	570	13,013
Hewn ties	491	.....	.....	.....	.....	.....	.....	.....	1,303	.....	1,000	915	3,709
Totals—													
F.b.m.	105,274,942	120,564,694	137,274,808	180,057,552	171,475,563	199,115,219	170,768,628	65,931,385	74,201,234	151,515,569	193,737,729	183,236,368	1,753,153,691
Cubic feet	40,649,149	58,492,964	71,461,679	81,842,951	61,159,093	62,509,745	61,819,295	43,468,582	54,012,190	67,689,314	71,128,201	63,237,369	737,470,532
Lineal feet	1,023,290	604,419	769,686	901,722	1,374,450	1,214,219	1,319,589	1,060,799	1,599,631	1,572,300	2,703,752	1,755,576	15,899,433
Cords	8,060	5,840	8,401	9,281	7,985	10,546	6,449	9,389	10,784	6,780	12,849	8,982	105,346
Hewn ties	4,237	.....	2,854	7,933	41,070	3,742	9,590	17,549	6,718	11,850	13,433	7,364	126,340

VOLUME OF WOOD REMOVED UNDER RELOGGING AT REDUCED ROYALTY AND STUMPAGE, 1950–59, IN THOUSAND CUBIC FEET (10)

Year	Salvage Wood (M C.F.)	Year	Salvage Wood (M C.F.)
1950	324	1955	1,209
1951	420	1956	1,795
1952	732	1957	3,663
1953	1,053	1958	1,427
1954	1,888	1959	1,257

Ten-year average, 1950–59, 1,377.

NUMBER OF ACRES MANAGED AND OPERATED UNDER APPROVED WORKING PLANS, 1950–59 (11)

Year	Tree-farm Licences		Christmas-tree Permits		Farm Wood-lots		Public Working Circles and Sustained-yield Units[1]		Total Acres
	Number	Productive Acres	Number	Productive Acres	Number	Productive Acres	Number	Productive Acres	
1950	7	1,668,663	129	45,360	----	----------	----	----------	1,714,023
1951	10	1,953,754	135	47,250	3	452	----	----------	2,001,456
1952	13	2,071,918	145	49,986	5	727	----	----------	2,122,631
1953	14	2,158,898	163	64,835	20	4,571	24	5,649,162	7,877,466
1954	19	2,788,313	174	68,689	25	5,549	28	7,019,759	9,882,310
1955	23	4,685,492	209	72,603	29	6,455	33	9,328,447	14,092,997
1956	23	4,680,846	221	76,457	37	8,320	47	21,667,410	26,433,033
1957	23	4,871,237	283	80,651	44	10,488	58	28,820,776	33,783,152
1958	27	5,349,773	277	83,500	53	13,108	61	32,389,893	37,836,274
1959	36	5,851,979	279	83,210	50	12,059	64	34,606,543	40,553,791
Ten-year average, 1950–59	19	3,608,087	201	67,254	27	6,173	31	13,948,199	17,629,713

[1] Approved public working circles and sustained-yield units.

TOTAL SCALE OF ALL PRODUCTS FROM MANAGED LANDS, 1950–59 (12)

(In Table 8B, "tree-farm licences" includes only the cut from Crown lands within tree-farm licences. The cut from "other tenures" is shown under appropriate headings. In this table, all the cut from managed lands under regulation is combined.)

Year	Tree-farm Licences		Christmas-tree Permits		Farm Wood-lots		Public Working Circles and Sustained-yield Units		Total	
	Number	Cubic Feet	Number	Number of Trees	Number	Cubic Feet	Number	Cubic Feet	Number of Christmas Trees	Cubic Feet
1950	7	----------	129	174,609	----	----------	----	----------	174,609	----------
1951	10	27,440,866	135	175,755	3	----------	----	----------	175,755	27,440,866
1952	13	33,532,810	145	195,803	5	232	----	----------	195,803	33,533,042
1953	14	40,442,745	163	267,182	20	17,497	24	89,731,000	267,182	130,191,242
1954	19	47,631,411	174	326,106	25	26,939	28	100,166,664	326,106	147,825,014
1955	23	69,715,422	209	301,319	29	64,482	33	115,091,229	301,319	184,871,133
1956	23	121,869,721	221	430,447	37	92,124	47	188,455,411	433,850[1]	310,425,826[2]
1957	23	125,622,175	283	498,286	44	70,116	58	207,892,534	500,786[3]	333,584,825
1958	27	144,260,543	277	408,874	53	139,396	61	254,809,622	411,574[4]	399,276,185[5]
1959	36	178,742,435	279	398,504	50	205,676	64	312,048,987	404,249[6]	490,997,098
Ten-year average, 1950–59	19	78,925,813	201	317,688	27	61,646	31	126,819,545	319,123	205,814,523

[1] Includes 3,403 Christmas trees cut on tree-farm licences and farm wood-lots.
[2] Includes 8,570 cubic feet cut from Christmas-tree permits.
[3] Includes 2,500 Christmas trees cut on tree-farm licences.
[4] Includes 2,700 Christmas trees cut on tree-farm licences.
[5] Includes 66,624 cubic feet cut from Christmas-tree permits.
[6] Includes 5,402 Christmas trees cut from tree-farm licences and 343 trees cut from farm wood-lots.

(13)

LOGGING INSPECTIONS, 1959

Forest District	Type of Tenure Operated				Number of Inspections
	Timber Sales	Hand-loggers' Licences	Leases, Licences, Crown Grants, and Pre-emptions	Total	
Vancouver	1,332	1	1,168	2,501	8,382
Prince Rupert	795	1	189	985	2,929
Prince George	1,804	----	1,307	3,111	6,610
Kamloops	1,706	----	1,472	3,178	5,459
Nelson	636	----	760	1,396	3,532
Totals, 1959	6,273	2	4,896	11,171	26,912
Totals, 1958	5,936	2	4,339	10,257	23,802
Totals, 1957	7,503	3	5,937	13,443	25,253
Totals, 1956	7,492	3	5,838	13,333	22,038
Totals, 1955	6,818	3	4,673	11,494	22,355
Totals, 1954	5,855	3	4,874	10,732	21,011
Totals, 1953	5,851	3	4,859	10,713	20,656
Totals, 1952	5,822	6	5,710	11,538	20,264
Totals, 1951	5,448	6	4,766	10,220	17,754
Totals, 1950	5,189	6	3,812	9,007	16,221
Ten-year average, 1950–59	6,217	4	4,970	11,191	21,577

(14)

TRESPASSES, 1959

Forest District	Number of Cases	Area Cut Over (Acres)	Quantity Cut									Number of Resulting Seizures	Assessment in Dollars
			Cubic Feet	Feet B.M.	Lineal Feet	Cords	Ties	Christmas Trees	Cedar Shakes, Car-stakes	Posts	Trees		
Vancouver	146	556	111,085	.....	3,680	10	.....	759	126,440	.....	.....	5	$57,187.05
Prince Rupert	90	995	1,033,172	.....	33,209	84	3,473	.....	6,661	.....	.....	3	39,161.74
Prince George	172	1,493	786,850	.....	39,644	5,689	.....	.....	.....	306	1,655	2	45,473.25
Kamloops	167	3,124	766,702	.....	38,350	31	.....	24,169	.....	.....	1,267	2	72,138.36
Nelson	52	500	143,206	.....	2,160	.....	.....	1,470	282	6,843	.....	1	7,232.24
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
Totals, 1954	463	5,910	4,373,368	.....	266,856	270	5,083	14,914	119,364	9,750	.....	7	$198,220.15
Totals, 1953	446	10,188	4,072,874	466,401	230,636	2,917	6,335	16,314	116,368	30,663	.....	4	$221,000.12
Totals, 1952	419	5,768	372,788	24,247,327	272,770	1,147	5,237	10,921	227,267	3,991	.....	13	$312,774.33
Totals, 1951	454	5,999	.....	24,545,775	159,064	1,779	20,976	28,121	.....	13,325	.....	41	$237,588.00
Totals, 1950	276	3,072	.....	12,753,405	360,190	1,475	1,806	6,312	75,309	7,550	.....	16	$87,589.23
Ten-year average, 1950–59	499	6,591	3,827,796[1]	15,503,227[2]	276,186	2,348	4,997	15,444	160,270	13,019	.....	13	$258,160.28

[1] Cubic feet—eight-year average. [2] Feet b.m.—four-year average.

(15) AREAS EXAMINED BY THE FOREST SERVICE FOR MISCELLANEOUS PURPOSES OF THE LAND ACT, 1959

Forest District	Applications for Hay and Grazing Leases		Applications for Foreshore Leases		Applications to Purchase		Miscellaneous		Total	
	Number	Acres	Number	Acres	Number	Acres	Number	Acres	Number	Acres
Vancouver	.....	.....	26	591	5	32	4	128	35	751
Prince Rupert	1	2,562	10	60	8	815	11	531	30	3,968
Kamloops	.....	.....	3	242	.....	.....	.....	.....	3	242
Totals	1	2,562	39	893	13	847	15	659	68	4,961

(16) CLASSIFICATION OF AREAS EXAMINED BY THE FOREST SERVICE, 1959

Forest District	Total Area	Agricultural Land	Non-agricultural Land	Merchantable-timber Land	Estimated Timber on Merchantable-timber Land
	Acres	Acres	Acres	Acres	M F.B.M.
Vancouver	751	5	746	138	468
Prince Rupert	3,968	286	3,682	315	7,993
Kamloops	242	67	175	90	316
Totals	4,961	358	4,603	543	8,777

(17) AREAS CRUISED FOR TIMBER SALES, 1959

Forest District	Number Cruised	Acreage	Saw-timber (M B.M.)	Pit-props, Poles, and Piles (Lin. Ft.)	Shingle-bolts and Cord-wood (Cords)	Railway-ties (No.)	Car-stakes, Posts, Shakes, etc. (No.)	Saw-timber (M C.F.)
Vancouver	750	99,197	.....	348,247	6,133	.....	.....	234,167
Prince Rupert	305	78,850	.....	1,896,823	2,609	1,000	3,600	121,781
Prince George	465	141,355	.....	1,610,420	3,800	25,875	103,770	203,145
Kamloops	545	259,449	.....	1,512,300	12,456	.....	75,350	240,028
Nelson	252	102,699	.....	2,020,170	2,755	.....	941,680	78,249
Totals, 1959	2,317	681,550	.....	7,387,960	27,753	26,875	1,124,400	877,370
Totals, 1958	1,922	609,563	.....	8,772,888	24,316	34,430	1,146,719	890,285
Totals, 1957	2,582	781,748	.....	16,099,489	39,254	95,209	1,149,133	1,171,283
Totals, 1956	3,089	1,095,150	.....	13,981,856	44,287	128,432	1,916,510	1,273,970
Totals, 1955	3,354	1,077,986	.....	9,885,451	16,819	145,525	501,820	1,131,521
Totals, 1954	3,085	781,665	.....	10,532,164	76,859	76,310	1,127,346	697,421
Totals, 1953	2,579	719,234	.....	12,887,882	12,328	141,313	694,182	561,601
Totals, 1952	2,340	1,029,199	2,543,890	40,005,329	13,405	989,144	518,652	1,188,361
Totals, 1951	2,704	934,475	6,577,298	20,674,280	25,630	316,954	432,000	.....
Totals, 1950	2,196	333,435	1,777,025	7,388,875	24,522	123,091	352,440	.....
Ten-year average, 1950–59	2,617	804,400	3,632,738	14,761,617	30,517	207,728	896,320	973,976

M B.M.—three-year average; M c.f.—eight-year average.

(18) TIMBER-SALE RECORD, 1959

Forest District	Sales Made	Sales Closed	Total Sales Existing	Total Area (Acres)	Area Paying Forest-protection Tax (Acres)	Total 10-per-cent Deposits
Vancouver	650	662	1,916	607,517	559,324	$6,274,490.19
Prince Rupert	254	393	1,118	377,812	366,162	1,294,745.92
Prince George	355	500	1,301	653,992	602,333	2,126,246.43
Kamloops	434	549	1,992	1,179,187	1,168,227	3,573,623.95
Nelson	233	267	812	603,513	592,594	1,881,106.26
Totals	1,926	2,371	7,139	3,422,021	3,288,640	$15,150,212.75
Cash sales	234	------	------	------	------	------
Total sales	2,160	------	------	------	------	------

(19)

TIMBER SALES AWARDED BY FOREST DISTRICTS, 1959

Forest District	No. of Sales	Acreage	Saw-timber (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 Car-stakes	No. of Blasting-sticks	No. of Bean-poles	No. of Cedar Shakes	No. of Fence-rails	Estimated Revenue
Vancouver	650	162,334	324,619,500		115,440		5,862								$13,994,920.90
Prince Rupert	284	61,601	62,844,950		1,499,918	1,000	1,627	7,450		2,500					1,627,756.12
Prince George	414	126,524	138,433,700		353,513	96,600	2,766	38,130						400	4,796,779.32
Kamloops	515	172,854	123,548,000		1,695,180	75,042	1,873			4,000					5,607,804.62
Nelson	297	119,369	89,901,600		2,131,575	1,123,254	960			500			162,000		3,796,028.11
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	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
Totals, 1954	3,009	693,153	530,817,905		10,210,460	1,017,098	655,670	67,275	300	7,600	15,500		95,400	235	$18,938,049.78
Totals, 1953	2,881	605,450	461,100,000	446,200	22,090,812	795,235	22,580	196,144		6,810	12,000	500	9,100		$17,322,931.29
Totals, 1952	2,594	534,409	57,729,795	2,221,589,000	14,148,539	1,005,485	20,546	218,433	300	700			174,700		$23,584,741.49
Totals, 1951	2,962	605,511	5,000	2,806,195,000	12,812,383	615,153	25,783	296,932		2,150			313,250		$24,621,254.79
Totals, 1950	2,591	372,237		1,628,166,500	12,451,507	793,976	31,785	144,592	300	1,700			113,720		$9,152,791.81
Ten-year average, 1950–59	2,712	651,962			12,331,550	915,522	83,274	147,616		5,396			115,116		$26,509,240.17

(20)

AVERAGE STUMPAGE PRICES AS BID, BY SPECIES AND FOREST DISTRICTS, ON SAW-TIMBER SOLD ON TIMBER SALES IN 1959, PER C C.F. 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	64,173	$8.69	$1.00–31.30	72,678	$3.52	$1.00–23.00	4,729	$2.81	$2.00– 6.00	116,556	$3.14	$1.00–15.60	60,650	$3.05	$2.10– 9.20
Prince Rupert (C.)	2,137	5.97	4.80–10.20	7,118	2.48	0.85– 4.90	5,654	2.40	0.85– 5.30	7,924	2.39	0.85– 4.00	3,140	1.84	1.30– 2.50
Prince Rupert (I.)	.....	.....	.....	266	2.91	0.60– 7.70	15,114	2.46	0.75– 4.20	2,206	2.00	0.50– 2.40	6,300	1.54	0.60– 3.10
Prince George	10,118	4.81	0.75– 9.50	1	0.80	0.80	90,019	3.75	0.75–10.50	.....	.....	.....	6,908	1.99	0.75– 8.00
Kamloops	84,110	4.86	0.50–17.50	1,897	2.96	0.25– 6.90	17,033	3.43	1.30– 8.20	3,098	2.09	0.25–10.50	2,046	2.32	0.25– 5.20
Nelson	14,541	4.42	0.75–12.50	8,081	2.46	0.50– 8.50	31,929	3.85	0.75–10.30	8,842	2.55	0.50– 8.50	7,540	2.29	0.25– 8.90
Totals for Province	175,079	$6.23	$0.50–31.30	90,041	$3.33	$0.25–23.00	164,478	$3.55	$0.75–10.50	138,626	$3.02	$0.25–15.60	86,584	$2.73	$0.25– 9.20

Forest District	White Pine			Western Yellow Pine			Larch			Other Species			All Species		
	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.
Vancouver	1,231	$4.27	$0.75– 7.90	3	$2.60	$2.60	.....	.....	.....	4,598	$2.80	$0.75– 8.80	324,618	$4.30	$0.75–31.30
Prince Rupert (C.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,141	2.51	0.85– 4.90	28,114	2.64	0.85–10.20
Prince Rupert (I.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	10,845	2.37	0.50– 6.20	34,731	2.24	0.50– 7.20
Prince George	.....	.....	.....	.....	.....	.....	.....	.....	.....	31,388	2.48	0.75– 7.50	138,434	3.46	0.75–10.50
Kamloops	2,660	12.45	5.40–18.60	1,509	5.32	2.70– 6.90	2,141	$5.06	$1.50–17.50	9,054	1.88	0.50– 9.10	123,548	4.47	0.25–18.60
Nelson	2,214	14.73	0.75–20.90	643	4.73	0.75–12.90	11,320	6.44	0.75–12.50	4,792	3.17	0.75–12.50	89,902	4.12	0.25–20.90
Totals for Province	6,105	$11.63	$0.75–20.90	2,155	$5.13	$0.75–12.90	13,461	$6.22	$0.75–17.50	62,818	$2.45	$0.50–12.50	739,347	$4.03	$0.25–31.30

AVERAGE APPRAISED STUMPAGE PRICES, BY SPECIES AND FOREST DISTRICT, ON SAW-TIMBER ON TREE-FARM LICENCE CUTTING PERMITS ISSUED IN 1959

(21)

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	7,854.4	$5.79	$3.10–12.20	6,542.7	$2.72	$2.20– 3.90	1,290.5	$2.33	$2.00– 4.60	16,101.4	$2.23	$2.00– 3.30	6,073.6	$2.03	$1.80– 2.60
Prince Rupert	.....	.....	.....	575.4	2.40	1.90– 2.80	1,262.3	1.60	0.70– 3.50	7,647.1	1.32	0.50– 2.10	3,014.6	1.36	0.50– 1.90
Prince George	1,791.0	2.14	0.60– 4.10	.....	.....	.....	1,316.0	2.24	0.90– 4.30	.....	.....	.....	42.0	2.00	0.60– 2.70
Kamloops	1,884.7	2.99	1.40– 6.80	0.2	1.30	1.30	3,560.9	1.99	1.40– 6.80	.....	.....	.....	163.6	1.25	0.90– 2.40
Nelson	3,589.8	2.32	1.90– 5.30	1,100.9	2.14	2.00– 4.60	2,336.8	2.24	2.00– 6.00	842.4	1.37	1.10– 3.20	128.8	1.37	1.20– 3.60
Totals for Province	15,119.9	$4.18	$0.60–12.20	8,219.2	$2.62	$1.30– 4.60	9,766.5	$2.08	$0.70– 6.80	24,590.9	$1.92	$0.50– 3.30	9,422.6	$1.79	$0.50– 3.60

Forest District	White Pine			Western Yellow Pine			Larch			Other Species			All Species		
	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.	Volume M C.F.	Price per C C.F.	Price Range per C C.F.
Vancouver	132.7	$5.02	$2.20– 6.60	.....	.....	.....	.....	.....	.....	29.4	$2.53	$2.00– 3.70	38,024.7	$3.03	$1.80–12.20
Prince Rupert	.....	.....	.....	.....	.....	.....	.....	.....	.....	180.5	2.63	2.50– 3.00	12,679.9	1.42	0.50– 3.00
Prince George	.....	.....	.....	.....	.....	.....	.....	.....	.....	148.0	1.26	0.60– 1.50	3,297.0	2.14	0.60– 4.50
Kamloops	.....	.....	.....	87.3	$2.66	$2.00– 5.20	310.2	$1.88	$1.30– 2.40	103.0	2.06	1.10– 4.20	6,109.9	2.28	0.90– 6.80
Nelson	508.8	16.37	7.60–19.00	190.4	5.18	2.40– 6.00	1,437.1	2.17	2.10– 5.30	58.9	1.71	1.50– 5.30	10,193.9	2.92	1.10–19.00
Totals for Province	641.5	$14.02	$2.20–19.00	277.7	$4.39	$2.00– 6.00	1,747.3	$2.12	$1.30– 5.30	519.8	$2.02	$0.60– 4.20	70,305.4	$2.62	$0.50–19.00

(22)

TIMBER CUT FROM TIMBER SALES, 1959

Forest District	Board-feet	Lineal Feet	Cords	Ties	Posts	Christmas Trees	Hop-poles	Stakes and Sticks	Car-stakes	Blasting-sticks	Anchor-blocks	Shingle-shakes	Shake Blanks	Cubic Feet
Vancouver	54,520,867	579,779	1,561	.....	400	.....	10,738	.....	.....	.....	.....	6,211,403	986,461	155,617,669
Prince Rupert	514,070	1,002,989	1,375	43,048	.....	.....	.....	.....	2,448	.....	.....	.....	.....	45,822,088
Prince George	8,822,175	937,360	1,764	70,517	86,816	.....	.....	.....	.....	.....	.....	.....	.....	129,605,320
Kamloops	18,448,984	2,347,863	3,863	.....	158,107	.....	.....	.....	.....	.....	22	3,025	.....	150,481,209
Nelson	16,881,147	1,888,644	988	491	464,310	339,598	.....	.....	.....	.....	.....	.....	.....	57,507,217
Totals, 1959	99,187,243	6,756,635	9,551	114,056	709,633	339,598	10,738	.....	2,448	.....	22	6,214,428	986,461	539,033,503
Totals, 1958	160,011,288	7,935,015	8,641	48,419	667,907	479,657	.....	.....	2,298	.....	18	3,546,527	922,900	441,192,089
Totals, 1957	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	392,306,642
Totals, 1956	501,950,576	11,426,509	13,529	308,076	607,528	268,945	.....	.....	1,954	.....	.....	5,943,124	1,040,496	423,459,495
Totals, 1955	707,975,332	10,646,201	19,839	158,748	712,813	313,820	.....	.....	3,971	45,000	610	5,966,313	1,196,178	360,046,248
Totals, 1954	1,072,985,534	9,249,681	15,214	241,579	773,939	234,277	42,632	1,225,534	1,204	15,000	107	4,030,698	1,262,058	208,475,224
Totals, 1953	1,593,812,300	14,671,961	14,961	345,513	1,209,211	208,070	254,330	908,250	3,266	12,500	340	4,753,434	783,450	74,251,388
Totals, 1952	1,853,359,728	15,463,269	14,861	390,598	1,168,309	177,329	42,834	1,223,775	1,190	12,000	925	3,505,899	729,817	828,089
Totals, 1951	1,761,852,867	8,794,979	15,682	276,688	1,018,336	1,025	.....	690,200	2,550	.....	.....	3,008,663	1,092,737	2,440
Totals, 1950	1,522,542,421	11,393,092	24,260	175,905	1,101,724	174,048	3,940	631,900	2,350	12,000	.....	4,480,878	956,777	173,729
Ten-year average, 1950–59	955,508,072	12,181,301	18,103	236,391	881,365	275,943	35,783	468,899	3,287	9,650	202	5,306,853	1,286,138	243,976,885

(23) SAW AND SHINGLE MILLS, 1959

Forest District	Operating				Shut Down			
	Sawmills		Shingle-mills		Sawmills		Shingle-mills	
	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.	Number	Estimated Eight-hour Daily Capacity, M B.F.
Vancouver	211	8,125	60	1,122	70	273	2	6
Prince Rupert	271	1,821	.....	.....	131	758	.....	.....
Prince George	648	7,667	.....	.....	197	1,600	.....	.....
Kamloops	580	7,036	2	8	104	746	1	3
Nelson	295	3,631	3	8	85	598	3	14
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	72	1,804	404	2,285	3	19
Totals, 1954	2,346	25,602	57	1,108	367	2,281	13	22
Totals, 1953	2,413	23,300	59	1,121	286	2,186	12	47
Totals, 1952	2,223	23,433	59	1,173	332	2,092	24	117
Totals, 1951	2,100	21,748	60	1,169	294	1,474	16	78
Totals, 1950	1,826	19,143	65	1,234	234	1,462	11	25
Ten-year average, 1950–59	2,210	25,305	62	1,266	399	2,490	11	50

(24) EXPORT OF LOGS (IN F.B.M.), 1959

Species	Grade No. 1	Grade No. 2	Grade No. 3	Ungraded	Fuel-logs	Total
Fir	.....	395,464	539,812	.....	1,838,183	2,773,459
Cedar	169,372	1,042,982	5,076,803	.....	68	6,289,225
Spruce	.....	12,356	204,014	.....	.....	216,370
Hemlock	125,533	929,371	13,287,651	.....	617	14,343,172
Balsam	.....	.....	.....	3,997,287	36	3,997,323
White pine	.....	720	3,533	.....	126	4,379
Cypress	191,780	220,760	449,363	.....	.....	861,903
Hardwoods	.....	.....	.....	2,614	.....	2,614
Cottonwood	.....	.....	47,032	.....	.....	47,032
Totals, 1959	486,685	2,601,653	19,608,208	3,999,901	1,839,030	28,535,477[1]
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
Totals, 1954	3,948,345	19,595,544	90,691,771	17,465,267	9,274,995	140,975,922
Totals, 1953	5,341,576	15,853,076	74,187,464	18,974,550	5,788,905	120,145,571
Totals, 1952	4,732,890	15,944,292	84,757,110	18,400,266	1,161,660	124,996,218
Totals, 1951	5,901,140	12,229,159	51,699,605	10,202,844	2,224,693	82,257,441
Totals, 1950	8,659,552	21,625,295	88,031,088	19,210,615	.....	137,526,550
Ten-year average, 1950–59	3,141,936	10,596,599	53,345,274	12,749,836	3,575,832	83,409,478

[1] Of this total, 20,137,157 f.b.m. were exported from Crown-granted lands carrying the export privilege; 8,398,320 f.b.m. were exported under permit from other areas.

(25) SHIPMENTS OF POLES, PILING, MINE-PROPS, FENCE-POSTS, RAILWAY-TIES, ETC., 1959

Forest District and Product	Quantity Exported	Approximate Value, F.O.B.	Where Exported		
			United States	Canada	Other Countries
Vancouver—					
Poles ... lin. ft.	3,397,922	$1,160,196.37	2,985,896	286,021	126,005
Poling ... ,,	928,624	268,892.92	14,150	380,849	533,625
Stakes and sticks ... ,,	189,070	1,460.50	189,070	...	...
Fence-posts ... pieces	22,976	5,744.00	...	22,976	...
Cedar shakes ... ,,	19,688,069	1,257,847.00	19,587,989	19,080	81,000
Christmas trees ... ,,	62,861	18,858.30	62,861	...	...
Prince Rupert—					
Poles and piling ... lin. ft.	1,832,940	692,616.66	1,099,764	733,176	...
Ties ... pieces	49,354	76,992.24	...	49,354	...
Prince George—					
Poles ... lin. ft.	641,760	180,200.00	94,940	546,820	...
Ties ... pieces	65,654	110,000.00	251	65,403	...
Fence-posts ... ,,	92,361	23,100.00	...	92,361	...
Cordwood ... cords	239	3,350.00	...	239	...
Kamloops—					
Poles ... lin. ft.	3,039,775	607,955.00	1,485,040	1,554,735	...
Poles and piling ... ,,	816,130	106,096.90	423,185	392,945	...
Fence-posts ... cords	2,030	81,480.00	298	1,732	...
Christmas trees ... pieces	707,619	212,285.70	707,619	...	...
Nelson—					
Poles and piling ... lin. ft.	2,452,270	1,130,037.00	1,409,245	1,043,025	...
Corral-rails ... ,,	123,990	1,488.00	...	123,990	...
Orchard-props ... ,,	24,000	312.00	24,000	...	...
Mine-timbers ... ,,	240,714	9,219.00	...	240,714	...
Mine-props ... cords	230	3,635.00	...	230	...
Cedar shakes ... ,,	138	1,932.00	105	33	...
Cordwood ... ,,	45	635.00	...	45	...
Fence-posts ... ,,	6,744	282,627.00	1,331	5,413	...
Ties ... pieces	3,218	5,825.00	...	3,218	...
Christmas trees ... ,,	1,434,521	832,022.00	1,328,353	106,168	...
Total value, 1959	...	$7,074,807.59	...	...	...
Total value, 1958	...	$6,307,059.25	...	...	...

(26) SUMMARY OF EXPORTS, MINOR PRODUCTS, 1959

Product	Volume	Value	Per Cent of Total Value
Poles ... lin. ft.	7,079,457	$1,948,351.37	27.5393
Piling ... ,,	928,624	268,892.92	3.8007
Other poles and piling ... ,,	5,101,340	1,928,750.56	27.2622
Mine-timbers ... ,,	240,714	9,219.00	0.1303
Corral-rails ... ,,	123,990	1,488.00	0.0210
Stakes and sticks ... ,,	189,070	1,460.50	0.0207
Orchard-props ... ,,	24,000	312.00	0.0044
Fence-posts ... pieces	115,337	28,844.00	0.4077
Cedar shakes ... ,,	19,688,069	1,257,847.00	17.7793
Christmas trees ... ,,	2,205,001	1,063,166.00	15.0275
Hewn ties ... ,,	118,226	192,817.24	2.7254
Cordwood ... Cords	284	3,985.00	0.0563
Fence-posts ... ,,	8,774	364,107.00	5.1465
Mine-props ... ,,	230	3,635.00	0.0514
Cedar shakes ... ,,	138	1,932.00	0.0273
Total value ...	...	$7,074,807.59	100.0000

(27) TIMBER MARKS ISSUED, 1950–59

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	Ten-year Average 1950–59
Old Crown grants	549	1,062	696	381	528	609	480	320	215	299	514
Crown grants, 1887–1906	169	269	201	134	175	218	207	108	93	103	168
Crown grants, 1906–1914	165	218	204	136	160	171	172	97	93	125	154
Section 55, *Forest Act*	505	714	538	409	485	653	655	460	362	524	530
Stumpage reservations	69	108	62	95	69	95	82	59	89	108	84
Pre-emptions under sections 28 and 29, *Land Act*	5	3	8	10	1	2	6	1	------	------	4
Timber berths	8	6	7	3	1	10	10	7	7	9	7
Indian reserves	32	41	13	24	30	31	46	23	9	21	27
Timber sales	2,591	2,962	2,594	2,881	2,786	3,130	2,859	2,239	1,900	1,926	2,587
Hand-loggers	------	------	------	------	------	------	------	------	------	------	------
Special marks and rights-of-way	33	73	98	63	44	43	71	74	80	85	66
Pulp leases	4	------	6	3	1	6	1	1	7	1	3
Pulp licences	4	2	1	------	------	------	------	------	------	------	------
Totals	4,134	5,458	4,428	4,139	4,280	4,968	4,589	3,389	2,855	3,201	4,144
Tranfers and changes of marks	752	1,086	983	744	780	867	873	615	598	669	797

(28) CROWN-GRANTED TIMBER LANDS PAYING FOREST-PROTECTION TAX AS COMPILED FROM TAXATION RECORDS, 1950–59

Year	Acreage Assessed as Timber Land	Coast		Interior	
		Logged	Timber	Logged	Timber
		Acres	Acres	Acres	Acres
1959	502,001	125,883	238,285	71,509	66,324
1958	698,470	133,100	271,717	194,640	99,013
1957	614,095	146,535	288,046	88,580	90,934
1956	723,103	205,503	389,396	64,606	63,598
1955	783,517	221,934	429,350	69,822	62,411
1954	801,983	236,350	429,037	69,416	67,180
1953	757,516	201,264	444,014	27,692	84,546
1952	718,284	203,249	433,496	29,418	52,121
1951	682,746	191,435	410,037	31,333	49,941
1950	631,967	207,308	378,985	8,635	37,039

(29) ACREAGE OF TIMBER LAND BY ASSESSMENT DISTRICTS

District	Acres	District	Acres
Alberni	13,858	Nelson-Slocan	90,171
Comox	94,540	Prince George	800
Cowichan	92,391	Prince Rupert	11,796
Cranbrook	5,011	Princeton	2,887
Gulf Islands	1,312	Quesnel Forks	40
Kamloops	160	Revelstoke	33,654
Kettle River	445	Vancouver	4,032
Lillooet	4,026	Vernon	639
Nanaimo	110,779	Victoria	35,460

FOREST REVENUE

	Twelve Months to Dec. 31, 1955	Twelve Months to Dec. 31, 1956	Twelve Months to Dec. 31, 1957	Twelve Months to Dec. 31, 1958	Twelve Months to Dec. 31, 1959	Ten-year Average, 1950–59
Timber-licence rentals and fees	$365,300.19	$369,821.07	$365,193.26	$362,192.71	$362,825.25	$373,290.55
Timber-berth rentals and fees	19,695.51	20,245.13	19,486.74	19,335.48	19,910.61	20,034.72
Timber-lease rentals and fees	72,238.83	72,036.75	70,455.47	70,780.38	70,094.39	63,022.08
Timber-sale rentals and fees	313,865.18	379,821.98	380,963.43	425,867.87	435,589.31	271,346.10
Timber-sale stumpage	19,538,202.71	26,335,715.53	26,327,150.06	21,355,873.18	23,092,737.28	17,273,241.51
Timber-sale cruising and advertising	260,583.65	255,916.89	245,542.40	225,790.42	252,985.19	181,368.71
Timber royalties	2,368,344.78	2,069,424.19	1,838,162.25	1,719,957.61	1,890,590.96	2,069,635.47
Grazing permits and fees	75,250.32	79,247.61	69,041.15	73,093.16	86,506.29	86,165.88
Forest-protection tax	.....	364,388.20	459,312.26	500,914.85	510,661.47	.....
Miscellaneous	113,555.93	141,478.88	156,060.04	132,917.72	121,287.96	96,450.19
Totals	$23,127,037.10	$30,088,096.23	$29,931,367.06	$24,886,723.38	$26,843,188.71	$20,434,555.21

(31) AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, 1959

District	Royalty	Seizure Expenses	Government Scaling Expenses	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Forest Reserve Account Timber	Silviculture Fund	Forest Development Fund	Total
				Scaling Expenses	Scaling Fees						
Vancouver	$1,418,365.49	$207.50	$1,771.44	$196,814.29	$950,889.98	$8,830,639.92	$338,002.86			$57.86	$11,736,749.34
Prince Rupert	181,786.06	112.90	903.35	11,482.42	62,407.54	1,580,380.62	111,331.57			5,262.11	1,953,666.57
Prince George	57,761.07		1,673.50			3,851,113.38	165,332.24			117,174.24	4,193,054.43
Kamloops	128,414.54	921.90	3,653.56			6,256,870.02	252,943.81			31,777.48	6,674,581.31
Nelson	97,522.26	188.24	889.00			2,610,624.97	153,035.09			44,444.98	2,906,704.54
Totals, 1959	1,883,849.42	$1,430.54	$8,890.85	$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	$3,877.67	$9,842.45	$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	$3,715.55	$12,215.30	$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	$810.22	$11,196.98	$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	$765.88	$10,258.85	$176,151.17	$452,171.32	$19,950,410.73	$817,677.77		$891,076.65	$71,861.56	$24,723,018.39
Totals, 1954	$2,234,308.99	$1,393.07	$9,291.03	$144,589.21	$556,779.39	$14,596,633.95	$586,983.41		$1,163,596.44	$32,785.07	$19,326,360.56
Totals, 1953	$2,261,183.39	$1,134.99	$8,578.30	$126,613.32	$552,705.46	$14,961,152.26	$453,745.79		$1,066,676.88	$22,501.38	$19,454,291.77
Totals, 1952	$2,097,011.42	$2,075.40	$10,043.93	$119,689.20	$555,735.85	$14,950,895.47	$421,924.48	$12,008.53	$153,752.26	$8,871.32	$18,332,007.86
Totals, 1951	$2,269,348.68	$720.21	$4,889.37	$103,302.87	$444,068.21	$10,151,067.98	$358,394.68	$33,986.75	$93,127.15		$13,458,905.90
Totals, 1950	$2,466,528.23	$733.18	$4,871.58	$100,555.30	$376,945.27	$6,261,542.18	$253,486.04		$694,948.82		$10,163,125.26
Ten-year average, 1950–59	$2,126,336.42	$1,665.67	$9,007.86	$157,703.92	$642,887.56	$17,937,926.92	$673,728.00				$22,070,972.28

NOTE.—" Tax " column previously shown now combined under " Royalty " heading.

(32) AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, FISCAL YEAR 1958/59

District	Royalty	Seizure Expenses	Government Scale Expenses	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Silviculture Fund	Forest Reserve Account	Forest Development Fund	Total
				Expenses	Fees						
Vancouver	$1,305,600.45	$221.90	$1,482.62	$180,265.54	$810,152.13	$8,447,615.80	$318,964.84				$11,064,303.28
Prince Rupert	163,880.76	602.36	381.56	9,468.05	47,203.90	1,493,659.22	118,170.12			$1,290.67	1,834,656.64
Prince George	60,113.32	38.00	2,266.00			3,487,673.22	148,565.95			111,350.53	3,810,007.02
Kamloops	103,921.88	921.07	3,421.91			5,278,115.80	251,233.76			22,561.25	5,660,175.67
Nelson	90,819.36	124.00	819.30			2,332,459.82	143,674.66			4,479.78	2,572,376.92
Totals, 1958/59	$1,724,335.77	$1,907.33	$8,371.39	$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	$5,652.05	$12,765.99	$200,348.04	$890,547.82	$24,860,333.41	$930,780.33			$137,679.66	$28,914,732.07
Totals, 1956/57	$2,100,595.60	$980.14	$11,837.04	$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	$781.20	$9,797.16	$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	$740.25	$10,465.61	$151,213.86	$550,878.38	$15,774,317.46	$609,994.41	$1,018,909.39		$46,371.75	$20,479,627.22
Totals, 1953/54	$2,151,985.58	$1,620.06	$7,862.82	$123,420.80	$523,584.39	$13,672,473.41	$408,143.52	$1,077,446.47			$17,966,537.05
Totals, 1952/53	$2,094,496.37	$2,042.15	$10,734.56	$118,794.61	$525,391.14	$15,175,379.22	$289,757.89	$381,467.62	$8,991.41		$18,607,054.97
Totals, 1951/52	$2,316,222.37	$856.75	$5,179.84	$110,524.80	$527,790.82	$11,596,883.33	$261,783.40	[1]$6,025.17	$37,003.87		$14,850,220.01
Totals, 1950/51	$2,569,193.76	$756.14	$4,872.85	$108,594.65	$399,834.04	$7,021,098.74	$265,649.10	$663,475.85			$11,033,475.13
Totals, 1949/50	$2,543,634.82	$932.34	$5,351.54	$92,195.04	$288,118.35	$4,950,699.50	$209,680.23	$482,808.18			$8,571,244.98
Ten-year average, 1949/50 to 1958/59	$2,197,714.69	$1,626.84	$8,723.88	$149,436.86	$585,021.32	$16,442,036.83	$577,747.53				$20,551,505.60

[1] Credit.

NOTE.—" Tax " column previously shown now combined under " Royalty " heading.

(33A) FOREST REVENUE, FISCAL YEAR 1958/59

		Ten-year Average
Timber-licence rentals and fees	$357,213.39	$378,577.09
Timber-berth rentals and fees	19,244.08	17,971.37
Timber-lease rentals and fees	69,364.69	60,008.88
Timber-sale rentals and fees	423,430.93	235,909.35
Timber-sale stumpage	21,529,804.34	14,820,807.05
Timber-sale cruising and advertising	225,693.62	155,446.36
Timber royalties	1,754,344.26	2,198,680.84
Grazing permits and fees	71,919.21	71,468.27
Forest-protection tax	512,614.84	(1)
Miscellaneous	118,186.23	83,959.47
	$25,081,815.59	$18,022,828.68
Taxation from Crown-granted timber lands	516,669.53	545,593.43
Taxation collected under authority of *Esquimalt and Nanaimo Railway Belt Land Tax Act*	738,039.35[2]	.....
Taxation collected on forest land (section 32A, *Taxation Act*)	609,136.45[3]	.....
Taxation collected on tree-farm land (section 33A, *Taxation Act*)	155,087.79[4]	.....
	$27,100,748.71	.....

[1] Formerly credited to Forest Protection Fund.
[2] Collection of this tax has been authorized only during the last nine fiscal years.
[3] Collection of this tax has been authorized only during the last five fiscal years.
[4] Collection of this tax has been authorized only during the last six fiscal years.

(33B) FOREST REVENUE BY FISCAL YEARS, 1949/50 TO 1958/59

Fiscal Year	Direct Forest Revenue	Taxation from Crown-granted Lands	Taxation Collected under Secs. 32A and 33A of Taxation Act	Taxation Collected under Authority of E. & N. Railway Belt Land Tax Act	Total
1958/59	$25,081,815.59	$516,669.53	$764,224.24	$738,039.35	$27,100,748.71
1957/58	29,054,657.56	597,118.52	883,674.75	1,060,884.36	31,596,335.19
1956/57	31,240,260.37	675,079.21	685,611.49	1,147,535.38	33,748,486.45
1955/56	23,867,705.50	681,503.26	532,010.00	940,632.27	26,021,851.03
1954/55	19,130,835.31	621,527.16	518,648.74	879,822.00	21,150,833.21
1953/54	17,578,625.58	612,865.29	.....	863,116.21	19,054,607.08
1952/53	18,016,025.17	588,821.78	.....	418,395.59	19,023,242.54
1951/52	13,703,715.41	484,475.51	.....	972,156.13	15,160,347.05
1950/51	10,089,884.69	440,213.07	.....	345,220.16	10,875,317.92
1949/50	8,331,497.19	445,632.68	.....	.....	8,777,129.87

(34) FOREST SERVICE EXPENDITURES, FISCAL YEAR 1958/59[1]

Forest District	Salaries	Expenses	Total
Vancouver	$522,387.31	$167,865.24	$690,252.55
Prince Rupert	337,181.65	110,507.59	447,689.24
Prince George	390,131.36	119,881.89	510,013.25
Kamloops	505,278.69	129,321.02	634,599.71
Nelson	406,563.38	101,504.17	508,067.55
Victoria	259,188.86	299,421.09	558,609.95
Totals	$2,420,731.25	$928,501.00	$3,349,232.25
Reforestation and forest nursery			450,105.23
Forest management			420,240.37
Forest research			166,868.01
Public information and education			93,545.69
Forest Ranger School			93,147.74
Grant to Canadian Forestry Association			10,000.00
Office furniture and fixtures			27,551.57
Silviculture			1,255,862.24
Engineering services			898,488.88
Forest protection			2,497,702.98
Forest surveys			1,078,517.85
Grazing Range Improvement Fund[2]			55,838.31
Forest-development roads			1,897,497.62
Fire suppression			4,913,670.17
Forestry administration buildings and property			26,767.64
			$17,235,036.55

[1] True gross expenditures.
[2] Separate statement provided in this Report.

(35) SCALING FUND

Balance for April 1st, 1958 (debit)		$209,492.79
Collections, fiscal year 1958/59		1,031,227.78
		$821,734.99
Expenditures, fiscal year 1958/59	$1,080,698.87	
Less refunds	1,015.15	
		1,079,683.72
Deficit, March 31st, 1959 (debit)		$257,948.73
Collections, nine months, April to December, 1959		962,094.56
		$704,145.83
Expenditures, nine months, April to December, 1959		880,476.13
Balance, December 31st, 1959 (debit)		$176,330.30

(36) GRAZING RANGE IMPROVEMENT FUND

Balance, April 1st, 1958 (credit)		$28,679.60
Government contribution (section 14, *Grazing Act*)		34,888.93
		$63,568.53
Expenditures, fiscal year 1958/59	$55,858.31	
Less refunds	37.50	
		55,820.81
Balance, March 31st, 1959 (credit)		$7,747.72
Government contribution (section 14, *Grazing Act*)		35,959.60
		$43,707.32
Expenditures, April 1st, 1959, to December 31st, 1959		34,008.20
Balance, December 31st, 1959 (credit)		$9,699.12

(37) FOREST-PROTECTION EXPENDITURE FOR TWELVE MONTHS ENDED MARCH 31ST, 1959, BY THE FOREST SERVICE

District	Salaries and Expenses		Tools and Equipment		Fires	Improvements	Aircraft	Planning and Research	Hazard Reduction	Uniforms	Miscellaneous	Total
	Permanent	Temporary	New	Maintenance and Operation								
Vancouver	$1,704.70	$288,989.58	$624.36	$32,870.70	$769,058.67	$19,434.47	$27,649.30	.....	.....	.....	$2,277.12	$1,142,608.90
Prince Rupert	2,486.70	142,519.27	1,310.68	41,077.17	583,359.88	51,007.15	27,226.82	.....	.....	.....	2,515.21	851,502.88
Prince George	2,678.21	169,214.96	2,193.66	73,463.54	1,971,894.51	80,386.38	32,622.54	.....	.....	.....	2,685.54	2,335,139.34
Kamloops	5,239.92	286,374.98	1,976.74	52,677.83	622,443.21	80,235.54	41,913.79	.....	.....	.....	1,502.73	1,092,364.74
Nelson	5,240.87	292,893.83	1,989.01	57,410.67	819,344.24	75,976.99	49,229.33	.....	.....	.....	1,437.73	1,303,522.67
Victoria	3,296.63	15,323.14	359,536.11	21,554.94	147,569.66	44,488.35	21,292.84	$33,252.85	$22,518.89	$2,499.65	14,901.56	686,234.62
Totals	$20,647.03	$1,195,315.76	$367,630.56	$279,054.85	$4,913,670.17	$351,528.88	$199,934.62	$33,252.85	$22,518.89	$2,499.65	$25,319.89	$7,411,373.15

(38) REPORTED APPROXIMATE EXPENDITURE IN FOREST PROTECTION BY OTHER AGENCIES, 1959

Forest District	Expenditures				
	Patrols and Fire Prevention	Tools and Equipment	Fires	Improvements	Total
Vancouver	$126,425	$248,760	$41,245	$196,800	$613,230
Prince Rupert	24,400	47,765	898	67,300	140,363
Prince George	32,000	12,000	20,120	120,000	184,120
Kamloops	32,500	170,000	10,166	611,000	823,666
Nelson	18,900	49,668	26,581	22,954	118,103
Totals	$234,225	$528,193	$99,010	$1,018,054	$1,879,482
Ten-year average, 1950–59	$277,874	$381,626	$345,478	$212,457	$1,217,435

(39) SUMMARY OF SNAG-FALLING, 1959, VANCOUVER FOREST DISTRICT

		Acres
Total area logged, 1959		72,392
Logged in small exempted operations[1]	308	
Assessed for non-compliance, less 833 acres subsequently felled	1,350	
		1,658
Balance logged acres snagged, 1959		70,734
Snags felled in 1959 by Forest Service Protection Division		5,388
Snags felled in 1959 by Forest Service Reforestation Division		1,077
Total area snagged, 1959		77,199

[1] Exemption granted under subsection (3), section 113, *Forest Act.*

(40) SUMMARY OF LOGGING SLASH CREATED, 1959, VANCOUVER FOREST DISTRICT

		Acres
Total area logged, 1959		72,392
Area covered by full hazard reports	34,222	
Covered by snag reports but exempted from slash-disposal	26,571	
Covered by acreage reports only (exempted from slash and snag-disposal)[1]	308	
		61,101
Slash created and not reported in 1959		11,291

[1] Exemption granted under subsection (3), section 113, *Forest Act.*

(41) ACREAGE ANALYSIS OF SLASH-DISPOSAL REQUIRED, 1959, VANCOUVER FOREST DISTRICT

	Acres of Slash		
	Prior to 1959	1959[1]	Total Acres
Broadcast burning	5,440	4,718	10,158
Spot burning	9,570	14,494	24,064
Totals	15,010	19,212	34,222
1959 reports not recommending slash-disposal		26,571	
1959 slash on very small operations exempted without special examination		308	
			26,879
Total area of slash dealt with, 1959			61,101

[1] Above table does not include the estimated 11,291 acres (*see* Table 42) created too late to be dealt with in 1959.

(42) ANALYSIS OF PROGRESS IN SLASH-DISPOSAL, 1959, VANCOUVER FOREST DISTRICT

	Acres.
Total disposal required (*see* Table 41)	34,222

	Acres of Slash		
Type of Disposal	Prior to 1959	1959	Total Acres
Spring broadcast burning	541	----------	541
Spring spot burning	1,176	----------	1,176
Fall broadcast burning	2,502	4,013	6,515
Fall spot burning	8,633	9,437	18,070
Total burning completed	12,852	13,450	26,302
Burning by accidental fires			566
Lopping, scattering, land-clearing, etc.			----------
Total			26,868
Balance reported slash not yet abated			7,354
Slash created, 1959—acres assessed			----------
Plus slash created too late to be dealt with, 1959			11,291
Total area of slash carried over to 1960 for disposition[1]			18,645

[1] Does not show the acreage instructed in 1959 to be extended or assessed in 1960.
Actual area burned in spring spot burning, 78 acres.
Actual area burned in fall spot burning, 1,928 acres.
The above figures do not include 1958 slash-burn reports received too late for inclusion in 1959 Annual Report, 1,052 acres.

(43) SUMMARY OF SLASH-BURN DAMAGE AND COSTS, 1959, VANCOUVER FOREST DISTRICT

Total acres of forest-cover burned in slash fires, 1959	*Nil*
Net damage to forest-cover	*Nil*
Net damage to cut products	$850.00
Net damage to equipment and property	3,580.00
Total damage	$4,430.00

Cost of Slash-burning as Reported by Operators

	Total Cost	Acres	Cost per M B.F.	Cost per Acre
(*a*) Spring broadcast burning	$1,843.85	541	$0.09	$3.39
(*b*) Spring spot burning	1,798.00	1,176	.05	1,53
(*c*) Fall broadcast burning	33,139.68	6,515	.13	5.09
(*d*) Fall spot burning	41,160.59	18,070	.08	2.22

(*a*) and (*c*) based on volume of 40 M b.f. per acre.
(*b*) and (*d*) based on volume of 30 M b.f. per acre.

(44) FIRE OCCURRENCES BY MONTHS, 1959

Forest District	March	April	May	June	July	August	September	October	Total	Per Cent
Vancouver	.....	29	140	191	316	128	21	1	826	41.1
Prince Rupert	.....	6	18	12	7	6	.....	.....	49	2.4
Prince George	17	13	89	24	45	18	1	.....	207	10.3
Kamloops	61	105	154	59	182	74	16	.....	651	32.4
Nelson	.....	21	23	18	113	98	4	.....	277	13.8
Totals	78	174	424	304	663	324	42	1	2,010	100.0
Per cent	3.9	8.7	21.1	15.1	33.0	16.1	2.1	.....	100.0	.....
Ten-year average, 1950–59	24	77	388	238	543	450	191	37	1,948	.....
Per cent	1.2	4.0	19.9	12.2	27.9	23.1	9.8	1.9	100.0	.....

(45) NUMBER AND CAUSES OF FOREST FIRES, 1959

Forest District	Lightning	Campers	Railways Operating	Smokers	Brush-burning (Not Railway-clearing)	Road and Power- and Telephone-line Construction	Industrial Operation	Incendiarism	Miscellaneous (Known Causes)[1]	Unknown Causes	Total	Per Cent of Total Fires in Province
Vancouver	34	33	548	65	16	13	17	.....	86	14	826	41.1
Prince Rupert	6	10	1	7	3	1	7	1	12	1	49	2.4
Prince George	46	39	7	12	22	4	32	.....	42	3	207	10.3
Kamloops	26	71	31	81	18	6	126	4	278	10	651	32.4
Nelson	72	19	37	46	16	6	22	29	25	5	277	13.8
Totals	184	172	624	211	75	30	204	34	443	33	2,010	100.0
Per cent	9.2	8.6	31.0	10.5	3.7	1.5	10.2	1.7	22.0	1.6	100.0	.....
Ten-year average, 1950–59	462	216	456	264	87	27	132	25	233	46	1,948	.....
Per cent	23.7	11.1	23.4	13.5	4.5	1.4	6.8	1.3	12.0	2.3	100.0	.....

[1] Uncontrolled range-burning fires.

(46)

NUMBER AND CAUSES OF FOREST FIRES FOR THE LAST TEN YEARS

Causes	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	Total
Lightning	342	574	431	597	116	418	497	307	1,150	184	4,616
Campers	251	228	298	174	157	195	214	170	296	172	2,155
Railways operating	197	211	255	184	118	206	1,090	455	1,224	624	4,564
Smokers	291	354	349	171	120	206	281	182	478	211	2,643
Brush-burning (not railway-clearing)	77	128	140	47	63	47	112	65	120	75	874
Road and power- and telephone-line construction	25	20	17	10	11	24	73	46	18	30	274
Industrial operations	94	133	114	83	64	89	183	107	246	204	1,317
Incendiarism	7	28	37	10	12	15	27	22	53	34	245
Miscellaneous (known causes)	196	205	237	116	82	134	260	220	441	443[1]	2,334
Unknown causes	35	42	36	28	21	50	73	45	94	33	457
Totals	1,515	1,923	1,914	1,420	764	1,384	2,810	1,619	4,120	2,010	19,479

[1] Uncontrolled range-burning fires in 1959.

(47)

FIRES CLASSIFIED BY SIZE AND DAMAGE, 1959

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	826	41.1	743	89.9	54.7	65	7.9	16.2	18	2.2	9.2	.....	.....	0.0	805	13	8
Prince Rupert	49	2.4	26	53.1	1.9	17	34.7	4.2	5	10.2	2.6	1	2.0	1.8	41	5	3
Prince George	207	10.3	80	38.6	5.9	55	26.6	13.7	42	20.3	21.5	30	14.5	55.6	154	31	22
Kamloops	651	32.4	324	49.8	23.8	194	29.8	48.2	111	17.0	56.9	22	3.4	40.8	551	50	50
Nelson	277	13.8	186	67.1	13.7	71	25.6	17.7	19	6.9	9.8	1	0.4	1.8	257	10	10
Totals	2,010	100.0	1,359	.....	100.0	402	.....	100.0	195	.....	100.0	54	.....	100.0	1,808	109	93
Per cent	100.0	.....	67.6	.....	.....	20.0	.....	.....	9.7	.....	.....	2.7	.....	.....	90.0	5.4	4.6
Ten-year average, 1950–59	1,948	.....	1,244	.....	.....	473	.....	.....	179	.....	.....	52	.....	.....	1,777	91	80
Per cent	100.0	.....	63.9	.....	.....	24.3	.....	.....	9.2	.....	.....	2.6	.....	.....	91.2	4.7	4.1

(48) DAMAGE TO PROPERTY OTHER THAN FORESTS, 1959[1]

Forest District	Forest Products in Process of Manufacture	Buildings	Railway and Logging Equipment	Miscellaneous	Total	Per Cent of Total
Vancouver	$22,600.00	$3,000.00	$172,550.00	$885.00	$199,035.00	22.9
Prince Rupert	.....	5,300.00	500,000.00	.....	505,300.00	58.1
Prince George	89.00	2,000.00	20,310.00	1,500.00	23,899.00	2.7
Kamloops	59,900.00	40,300.00	20,000.00	18,960.00	139,160.00	16.0
Nelson	100.00	2,075.00	.....	.....	2,175.00	0.3
Totals	$82,689.00	$52,675.00	$712,860.00	$21,345.00	$869,569.00	100.0
Per cent	9.5	6.1	82.0	2.4	100.0	.....
Ten-year average, 1950–59	$150,436.00	$28,742.00	$242,902.00	$31,102.00	$453,182.00	.....
Per cent	33.2	6.3	53.7	6.8	100.0	.....

[1] Does not include intentional slash-burns. (For this item *see* page 112.)

(49) DAMAGE TO FOREST-COVER CAUSED BY FOREST FIRES, 1959—PART I[1]

Forest District	Accessible Merchantable Timber				Inaccessible Merchantable Timber			Immature Timber	
	Net Area Killed	Total Volume Killed	Salvable Volume of Timber Killed	Net Stumpage Loss	Net Area Killed	Total Volume Killed	Damage	Net Area Killed	Present Value
	Acres	M B.F.	M B.F.	$	Acres	M B.F.	$	Acres	$
Vancouver	72	772	359	3,712	17	200	4	168	14,721
Prince Rupert	303	604	.....	1,224	.....	.....	.....	406	8,155
Prince George	265	498	43	4,004	.....	.....	.....	15,264	277,722
Kamloops	6,326	44,595	12,082	100,064	.....	.....	.....	50,073	694,931
Nelson	678	3,763	175	22,997	234	455	59	1,974	52,714
Totals	7,644	50,232	12,659	132,001	251	655	63	67,885	1,048,243
Per cent	2.8	98.7	25.2	9.8	0.1	1.3	0.0	24.8	78.1
Ten-year average, 1950–59	19,196	217,551	96,515	498,797	18,417	70,201	13,353	45,771	627,156
Per cent	4.4	75.6	44.4	38.4	4.2	24.4	1.0	10.4	48.2

[1] Does not include intentional slash-burns. (For this item *see* page 112.)

(49)

DAMAGE TO FOREST-COVER CAUSED BY FOREST FIRES, 1959—PART II[1]

Forest District	Not Satisfactorily Restocked				Non-commercial Cover		Grazing or Pasture Land		Non-productive Sites		Grand Totals		
	Logged Un-burned	Logged and Burned	Burned, Not Logged	Damage	Area Burned	Damage	Area Burned	Damage	Area Burned	Damage	Area	Quan-tity	Damage
	Acres	Acres	Acres	$	Acres	$	Acres	$	Acres	$	Acres	M B.F.	$
Vancouver	565	30	.....	27,234	150	34	2	.....	828	203	1,832	972	45,908
Prince Rupert	24	.....	1,920	840	2,020	505	75	4	3 321	830	8,069	604	11,558
Prince George	1.848	609	25,758	23,286	134,964	31,763	4,690	179	4,894	1,544	188,292	498	338,498
Kamloops	776	81	3,383	69,505	3,463	876	6,295	391	262	37	70,659	44,595	865,804
Nelson	143	3	219	4,958	1,118	278	174	8	236	67	4,779	4.218	81,081
Totals	3,356	723	31,280	125,823	141,715	33,456	11.236	582	9,541	2,681	273,631	50,887	1,342,849
Per cent	1.2	0.3	11.4	9.4	51.8	2.5	4.1	0.0	3.5	0.2	100.0	100.0	100.0
Ten-year average, 1950–59	6,748	2,793	30,241	89,651	202,508	51,498	35.810	1,979	77,784	17 367	439,268	287,752	1,299,801
Per cent	1.5	0.6	6.9	6.9	46.1	4.0	8.2	0.2	17.7	1.3	100.0	100.0	100.0

[1] Does not include intentional slash-burns. (For this item *see* page 112.)

(50) FIRE CAUSES, AREA BURNED, FOREST SERVICE COST, AND TOTAL DAMAGE, 1959

Causes	Fire Causes		Area Burned		Forest Service Cost		Total Damage	
	Number	Per Cent	Acres	Per Cent	Cost	Per Cent	Damage	Per Cent
Lightning	184	9.2	93,754	34.3	$178,182	23.2	$56,845	2.6
Campers	172	8.6	35,754	13.1	25,122	3.3	234,840	10.6
Railways operating	624	31.0	243	0.1	1,057	0.1	1,470	0.1
Smokers	211	10.5	924	0.3	56,790	7.4	19,250	0.9
Brush-burning (not railway-clearing)	75	3.7	30,087	11.0	11,496	1.5	14,038	0.6
Road and power- and telephone-line construction	30	1.5	1,895	0.7	14,294	1.9	28,170	1.3
Industrial operations	204	10.2	1,678	0.6	40,134	5.2	894,533	40.4
Incendiarism	34	1.7	227	0.1	20,802	2.7	1,910	0.1
Miscellaneous (known causes)[1]	443	22.0	108,944	39.8	418,360	54.5	955,062	43.1
Unknown causes	33	1.6	125	0.0	1,847	0.2	6,300	0.3
Totals	2,010	100.0	273,631	100.0	$768,084	100.0	$2,212,418	100.0

[1] Uncontrolled range-burning fires.

(51) COMPARISON OF DAMAGE CAUSED BY FOREST FIRES IN LAST TEN YEARS

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	Total, Ten Years
Total number of fires	1,515	1,923	1,914	1,420	764	1,384	2,810	1,619	4,120	2,010	19,479
Area burned (acres)	848,246	420,954	152,406	38,645	10,309	46,694	469,648	66,724	2,065,423	273,631	4,392,680
Standing timber destroyed or damaged (M f.b.m.)	17,882	295,462	278,759	8,308	3,186	5,316	61,150	7,671	2,148,896	50,887	2,877,517
Amount salvable (M f.b.m.)	7,805	187,235	129,146	4,680	1,177	1,615	27,386	2,343	591,103	12,659	965,149
Damage to forests	$359,417	$1,417,975	$498,775	$145,957	$43,329	$90,971	$1,058,469	$123,032	$7,917,235	$1,342,849	$12,998,009
Damage to other forms of property	413,194	1,535,125	492,344	114,693	131,554	64,153	372,803	130,204	408,183	869,569	4,531,822
Total damage	$772,611	$2,953,100	$991,119	$260,650	$174,883	$155,124	$1,431,272	$253,236	$8,325,418	$2,212,418	$17,529,831

(52) FIRES CLASSIFIED BY FOREST DISTRICT, PLACE OF ORIGIN, AND COST PER FIRE OF FIRE-FIGHTING, 1959

Forest District	Total Fires	Originated on Vacant Crown Lands and Lands Contributing to Forest Protection Fund	Originated on Lands Not Contributing to Forest Protection Fund	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	826	52	774	114,677.00	14.9	1,303.15	685	82.9	34.1	141	17.1	7.0	78	41	13	3	6
Prince Rupert	49	35	14	60,948.00	7.9	2,438.00	24	49.0	1.2	25	51.0	1.2	17	7	.....	.....	1
Prince George	207	155	52	127,741.00	16.6	863.11	59	28.5	2.9	148	71.5	7.4	57	55	31	3	2
Kamloops	651	573	78	234,000.00	30.5	975.00	333	51.2	16.6	318	48.8	15.8	173	106	29	7	3
Nelson	277	235	42	230,718.00	30.1	1,774.75	75	27.1	3.7	202	72.9	10.1	131	50	14	1	6
Totals	2,010	1,050	960	768,084.00[1]	100.0	1,306.26	1,176	.....	58.5	834	.....	41.5	456	259	87	14	18
Per cent	100.0	52.2	47.8	.....	.....	.....	58.5	.....	.....	41.5	.....	.....	22.7	12.9	4.3	0.7	0.9
Ten-year average, 1950–59	1,948	1,176	772	840,423.00	.....	.....	1,012	.....	.....	936	.....	.....	581	256	65	12	22
Per cent	100.0	60.4	39.6	.....	.....	.....	52.0	.....	.....	48.0	.....	.....	29.8	13.2	3.3	0.6	1.1

[1] Cost correct to date. Subject to later revision.
Cost to other parties (347 cost-fires), $99,010. Cost to Forest Service (588 cost-fires), $768,084.
Detailed final costs are published one year in arrears in the table " Expenditure by Districts " in each Annual Report.

(53)

PROSECUTIONS, 1959

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	Failing to Maintain a Watchman as Required by Regulations	Fines		Served Sentence in Gaol	Suspended Sentence	Cases Dismissed	Cases Withdrawn
									Number	Amount				
Vancouver	11	7	—	—	3	—	—	1	11	$310	—	—	—	—
Prince Rupert	3	1	2	—	—	—	—	—	3	85	—	—	—	—
Prince George	4	4	—	—	—	—	—	—	4	133	—	—	—	—
Kamloops	14	8	5	—	1	—	—	—	12	355	—	—	—	2
Nelson	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Totals	32	20	7	—	4	—	—	1	30	$883	—	—	—	2
Ten-year average, 1950–59	60	20	15	13	8	3	1	—	53	$1,574	1	2	3	1

(54) ENROLMENT AT RANGER SCHOOL, 1959

Forest District	Forest Assistants	Rangers	Acting Rangers	Assistant Rangers	Clerks	Total	Graduations
Vancouver	----	----	----	4	----	4	----
Prince Rupert	----	----	----	2	----	2	----
Prince George	4	----	----	2	----	6	----
Kamloops	----	----	----	5	----	5	----
Nelson	----	----	----	4	----	4	----
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

NOTE.—Commencing with the class of 1949–50, each class takes one and one-half years to complete the course.

(55)

MOTION-PICTURE LIBRARY, 1950–59

Stock Records

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Films in library at January 1st	75	75	74	77	80	64	71	78	80	83
Films withdrawn during year	9	8	3	.....	24	2	3	.....	1	10
New films added during year	9	7	6	3	8	9	10	2	4	19
Films in library at December 31	75	74	77	80	64	71	78	80	83	92
Films used during year	76	71	72	79	64	70	80	79	84	83

Circulation Records

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Number of loans made during year	416	461	492	490	422	429	413	455	604	468
Number of film loans during year (one film loaned one time)	1,046	1,057	1,218	1,158	1,474	1,280	1,743	1,758	1,253	1,454
Number of showings during year	1,880	2,943	2,764	2,288	2,664	1,998	1,909	1,956	1,775	1,622
Number of audiences—										
Adults	26,988	13,542	13,655	12,640	12,333	14,353	14,537	18,983	10,330	17,329
Children	95,102[1]	264,245[1]	157,085[2]	118,622[2]	102,013[1]	131,844[1]	157,086[1]	86,829[1]	69,316[1]	54,429
Mixed	43,282	26,706	59,182	43,099	54,069	41,340	42,587	38,143	42,938	51,421
Totals	165,372[1]	304,493[1]	234,396[2]	174,367[2]	168,415[1]	187,537[1]	218,275[1]	148,124[1]	126,216[1]	123,179[1]

[1] Including attendances of lecture tour of two school lecturers.
[2] Including attendances of lecture tour of three school lecturers.

Leased Films, 1959

Title	Number of Showings	Number in Audience			
		Adult	Children	Mixed	Total
" Beaver Valley "	57	217	13,123	71	13,411
" Bear Country "	104	120	11,073	.....	11,193
" I'm No Fool with Fire "	263	120	32,588	71	32,799
Totals	424	457	56,784	142	57,383

(56)

SUMMARY OF COVERAGE BY SCHOOL LECTURERS, 1950–59

Forest District	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	Total
Vancouver—											
Number of school visits	78	288	79	163	140	203	232	10	176	108	1,477
Number of lectures given	91	341	79	176	206	352	419	11	237	162	2,074
Attendance	8,768	63,245	9,809	29,568	21,168	56,760	67,962	871	29,606	35,082	322,839
Kamloops—											
Number of school visits	38	60	122	43	5	.....	39	71	.....	47	425
Number of lectures given	38	66	122	56	5	.....	49	86	.....	49	471
Attendance	2,452	4,438	18,075	10,249	188	.....	5,731	10,046	.....	5,420	56,599
Nelson—											
Number of school visits	.....	23	51	150	67	.....	.....	42	.....	62	395
Number of lectures given	.....	23	51	201	88	.....	.....	60	.....	75	498
Attendance	.....	3,011	4,608	22,684	12,668	.....	.....	7,002	.....	9,972	59,965
Prince George—											
Number of school visits	.....	47	72	59	25	.....	.....	66	.....	76	345
Number of lectures given	.....	49	72	63	26	.....	.....	75	.....	82	367
Attendance	.....	1,864	5,028	2,913	1,343	.....	.....	5,671	.....	5,600	22,419
Prince Rupert—											
Number of school visits	.....	.....	19	21	.....	.....	.....	.....	.....	21	61
Number of lectures given	.....	.....	19	32	.....	.....	.....	.....	.....	25	76
Attendance	.....	.....	1,602	2,860	.....	.....	.....	.....	.....	5,135	9,597
All districts—											
Number of school visits	116	418	343	436	237	203	271	189	176	314	2,703
Number of lectures given	129	479	343	528	325	352	468	232	237	393	3,486
Total attendance	11,220	72,558	39,122	68,274	35,367	56,760	73,693	23,590	29,606	61,209	471,419

(57)

FOREST SERVICE LIBRARY, 1950–59

Classification	Items Catalogued and Indexed										Ten-year Average, 1950–59
	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	
Bound volumes	27	23	9	41	62	55	37	45	48	43	39
Government reports and bulletins	62	109	122	484	246	190	179	266	177	142	198
Other bulletins and reports	140	152	337	90	92	94	170	109	159	165	151
Periodicals	102	110	115	111	124	136	151	155	133	130	127
Serials[1]	.....	.....	.....	66	127	141	177	214	230	362	.....
References indexed	1,960	2,650	2,203	1,800	932	1,090	1,321	1,417	1,139	1,502	1,601

[1] Previous to 1953, included with periodicals, bulletins, and reports.

(58)

GRAZING PERMITS ISSUED

District	Number of Permits Issued	Number of Stock under Permit		
		Cattle	Horses	Sheep
Kamloops	1,170	106,815	3,112	19,482
Nelson	423	14,048	1,065	1,100
Prince George	90	3,562	200	22
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
Totals, 1954	1,750	111,767	3,738	24,909
Totals, 1953	1,730	108,894	4,133	23,172
Totals, 1952	1,621	104,610	4,040	23,565
Totals, 1951	1,561	100,082	4,350	22,282
Totals, 1950	1,562	98,484	4,650	23,100

NB.—Some of the figures in this table for the years 1950 and 1951 have been revised and differ from those shown in previous Reports. Past tables have shown net figures for some years and gross figures for others. This table shows the total number of permits issued and the net number of live stock covered for each of the years listed.

(59)

GRAZING FEES BILLED AND COLLECTED

Year	Fees Billed	Fees Collected[1]	Outstanding
1959	$91,636.13	$84,595.04	$18,417.62
1958	$69,986.23	$71,726.71	$11,376.53
1957	67,593.88	68,131.94	13,117.01
1956	76,155.51	79,247.61	13,655.07
1955	76,061.32	75,250.32	16,577.24
1954	80,191.97	85,043.96	15,766.24
1953	95,088.64	102,460.00	20,618.23
1952	125,495.09	110,731.32	27,989.59
1951	108,400.14	106,161.36	13,225.82
1950	80,178.43	74,305.08	10,986.74

[1] Includes statutory penalties.

(60)

AREA CLASSIFICATION BY OWNERSHIP

Coast

Area Classification	Crown	Crown Granted	Licences and Leases	Canada Control	Total
Forest land—	Acres	Acres	Acres	Acres	Acres
Commercial forest—					
Mature	8,507,862	905,948	1,508,601	61,347	10,983,758
Old immature	378,222	74,129	40,942	5,731	499,024
Young immature	1,970,913	1,014,220	262,340	44,600	3,292,073
Total, commercial forest	10,856,997	1,994,297	1,811,883	111,678	14,774,855
Selectively logged forest	1,272	384	1,169	124	2,949
Not satisfactorily restocked forest	306,637	280,245	228,778	8,416	824,076
Non-commercial forest	1,319,643	170,409	56,939	32,566	1,579,557
Total, all forest land	12,484,549	2,445,335	2,098,769	152,784	17,181,437
Non-forest land—					
Barren	.....	.....	.....	.....	11,960,510
Swamp	.....	.....	.....	.....	172,587
Argricultural and urban	.....	.....	.....	.....	576,540
Range and meadow	.....	.....	.....	.....	14,915
Non-productive tree-cover	.....	.....	.....	.....	9,597,448
Total, all non-forest land	.....	.....	.....	.....	22,322,000
Water—Lakes and rivers	.....	.....	.....	.....	1,022,693
Total, land and water	.....	.....	.....	.....	40,526,130

Interior

Area Classification	Crown	Crown Granted	Licences and Leases	Canada Control	Total
Forest land—	Acres	Acres	Acres	Acres	Acres
Commercial forest—					
Mature	43,498,844	857,761	224,267	284,720	44,865,592
Old immature	11,170,663	292,896	32,105	84,843	11,580,507
Young immature	44,227,859	2,059,509	65,661	351,789	46,704,818
Total, commercial forest	98,897,366	3,210,166	322,033	721,352	103,150,917
Selectively logged forest	207,930	75,649	8,733	4,675	296,987
Not satisfactorily restocked forest	5,372,339	195,977	11,178	30,720	5,610,214
Non-commercial forest	9,582,190	667,957	13,375	179,245	10,442,767
Total, all forest land	114,059,825	4,149,749	355,319	935,992	119,500,885
Non-forest land—					
Barren	.....	.....	.....	.....	38,052,164
Swamp	.....	.....	.....	.....	2,643,724
Argricultural and urban	.....	.....	.....	.....	862,890
Range and meadow	.....	.....	.....	.....	2,420,394
Non-productive tree-cover	.....	.....	.....	.....	25,008,464
Total, all non-forest land	.....	.....	.....	.....	68,987,636
Water—Lakes and rivers	.....	.....	.....	.....	5,100,680
Total, land and water	.....	.....	.....	.....	193,589,201

Province

Area Classification	Crown	Crown Granted	Licences and Leases	Canada Control	Total
Forest land—	Acres	Acres	Acres	Acres	Acres
Commercial forest—					
Mature	52,006,706	1,763,709	1,732,868	346,067	55,849,350
Old immature	11,548,885	367,025	73,047	90,574	12,079,531
Young immature	46,198,772	3,073,729	328,001	396,389	49,996,891
Total, commercial forest	109,754,363	5,204,463	2,133,916	833,030	117,925,772
Selectively logged forest	209,202	76,033	9,902	4,799	299,936
Not satisfactorily restocked forest	5,678,976	476,222	239,956	39,136	6,434,290
Non-commercial forest	10,901,833	838,366	70,314	211,811	12,022,324
Total, all forest land	126,544,374	6,595,084	2,454,088	1,088,776	136,682,322
Non-forest land—					
Barren	.....	.....	.....	.....	50,012,674
Swamp	.....	.....	.....	.....	2,816,311
Argricultural and urban	.....	.....	.....	.....	1,439,430
Range and meadow	.....	.....	.....	.....	2,435,309
Non-productive tree-cover	.....	.....	.....	.....	34,605,912
Total, all non-forest land	.....	.....	.....	.....	91,309,636
Water—Lakes and rivers	.....	.....	.....	.....	6,123,373
Total, land and water	.....	.....	.....	.....	234,115,331

SOUND-WOOD VOLUME IN COMMERCIAL FORESTS OF ALL AGES, BY OWNERSHIP AND SPECIES

(61)

(Gross volumes reduced for decay, at a close utilization standard, in thousands of cubic feet.)

COAST

Species and D.B.H. Limits		Crown	Crown Granted	Licences and Leases	Canada Control	Total
Douglas fir	4–9″	337,026	203,814	31,406	7,356	579,602
,,	10″+	6,523,744	3,175,979	1,330,799	80,289	11,110,811
Red cedar	4–9″	559,264	93,364	102,759	8,783	764,170
,,	10″+	15,895,966	1,289,288	2,743,230	124,787	20,053,271
Hemlock	4–9″	2,442,074	297,883	330,147	24,779	3,094,883
,,	10″+	26,634,596	2,684,164	4,457,746	194,259	33,970,765
Balsam (true firs)	4–9″	587,180	46,175	85,479	3,817	722,651
,,	10″+	10,586,052	950,480	1,903,786	51,015	13,491,333
Spruces	4–9″	67,376	7,515	7,770	2,683	85,344
,,	10″+	5,114,733	392,445	766,778	63,660	6,337,616
Yellow cedar	4–9″	180,004	11,283	35,607	1,920	228,814
,,	10″+	1,996,120	116,136	345,770	12,739	2,470,765
White pine	4–9″	18,177	16,839	2,735	365	38,116
,,	10″+	257,810	185,872	38,110	2,993	484,785
Lodgepole pine	4–9″	145,123	34,998	19,080	3,321	202,522
,,	10″+	306,290	48,760	39,378	6,208	400,636
Yellow pine	4–9″	709	26	13	18	766
,,	10″+	3,922	277	105	150	4,454
Larch	4–9″	----------	----------	----------	----------	----------
,,	10″+	----------	----------	----------	----------	----------
Cottonwood	4–9″	1,784	1,126	380	128	3,418
,,	10″+	265,833	36,184	37,169	7,726	346,912
Alder	4–9″	99,653	65,799	14,221	4,214	183,887
,,	10″+	384,028	161,103	50,084	10,922	606,137
Maple (broadleaf)	4–9″	3,999	1,408	677	104	6,188
,,	10″+	64,955	23,017	18,283	1,190	107,445
Birch	4–9″	20,574	11,016	7,270	363	39,223
,,	10″+	59,528	24,007	11,200	672	95,407
Aspen	4–9″	169	11	11	2	193
,,	10″+	12,054	459	3,162	434	16,109
Totals, all species	4–9″	4,463,112	791,257	637,555	57,853	5,949,777
,,	10″+	68,105,631	9,088,171	11,745,600	557,044	89,496,446

INTERIOR

Douglas fir	4–9″	2,111,469	242,135	15,225	50,000	2,418,829
,,	10″+	17,327,364	1,584,286	142,762	398,372	19,452,784
Red cedar	4–9″	681,824	50,593	16,299	13,028	761,744
,,	10″+	7,087,162	388,380	274,344	122,952	7,872,838
Hemlock	4–9″	2,254,727	56,429	22,465	19,932	2,353,553
,,	10″+	20,941,594	452,045	324,449	197,431	21,915,519
Balsam (true firs)	4–9″	7,559,358	220,557	22,483	53,060	7,855,458
,,	10″+	21,293,082	270,393	94,803	131,098	21,789,376
Spruces	4–9″	20,029,289	195,957	14,882	50,801	20,290,929
,,	10″+	84,692,856	1,157,236	263,932	373,276	86,487,300
Yellow cedar	4–9″	----------	----------	----------	----------	----------
,,	10″+	----------	----------	----------	----------	----------
White pine	4–9″	216,321	25,152	4,186	4,340	249,999
,,	10″+	1,007,249	91,940	30,222	22,034	1,151,445
Lodgepole pine	4–9″	24,220,742	598,570	21,288	124,174	24,964,774
,,	10″+	39,682,833	768,357	42,288	188,189	40,681,667
Yellow pine	4–9″	51,787	17,346	227	9,398	78,758
,,	10″+	1,724,266	592,565	14,733	137,410	2,468,974
Larch	4–9″	369,987	42,805	2,429	5,686	420,907
,,	10″+	1,655,205	157,824	26,479	36,282	1,875,790
Cottonwood	4–9″	462,210	19,987	185	789	483,171
,,	10″+	3,104,304	78,941	2,573	7,469	3,193,287
Alder	4–9″	7,030	29	1	23	7,083
,,	10″+	44,844	604	10	588	46,046
Maple (broadleaf)	4–9″	----------	----------	----------	----------	----------
,,	10″+	----------	----------	----------	----------	----------
Birch	4–9″	1,886,236	52,724	4,836	6,608	1,950,404
,,	10″+	2,531,612	114,459	12,119	14,267	2,672,457
Aspen	4–9″	2,674,012	94,780	1,118	6,663	2,776,573
,,	10″+	6,997,262	229,394	4,379	21,968	7,253,003
Totals, all species	4–9″	62,524,992	1,617,064	125,624	344,502	64,612,182
,,	10″+	208,089,633	5,886,424	1,233,093	1,651,336	216,860,486

SOUND-WOOD VOLUME IN COMMERCIAL FORESTS OF ALL AGES, BY OWNERSHIP AND SPECIES—*Continued*

(61)

(Gross volumes reduced for decay, at a close utilization standard, in thousands of cubic feet.)

PROVINCE

Species and D.B.H. Limits		Crown	Crown Granted	Licences and Leases	Canada Control	Total
Douglas fir	4–9″	2,448,495	445,949	46,631	57,356	2,998,431
,,	10″+	23,851,108	4,760,265	1,473,561	478,661	30,563,595
Red cedar	4–9″	1,241,088	143,957	119,058	21,811	1,525,914
,,	10″+	22,983,128	1,677,668	3,017,574	247,739	27,926,109
Hemlock	4–9″	4,696,801	354,312	352,612	44,711	5,448,436
,,	10″+	47,576,190	3,136,209	4,782,195	391,690	55,886,284
Balsam (true firs)	4–9″	8,146,538	266,732	107,962	56,877	8,578,109
,,	10″+	31,879,134	1,220,873	1,998,589	182,113	35,280,709
Spruces	4–9″	20,096,665	203,472	22,652	53,484	20,376,273
,,	10″+	89,807,589	1,549,681	1,030,710	436,936	92,824,916
Yellow cedar	4–9″	180,000	11,283	35,611	1,920	228,814
,,	10″+	1,996,120	116,136	345,770	12,739	2,470,765
White pine	4–9″	234,496	41,991	6,923	4,705	288,115
,,	10″+	1,265,059	277,812	68,332	25,027	1,636,230
Lodgepole pine	4–9″	24,365,871	633,568	40,362	127,495	25,167,296
,,	10″+	39,989,123	817,117	81,666	194,397	41,082,303
Yellow pine	4–9″	52,496	17,372	240	9,416	79,524
,,	10″+	1,728,188	592,842	14,838	137,560	2,473,428
Larch	4–9″	369,987	42,805	2,429	5,686	420,907
,,	10″+	1,655,205	157,824	26,479	36,282	1,875,790
Cottonwood	4–9″	463,991	21,113	568	917	486,589
,,	10″+	3,370,137	115,125	39,742	15,195	3,540,199
Alder	4–9″	106,686	65,828	14,219	4,237	190,970
,,	10″+	428,872	161,707	50,094	11,510	652,183
Maple (broadleaf)	4–9″	3,998	1,408	678	104	6,188
,,	10″+	64,955	23,017	18,283	1,190	107,445
Birch	4–9″	1,906,811	63,740	12,105	6,971	1,989,627
,,	10″+	2,591,140	138,466	23,319	14,939	2,767,864
Aspen	4–9″	2,674,181	94,791	1,129	6,665	2,776,766
,,	10″+	7,009,316	229,853	7,541	22,402	7,269,112
Totals, all species	4–9″	66,988,104	2,408,321	763,179	402,355	70,561,959
,,	10″+	276,195,264	14,974,595	12,978,693	2,208,380	306,356,932

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