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

1958

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1959

VICTORIA, B.C., FEBRUARY, 1959.

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 1958.

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 1958.

R. G. McKEE,
Deputy Minister of Forests.

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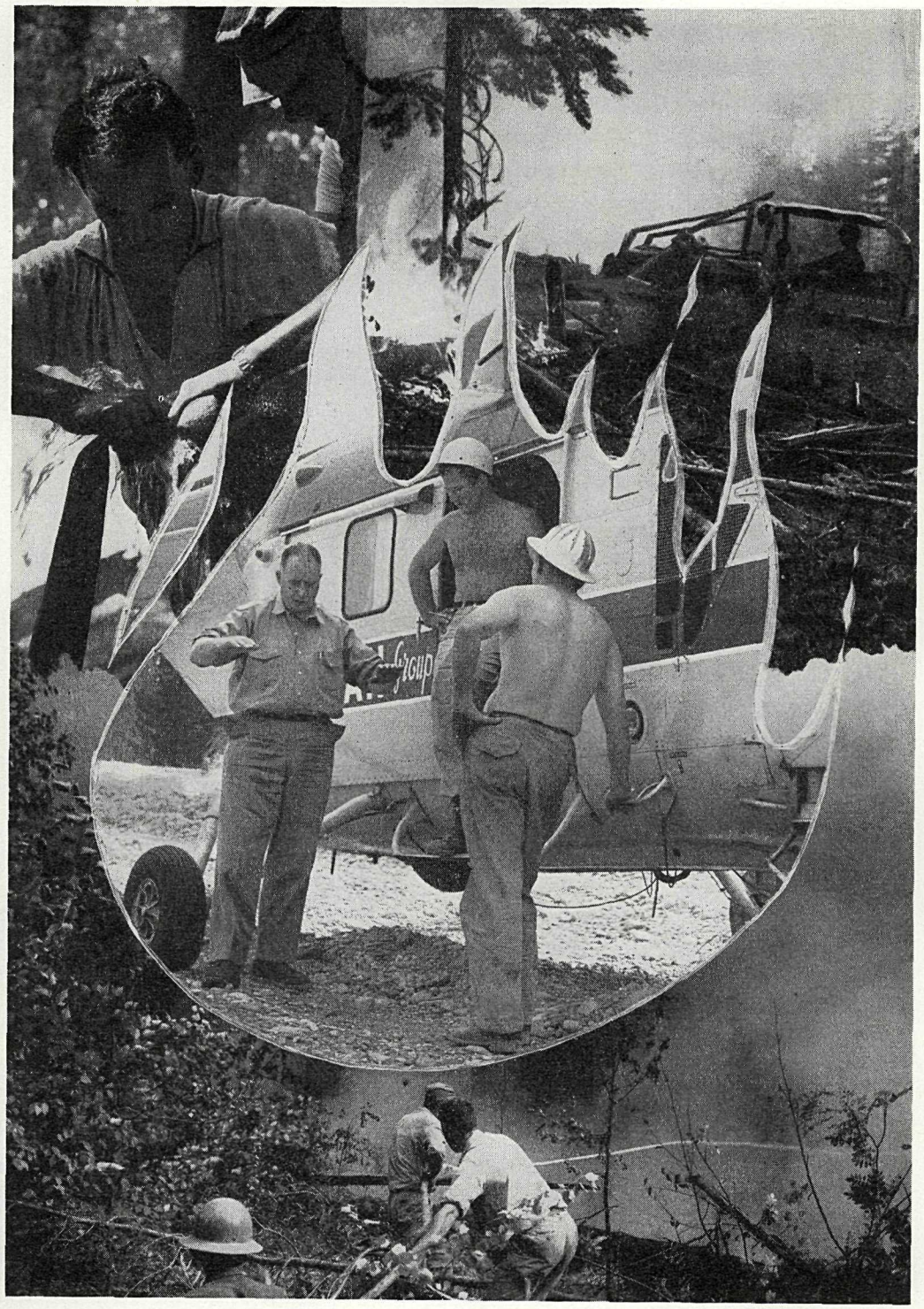


The 1958 fire season was the most severe in the history of the Province. All protection facilities of the Service were taxed to the limit as every practical means of fire suppression was employed.

REPORT OF THE FOREST SERVICE, 1958

Introduction and Legislation

Effective January 1st, 1958, the Honourable Gordon McG. Sloan, former Chief Justice of British Columbia and twice-appointed Royal Commissioner on Forestry, assumed the duties of " Forest Adviser to the Government," with the continuing powers of a Royal Commissioner. A series of special hearings was held by the Forest Adviser on specific problems confronting the industry, and recommendations were made to the Government on two of these problems. Towards the end of the year, the Honourable Mr. Sloan was engaged in the third and fourth series of hearings when he was stricken with a severe illness which later proved fatal, to the great and permanent loss of British Columbia.

During 1958 important changes were made in forest legislation to implement certain recommendations contained in the 1956 report of the Honourable Mr. Sloan under the " Public Inquiries Act." The principal of these amendments were those changing the name of " forest management licences " to " tree-farm licences " and the reduction of the term of these licences from perpetuity to a period of twenty-one years with renewal on application and subject to renegotiation of the terms and conditions of the contract.

In addition, the procedure for applying for a tree-farm licence was changed and a new section was added to the " Forest Act " to reduce the possibility of irregular bidding practices at auction sales of Crown timber. Provision was made to enable the Minister to enter into agreements for sharing the cost of control measures necessary to abate insect and disease attacks on timber. A new section was added making provision for the setting-up of advisory forest committees or councils.

There were other incidental amendments to the right-of-way sections and requirements *re* manufacture within the Province. Certain sections dealing with log salvage were clarified, and provision was made authorizing temporary closures of part of a log salvage district. Provision was made for the selling of timber on experimental areas.

In September, Dr. C. D. Orchard, Deputy Minister and Chief Forester since 1945, retired on superannuation and was succeeded by Mr. R. G. McKee.

Through the courtesy of the Forest Biology Division, Science Service, Canada Department of Agriculture, this Report again contains submissions from the Victoria units of that organization in forest-insect and forest-disease conditions in this Province.

Forest Surveys and Inventory

The Division completed the first year of the new maintenance inventory programme with financial assistance continuing from the Government of Canada under the Agreement for Inventory provisions of the Canada Forest Act.

The results of the first seven years' work under the Canada Forest Act were compiled and made available during the year in the form of a comprehensive report entitled " Continuous Forest Inventory of British Columbia—Initial Phase, 1957," which is enjoying world-wide distribution.

On the basis of the present inventory figures for volume of trees and distribution of age-classes of immature timber, it is estimated that the annual allowable cut for the Province at the present time is 967 million cubic feet. This is based on current accessibility limits and utilization to a minimum diameter of 12 inches d.b.h. This indicates that currently the annual harvest from the forests is just about in balance with the annual allowable cut.

The annual allowable cut could be increased to 3,028 billion cubic feet if, by reason of technological and economic changes, all merchantable forests became accessible and

utilization improved to a pulp standard. Of this 3,028 billion cubic feet, 995 million cubic feet would come from the Coast and 2,033 billion cubic feet from the Interior, which emphasizes the great pulp potential of the Interior forests.

Forest Research

Fourteen field parties were employed during the summer season, with work being undertaken in all forest districts.

Ecological studies involving climatic influence were continued on Vancouver Island, and a study was initiated on the effects of scarification in the preparation of seed-beds for natural regeneration of spruce-alpine fir types.

A preliminary investigation of regeneration problems on parts of Vancouver Island was completed.

There was considerable activity in the field of genetics during the year, with the work being concentrated again on the production of selected strains of Douglas fir to be planted in " seed orchards." Also, a series of studies was initiated which will lead to the standardization of methods for the handling and storage of cones and the extraction of coniferous seed.

Both research stations at Cowichan Lake and Aleza Lake were fully utilized during the year. At Cowichan Lake the major activity was with the problems of commercial thinning of Douglas fir, and at Aleza Lake with the study of cutting methods in mature spruce-balsam stands.

Reforestation

During 1958, Forest Service crews planted 3,254,600 seedlings on 3,796 acres and industry added 5,342,000 trees on 11,524 acres. All planting stock was provided free of charge by Forest Service nurseries. Most of the operations were in the spring and 95 per cent of the planting was on the Coast.

The Division took advantage of a good cone-crop of ponderosa pine in the Interior and collected 973 bushels. The Douglas fir cone-crop on the Coast, however, was again a failure, as it has been for the past eight years, which creates major problems in the management of Douglas fir types.

The programme of preparation of planting-sites proceeded satisfactorily, with more than 56,000 snags being felled on 2,035 acres to protect potential plantation areas.

The dominant factor in the 1958 nursery-year was the prolonged drought. For the first time in the history of the three Coastal nurseries, 2-year-old seedlings had to be irrigated. In one nursery the watering caused some seedlings to break dormancy and start further growth late in the season. As a result, some lots have suffered considerable frost damage.

Regeneration surveys were hampered by extended forest closures which precluded field work during much of the summer. The open spring and fall permitted detailed surveys to be completed on six projects totalling 13,874 acres, of which 8,770 acres were found to be not satisfactorily restocked and in need of planting.

A limited number of experimental nursery beds were established at two Ranger stations in the Prince George Forest District and one in the Prince Rupert District to provide an opportunity of observing the problems of nursery operation in these areas.

Working Plans

As a result of legislation enacted during the 1958 session of the Legislature, it was possible to award the first new tree-farm licence, which brings the total number of these units to twenty-seven, covering 5,349,773 acres of productive forest land with an annual allowable cut of 215,997,000 cubic feet.

Four new sustained-yield units were approved during the year, bringing the total to sixty-one, such units covering 32,389,900 acres with an annual allowable cut of 379,650,-000 cubic feet.

Ten new tree-farms were certified during 1958 under the " Taxation Act," and eight farm wood-lot licences were also awarded during the year.

In addition to the Division's regular activities, a considerable amount of time was spent in preparing essential data for the Forest Adviser in connection with hearings conducted in the Chilliwack and Squamish areas.

Public Information and Education

Due to the severity of the 1958 fire season, the demands on certain Divisional facilities reached a new high, particularly in the supplying of information to press, radio, and television news media. These requirements, plus heavy demands for information from the general public, clearly indicated the need for the establishing of Divisional personnel in the forest districts.

Location shooting for a new 16-mm. educational motion picture was completed during the summer in the Prince George Forest District. The two major films edited the previous year were sounded early in 1958 and put into circulation. The entry into the educational filmstrip field was a new undertaking by the Division during the year.

The normal printing and publication commitments of the Division were maintained but with increasing difficulties. The funds now available for this work are such that they are utilized to a great extent simply in maintaining stocks of existing publications in sufficient quantity.

The school lecture tour completed its eighth consecutive year of operation, with 250 individual lectures being given in 174 different schools to more than 29,000 students.

Twenty new sites were added to the roadway sign programme during the summer, resulting in a total of 205 signs, " Keep B.C. Green—Use Your Ashtray," now appearing throughout the southern half of the Province.

Forest Management

The value of production of all forest products during 1958 amounted to $542,787,427, a decrease of approximately 5 per cent from the previous year. The greatest drop in major products value was in lumber production, which was down 18 per cent from 1957. Value of plywood was, in contrast, up 25 per cent, and pulp and paper products values rose 7 and 6 per cent respectively.

The total Provincial cut was off 5 per cent from 1957 at 908,484,634 cubic feet. All this reduction was on the Coast, with Vancouver and Prince Rupert Coast Districts being down 15 per cent in cut. The scale in the Interior, however, increased 10 per cent over the previous year and now represents 44 per cent of the total Province-wide harvest.

Lumber shipments were up 235,443 M f.b.m. to 1,314,361 M f.b.m. Shipments to the United States increased substantially, while those to the United Kingdom and the Continent were down.

Douglas fir continued, with a 349,994,472-cubic-foot cut, to be the leading species harvested, accounting for 38 per cent of the total. It was followed by hemlock (170,732,898 cubic feet or 18 per cent), spruce (144,181,983 cubic feet or 15 per cent), and cedar (116,651,426 cubic feet or 12 per cent).

A total of 1,922 timber sales were cruised during the year, covering an area of 609,563 acres and containing 890,285,000 cubic feet of saw-timber. This reduction from recent years was due partly to a lower demand and partly to the regulation of cut in sustained-yield units. The number of sales awarded declined to 2,145 from the 1957 total of 2,544. However, the volume of timber under sales increased 15 per cent to

682,221,469 cubic feet. At the end of the year there were 7,584 timber sales in existence covering 3,326,737 acres.

With the exception of Douglas fir, average log prices on the Lower Coast remained at a low level throughout the year. As a result of the depressed market prices, stumpage rates were kept at a very low level, and minimum stumpage rates were designated in most instances.

Of the total Provincial cut, 144,000,000 cubic feet came from tree-farm licences and 255,000,000 cubic feet from public working circles or sustained-yield units.

Silvicultural treatments of various kinds were carried out during the year on 465 timber sales, covering an area of 141,577 acres.

Grazing

Use of the Crown ranges is carefully regulated to ensure sustained production of forage and the proper integration of grazing with the other forest-land uses involved. The extremely dry conditions of 1958 had a profound effect on the range. Forage production was generally reduced, and on some ranges water shortages developed.

Although the range-improvement programme was somewhat curtailed by the demands of the fire situation, a considerable number of projects were undertaken and the programme of range seeding continued.

During the year, 1,571 grazing permits were issued authorizing the depasturing of 122,489 cattle, 4,069 horses, and 20,927 sheep on Crown range.

The growing recreational use of lakes in the range country has necessitated special planning to ensure continued access by stock to vital water-supplies. A considerable number of stock-watering reserves were established on the basis of water-front use surveys carried out in 1958.

A heavy demand for feeder calves and yearlings developed in 1958, and prices rose markedly. A large part of the cattle industry has taken advantage of this situation and is now directing its efforts to the production of young stock in demand for finishing in surplus grain areas. This rapid move toward the marketing of younger cattle has resulted in a temporary reduction of the number of stock on Crown ranges. However, when the transition is completed, it is anticipated the requirements for range forage will be higher than before.

Engineering Services

The activities of the Division during 1958 were highlighted by two special programmes undertaken under Federal-Provincial agreements. These programmes have a dual purpose: firstly, to further the conservation and management of the forest resource by the construction of selected forest-development roads, and, secondly, to provide useful winter employment for seasonal workers. Costs were to be shared on a 50–50 basis, with the final programme covering the period January 2nd to June 30th, 1958, and the second agreement covering operations between November 1st, 1958, and June 30th, 1959.

During 1958, 54 miles of new road was constructed, general maintenance carried out on 153 miles of previously constructed road, 157 miles of road was located, and 350 miles of possible development-road routes were subjected to reconnaissance survey. This brings the total of forest-development road constructed since 1950 to 207 miles.

The 1958 fire season was a severe test of all mechanical equipment controlled by the Mechanical Section, but it was gratifying to note that mechanical failures were generally attributable to unskilled operations by transient help rather than to lack of maintenance.

Vehicle purchases during the year were light, consisting largely of four-wheel-drive and commercial units. In all, eighty-three vehicles were purchased, as against 188 purchases in 1957. Ninety-one vehicles were transferred to the Parks Branch of the Department of Recreation and Conservation and eighty-one units were removed from

service, leaving a total Forest Service vehicle fleet of 801 units at the end of the year, a net reduction of eighty-nine units from the previous year.

The building programme of the Structural Section was not as heavy as for the previous year. Also, carry-over projects from 1957 were not heavy, which made it possible to give closer supervision to projects carried out by Forest Service crews. The programme of Porta-building construction was continued to meet the demand for emergency accommodation.

In the field of marine design, designing of a suitable craft for personnel and equipment transportation on Ootsa Lake was completed and, by the end of the year, construction was under way at the Marine Station. Also, a special barge, capable of carrying 12 tons, was designed for use by silviculture crews working in the isolated reaches of Babine Lake. This barge obtains flotation from five pairs of Styrofoam-filled pontoons attached to a framework featuring two glulam longitudinal guides as a twin keel.

The severe fire season delayed summer radio installations in the Kootenay region and created a great deal of radio-propogation survey work which had not been anticipated. One hundred and fifty-six new transmitting units of all types were added to the Forest Service radio network during the year, to bring the total number of sets to 1,216, a net increase of 126 over the previous year.

Forest Protection

The 1958 fire season was the most disastrous ever recorded in British Columbia. A mild 1957/58 winter, with little or no snow at the lower elevations, followed by a record dry spring and summer, with far-above normal temperatures prevailing, were the weather features of the season that set its pattern.

A total of 4,120 forest fires burned over 2,065,423 acres, of which 1,307,853 acres were in the Prince George District. Forest Service costs for fire-fighting amounted to $4,528,137, and it is estimated private industry and other agencies spent $954,857 of their own, for a direct fire-fighting cost of almost $5,500,000.

The principal causes of fires were operating railways (1,224 fires), lightning (1,150 fires), campers, travellers, and smokers (774 fires).

The heaviest costs of suppression were attributable to lightning fires, which cost 75 per cent of the total, although they accounted for only 28 per cent of the total number.

The severity of the season made it necessary to impose numerous forest closures. Twice during the season a general forest closure was imposed on the Vancouver Forest District—one for twenty-two days, commencing July 16th, and one for thirteen days, commencing August 20th. Numerous recreational closures were imposed in various parts of the Province. It was even necessary to place a general closure on the Coastal area of the Prince Rupert District for seventeen days.

Every available type of fire-fighting aid was used during the season. Fixed-wing aircraft and helicopters were used extensively to carry fire crews and equipment, and both types were used in the bombing of fires with water and sodium calcium borate.

Fire-law enforcement resulted in 104 prosecutions for infraction of Part XI of the " Forest Act."

Two hundred and forty-one miles of protection roads were constructed and 849 miles were maintained. Forty-nine miles of protection trails were constructed and 684 miles were maintained.

To improve the fire lookout network, forty-nine possible new sites were examined and five new lookouts constructed and manned.

Assistant Ranger recruitment examinations, held annually for the purpose of obtaining a suitable supplementary protection staff, were held as usual. Of 289 candidates who sat for the examinations, sixty-four were successful, of whom twenty-eight accepted positions.

Forest-insect Investigations

Early in the year an interdepartmental committee, composed of representatives from four Federal agencies, was formed to study the possibilities of reducing toxicity to fish and fish food organisms caused by sprays used for control of forest insects.

The balsam woolly aphid, a serious, introduced pest of true firs, was discovered for the first time in British Columbia during 1958. It is now known to occur in North and West Vancouver, on the east side of Howe Sound, and in the New Westminster area. Indications are that the insect has been present for at least eight years and, although it has killed some true fir, thus far only small acreages have been affected.

The total area of a one-year-cycle spruce budworm outbreak in the Lillooet River and Lake region reached 653 square miles, an increase of 155 miles over 1957. The two-year-cycle budworm outbreak in the Babine Lake area is calculated at 1,286 square miles, with an increase in population expected in the coming year.

Forest-disease Investigations

A co-operative study to establish an ecological classification of white pine forests in the Interior was initiated during the year. This classification is designed to establish a basis for uniform stand descriptions and population sampling within diseased forest units. To date, approximately 200 sample-plot areas have been located between Nelson and Mabel Lakes.

Collections of forest disease submitted during 1958 by co-operators, Forest Biology Rangers, and other laboratory personnel totalled 2,443. Among this number were 133 fungi listed for the first time in the forest-disease herbarium.

Fifty-three additional plantations of exotic forest trees were brought to the attention of the laboratory during the year, bringing the total number registered to 118.

Forest Ranger School

The tenth class commenced its studies in January, 1958, and is scheduled to graduate in April, 1959.

The enrolment of this class was limited to twenty-one, a reduction of nine from the previous class.

While there were no major changes on 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 in the Forest Service. The experience of the heavy fire season provided a great deal of valuable material for the revision of the Forest Protection Manual.

Additional emphasis was placed on safety training in several courses, and first-aid training was made compulsory for all students, whether or not they had had previous training.

Forest Accounts

Total revenue collected, while still well above the decennial average, declined sharply to $24,886,723, some 16 per cent below 1957 revenue. The most striking drop was in stumpage, which comprises the bulk of the revenue, and which was down 18.8 per cent, primarily due to the downward revisions in stumpage rates.

Increases of 10.5 and 1 per cent respectively occurred in collections of timber-sale rental and forest-protection tax over the previous year.

Royalty revenue from timber cut on lands held under Crown grant or pre-emption declined by 6.4 per cent, being down $118,204 from 1957 to $1,719,957.61.

PERSONNEL

The normal functions of the Division to do with recruitment selection, placement, promotional reviews, employee ratings, establishment, and organization were maintained throughout the year.

Seven matters of grievance were presented by the Government Employees' Association, of which five were dropped after initial inquiry, one was satisfactorily settled, and one settled in part.

The Personnel Officer served on an interdepartmental committee set up to review the merit rating system, and the committee's recommendations were accepted by the Government.

Eighteen per cent of the Personnel Officer's time was spent away from headquarters in each of the five forest districts, and in attending Ranger meetings at Nelson and Kamloops and the District Silviculturists' meeting at Cowichan Lake.

The total Forest Service permanent establishment dropped 5 per cent during the year to 817. Continuously employed personnel increased by sixty-seven over 1957. Permanent staff turn-over during 1958 averaged 10 per cent, but professional staff turnover was triple that for the previous year, amounting to 13.2 per cent.

Changes were made in the Civil Service classifications of eight groups of employees. New specifications and titles were written for graduate foresters, setting up seven grades for registered foresters, and eliminating the former Assistant Forester classification.

Early in the year the Legislative Assembly approved funds to effect a 7.5-per-cent average wage increase retroactive to July 1st, 1957. By the year's end, most grades had again fallen behind the standard comparative positions outside the Civil Service.

FOREST SURVEYS AND INVENTORY DIVISION

INTRODUCTION

The Division completed the first year of the new maintenance inventory programme under which the Province is being completely re-examined on a ten-year cycle. Financial assistance was continued by the Government of Canada according to the Agreement for Inventory implemented under the " Canada Forestry Act." Under this Agreement, and subject to renewal under terms and conditions to be determined at the time of renewal, current Federal assistance following seven years of initial inventory remains limited to surveys at the Provincial inventory level until 1961. Additional assistance for the completion of surveys of a higher order within Crown forest units is much needed. Survey reports of these units continue to be dependent largely on the application of broad Provincial inventory data. Alleviation of this situation will mark the commencement of an adequate survey programme on a unit basis, essential for the practice of sustained-yield forestry.

OPERATIONS

Crews operated from field headquarters in each of the forest districts. The latest available aids in transportation and communication were used to increase the efficiency and margin of safety in all phases of woods work.

As in the previous year, the helicopter proved to be one of the outstanding aids in forest survey work. A total of 957 hours were flown in four contracted machines, 94 per cent of this time being utilized in forest classification and 6 per cent in sampling. Foresters in the machines recorded observed forest-type data on tape recorders for the first time. Each helicopter base camp was equipped with a 50-watt radio transmitter to maintain contact with each aircraft at all times.

These helicopters and attached field crews flew an additional 429 hours in a joint effort with forest district personnel to suppress the worst series of fires in the history of the Service.

Only thirty-three hours were flown in fixed-wing aircraft, largely for the transportation of field crews on operational surveys.

Two 60-watt marine radio transmitters of the latest design were secured for installation in launches, and a set of 50-foot towers was installed at the forest survey headquarters in the Nelson Forest District.

New half-ton motor-vehicles, equipped with positraction differentials, proved valuable in field operations. Two mobile mechanical repair units were in operation and proved to be of great assistance in avoiding costly major repairs and time-loss. A total of 195 repair jobs were carried out by two travelling mechanics during the field season.

The Air Survey Division of the Lands Service continued to function as the sole source of air photographs and base maps for the maintenance inventory programme, covering 19,630 square miles during the season, in accordance with the requirements of the Division.

CONTINUOUS INVENTORY—PROGRESS

In 1958, field surveys involving forest classification and sampling were carried out over an area of 15,582,430 acres in six different sub-zones, as detailed below:—

Forest District	Sub-zone No.	Acres
Vancouver	916	3,707,604
Prince George	933	1,879,661
Prince George	935	2,719,229
Prince Rupert	950	1,848,952
Kamloops	965	2,160,738
Nelson	973	3,266,246
Total		15,582,430

These surveys represent coverage of a little less than the specified one-tenth of the Province which is re-examined each year under the continuous inventory programme. Parks and forest units under private management are not included in the programme. The limited availability of 20-chain-to-1-inch air photography also reduced the coverage obtained in the first year of the cycle. The applicability of suitable alternative and existing photography was studied during the year, particularly as it related to the less accessible lower sites in the back areas and northern portions of the Province. As a result, it is expected that the rate of progress in the future will conform satisfactorily with the ten-year cycle as planned.

FOREST MAPPING

For the first time, complete forest index-map coverage of the Province was provided on lithographed coloured sheets at a scale of 1 inch to 2 miles. The 149 maps which comprised the Provincial total and the related statistical summaries were distributed as a Forest Inventory Summary series. Further copies are available on request. Of interest is the fact that a gigantic forest-cover map consisting of the entire 149 sheets in the series was displayed at the 1958 Pacific National Exhibition in Vancouver.

Forest classification carried out during the field season provided information for the production of revised forest-cover maps at a scale of 1 inch to 1 mile. This new series of maps, being produced under the continuous inventory programme, shows details of forest-cover rather than the general cover classes depicted on the 1-inch-to-2-mile series recently completed. In principle, the 1-inch-to-1-mile forest-cover map shows species predominance by ten colours and broad age-groups by four symbols. To expedite production of the series, maps are being published in units of one-quarter of the area of a map number of the National Topographic series. These map units are approximately 9 inches by 12 inches in size and are produced in black and white. Full map-sheets in colour will be published according to the accumulation of the smaller units.

Forest-cover map manuscripts showing details of the forest-cover were also produced at scales of 1inch to one-quarter mile, 1 inch to one-half mile, and 1 inch to 1 mile, depending on the scale of available air photographs and map bases. Prints of these maps and related statistics are now available or obtainable from files for all areas of the Province. They present the detailed data assembled for the report " Continuous Forest Inventory of B.C.—Initial Phase 1957."

During the year, 12,500 maps were distributed to various public and private agencies. This was an increase of 50 per cent over the previous year.

FOREST SAMPLING

Standard Sampling

In 1958, 5,812 sample plots were established. This total includes fifty-four samples formerly remeasured by the Research Division. As in the previous year, the helicopter was of great value in transporting sampling crews to and from forest areas of difficult access, thereby improving the over-all efficiency of sampling and ensuring better coverage of all forest types.

In the Vancouver and Nelson Forest Districts, 6,956 chains of examination strip were run in regeneration surveys.

Outstanding co-operation with private industry was indicated by the fact that two concerns who adopted the basic sampling methods employed by this Division made available 2,300 samples for incorporation into the continuous inventory programme. On the other hand, timber-volume statistics relating to forest types throughout the Province were made available by the Division to numerous private concerns on request.

Tables were constructed showing cubic-foot volume in 32-foot logs for the following species: Coast Douglas fir, red cedar, hemlock, balsam, and Sitka spruce. In construct-

ing these tables, the sum of log volumes in a tree of any given height and diameter was balanced to the tree volume at a close standard of utilization as shown in the appropriate tree-volume table. Basically, these tables are intended to be an aid to the timber cruiser and to the compiler of log-volume estimates. For a tree of known height and diameter class, the tables show the number and grade of 32-foot logs that it is mathematically possible to obtain from the average tree of these dimensions. The tables also show the gross cubic-foot volume of each log in the tree. Obviously, the allocation of grades to logs in a standing tree is not solely dependent on tree size and taper, and it is essential that the cruiser be thoroughly familiar with log-grade requirements as specified in the "Forest Act."

A sample page of the log-volume table for Douglas fir, in the 170-foot height class, is shown on page 21.

Photo Mensuration

Estimation of forest volumes by photo-mensuration techniques was continued, and 4,493 photo plots were measured during the year. Work was completed in fifty-five compartments of Sub-zone 935 (Prince George-Barkerville) and in thirty compartments of Sub-zone 933 (Quesnel River). For the above, photo volume estimates were read from a Zone 4 (North Central Interior) aerial photo stand volume table, and a local correction applied, based on double sampling.

A provisional aerial photo volume table was developed for Zone 2 (South Coast) and used, with a local correction, to provide photo volume estimates for 130 compartments in Sub-zone 916 (Vancouver-Pemberton). The Zone 2 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, living 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 the 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 table following:—

Zone 2 (South Coast)	Mature Coniferous	Immature Coniferous
Regression constant, b_0	+814.0	—4,599.3
Coefficient of height, b_1	50.9	64.3
Coefficient of density, b_2	42.4	56.4
Multiple correlation coefficient, $R_v HD$	.48	.58
Number of double samples	46	41

Work was carried out in Zone 5 (South Central Interior), and an aerial photo volume table will be available for this zone by late 1959.

Growth

In addition to the usual complement of remeasurable standard sample plots established, a further fifty-four plots, originally established by the Research Division, were remeasured by the Forest Surveys and Inventory Division. These plots were remeasured as part of a new programme to incorporate in the continuous inventory all suitable permanent plots established by the Forest Service. The data so obtained were utilized along

SAMPLE PAGE (THE THIRD OF FIVE PAGES) FOR 32-FOOT LOG-VOLUME TABLE, COAST MATURE FIR

(Compilation height, 170 feet.)
(All volumes in gross cubic feet, close utilization standard.)

DBH (In.)	D. MAX. CL.	TOT HT. (Ft.)	NO. 32 Ft. LOGS	LENGTH OF TOP LOG (Ft.)	VOLUME OF TOP LOG	VOLUME BY LOG POSITION 1	2	3	4	5	6	7	8	TOTAL VOLUME
44	1	170	4	31	18.5	172.1	129.4	92.9	55.1					468.0
	2	166	4	27	14.1	171.3	127.0	91.0	51.6					455.0
	3	160	4	22	9.2	169.7	124.6	86.2	45.3					435.0
46	1	170	4	31	18.4	191.8	138.8	98.4	56.6					504.0
	2	168	4	29	16.2	191.2	138.4	97.0	54.2					497.0
	3	162	4	24	11.0	189.6	134.7	92.7	49.0					477.0
48	1	170	5	-	-	205.5	148.7	105.4	60.6	19.8				540.0
	2	170	5	-	-	205.5	148.7	105.4	60.6	19.8				540.0
	3	164	4	27	13.9	202.8	145.5	101.5	54.3					518.0
50	1	170	5	-	-	219.8	159.3	112.8	64.9	21.2				578.0
	2	170	5	-	-	219.8	159.3	112.8	64.9	21.2				578.0
	3	166	4	29	17.1	218.0	156.3	110.0	60.6					562.0
52	1	170	5	-	-	234.8	169.9	120.4	69.3	22.6				617.0
	2	170	5	-	-	234.8	169.9	120.4	69.3	22.6				617.0
	3	168	4	31	20.7	233.3	169.2	118.5	66.3					608.0
54	1	170	5	-	-	248.9	180.5	127.9	73.6	24.1				655.0
	2	170	5	-	-	248.9	180.5	127.9	73.6	24.1				655.0
	3	170	5	-	-	248.9	180.5	127.9	73.6	24.1				655.0
56	1	170	5	-	-	267.0	192.3	135.9	76.8	24.0				696.0
	2	170	5	-	-	267.0	192.3	135.9	76.8	24.0				696.0
	3	170	5	-	-	267.0	192.3	135.9	76.8	24.0				696.0
58	1	170	5	-	-	282.7	203.6	143.9	81.4	25.4				737.0
	2	170	5	-	-	282.7	203.6	143.9	81.4	25.4				737.0
	3	170	5	-	-	282.7	203.6	143.9	81.4	25.4				737.0

with those from standard plots to provide increasingly reliable estimates of forest growth in the inventory.

Loss Factors and Forest Depletion

Logging utilization and breakage were studied on twenty Coast and Interior operations. During the year, this work involved making detailed measurements on 3,061 trees. The over-all objective in this work is the provision of reliable and realistic reduction factors applicable to estimates of sound-wood volume, to account for losses due to logging and utilization practices during the maintenance inventory cycle.

In connection with the derivation of annual forest depletion due to various causes, 10,609 timber-sale, fire, and inspection reports were processed in 1958. Seventeen requests were received from public and private agencies concerning the application of loss factors and volume tables in various localities. Compilations were made to meet the specifications of each request and to supply the necessary statistics.

SURVEYS IN CROWN FOREST UNITS

The work of bringing surveys of all Crown forest units up to an acceptable standard continued. Limitations of funds restricted progress, and only one unit—Cape Scott Public Working Circle—was intensively surveyed during the year. Forest types in this working circle were reclassified, fuel-type hazard ratings were recorded, and the number of sample plots was increased significantly. Forest-cover maps and the related statistics for this unit will be available early in 1959.

A number of previously published Forest Resources Bulletins concerning public working circles and sustained-yield units were amended. The amendments were necessary to account for boundary changes, improved sampling, and changing concepts of utilization and accessibility.

Amendments were printed and distributed for:—

Bulletin No. 23: Spallumcheen Forest Unit Survey Report.
Bulletin No. 25: Niskonlith Forest Unit Survey Report.
Bulletin No. 35: Kettle Forest Unit Survey Report.
Bulletin No. 36: Arrowhead Forest Unit Survey Report.
Bulletin No. 37: Edgewood Forest Unit Survey Report.
Bulletin No. 39: Nakusp Forest Unit Survey Report.
Bulletin No. 40: Slocan Forest Unit Survey Report.
Bulletin No. 41: Creston Forest Unit Survey Report.

As it becomes possible to improve or commence surveys in Crown forest units, this type of work will grow in scope. Its objective is to provide reliable maps and statistics describing the forest growing stock, so that essential management planning and control may be implemented in each unit.

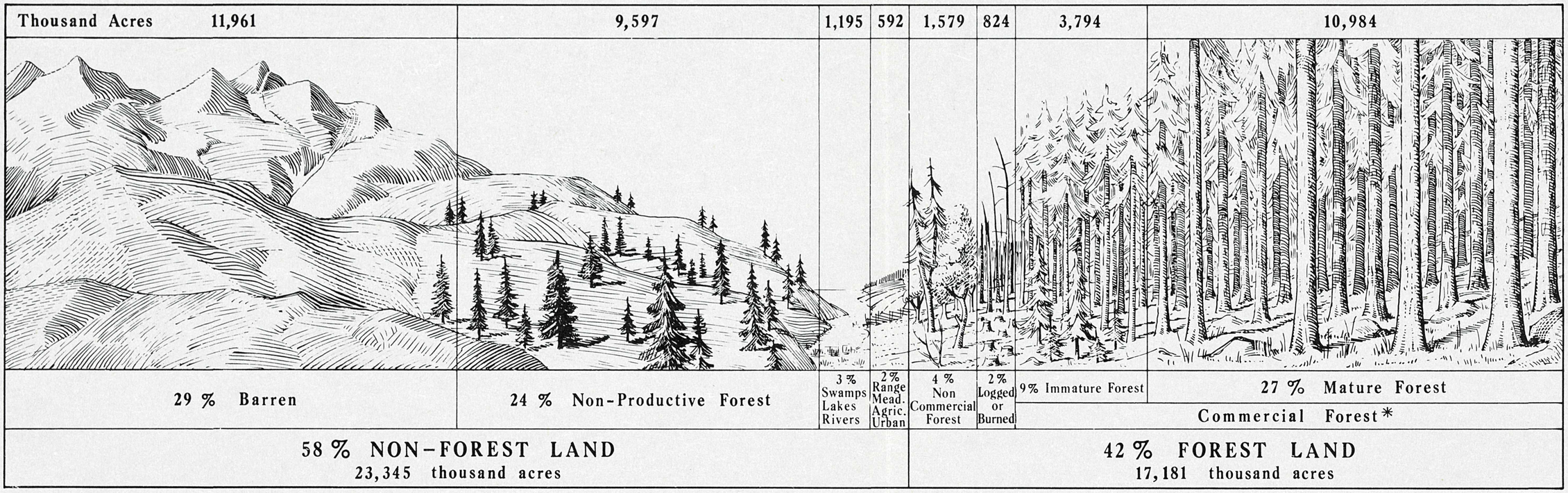
FOREST RESOURCES REPORT

During the year a comprehensive resources report, "Continuous Forest Inventory of British Columbia—Initial Phase 1957," was completed and preliminary distribution commenced. This report, eighteen months in the making, contains 160 detailed tables and lists statistics which have not been previously presented in any form. Among the striking facts presented in this publication are:—

Currently in Interior British Columbia, more annual depletion of forest resources results from disease than from logging.

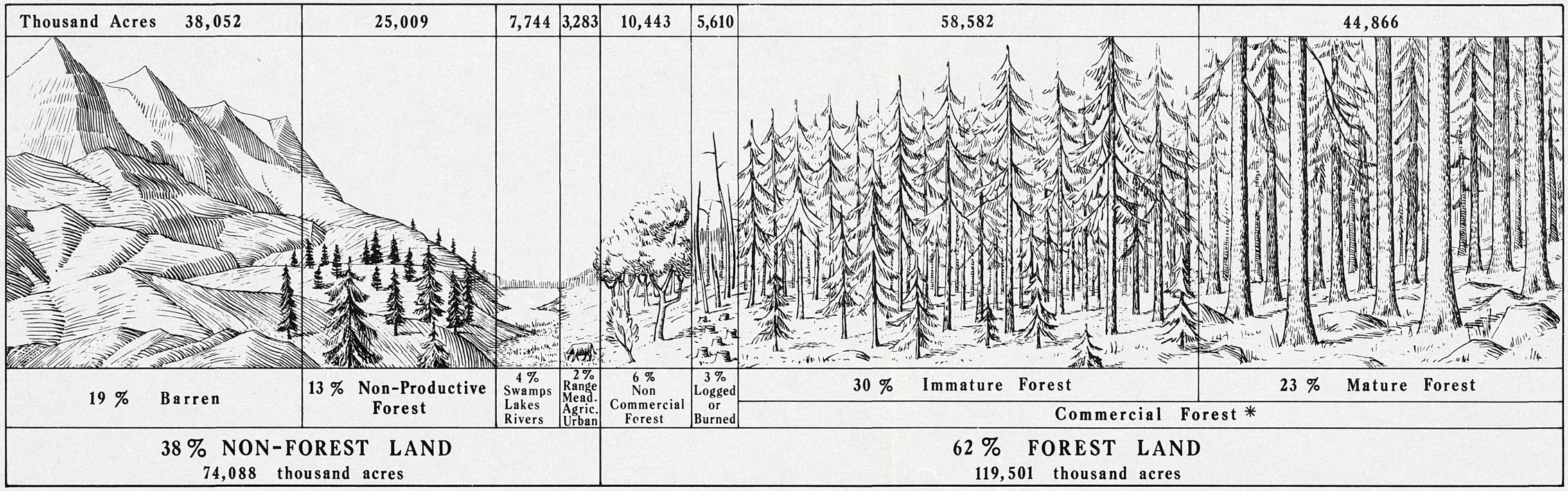
All commercial forests in the Province under full development and utilization can ultimately support a continuous annual harvest of more than 3 billion cubic feet.

COAST FORESTS



Total Area of Coastal British Columbia 40,526,130 Acres

INTERIOR FORESTS



Total Area of Interior British Columbia 193,589,201 Acres

Diagrams illustrating conditions found by Forest Surveys and Inventory Division-1951-1957.
Total Area-234,115,331 Acres, or 365,805 Square Miles.

* Including selectively logged forests

Figure 1

SOUND WOOD VOLUME IN COMMERCIAL FORESTS OF BRITISH COLUMBIA

VOLUME BY SPECIES

(percentages)

Total 376,918 million cu. ft. in trees 4″d.b.h.+

VOLUME BY VARIOUS D.B.H. LIMITS

(millions cu. ft.)

Total 376,918 million cu. ft. in trees 4″d.b.h.+

VOLUME BY OWNERSHIP

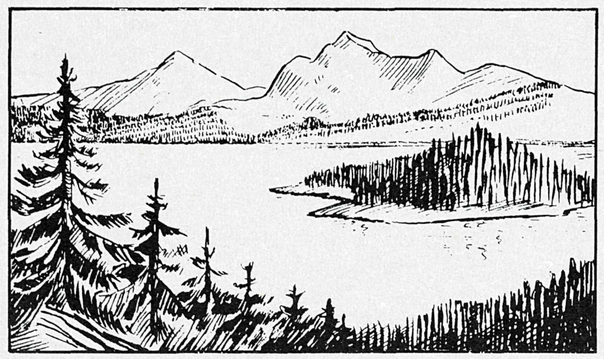
(millions cu. ft.)

Total 376,918 million cu. ft. in trees 4″d.b.h.+

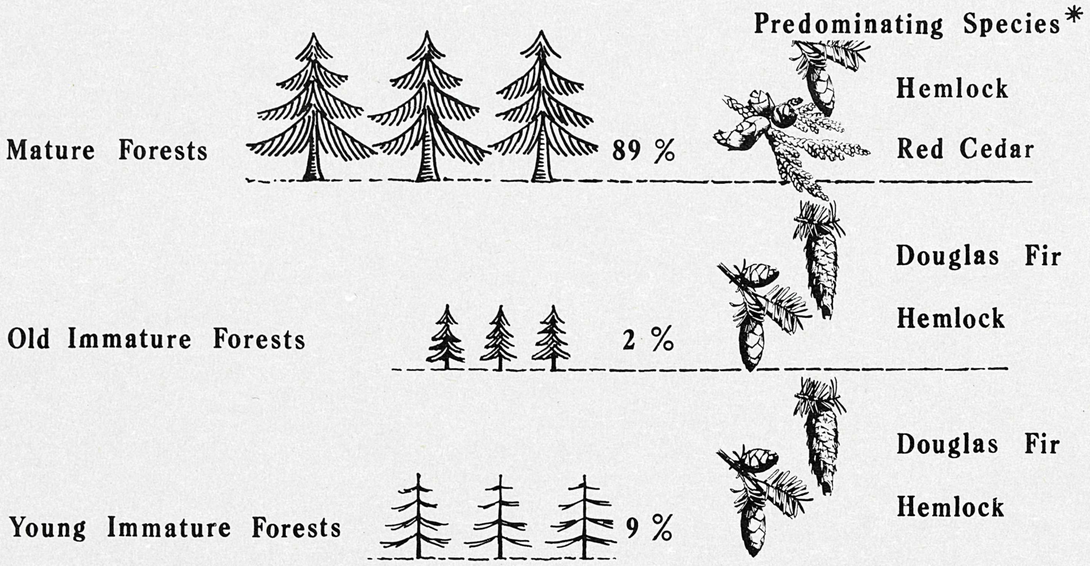
Federal
2,610

VOLUME BY AGE GROUPS

COAST

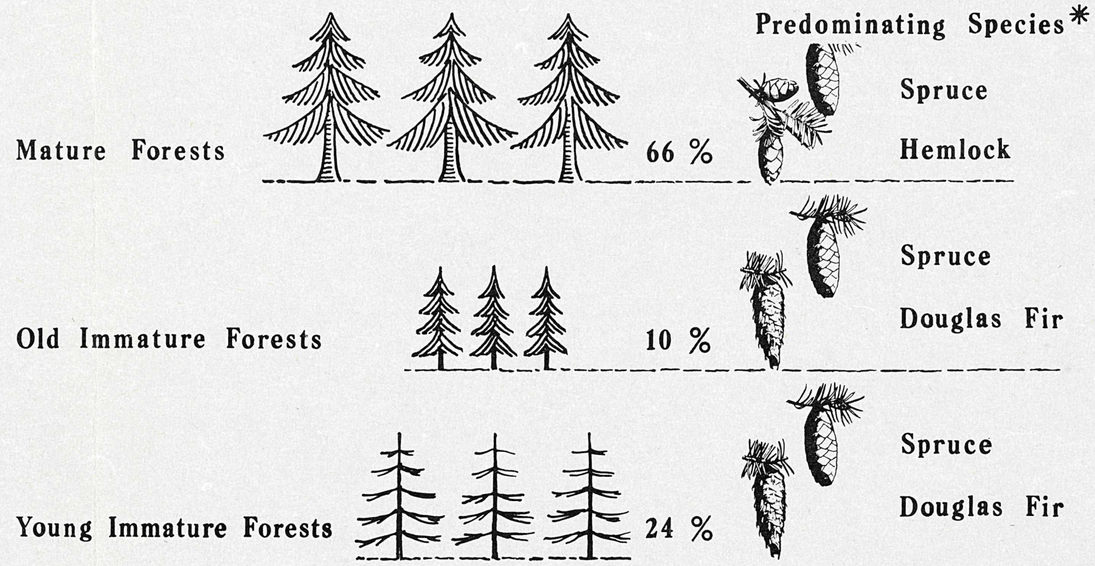


Commercial Forest‡ 14,775 million acres.
Total Volume 89,496 million cu. ft. in trees 10″d.b.h.+



INTERIOR

Commercial Forest‡ 103,151 million acres.
Total Volume 216,861 million cu. ft. in trees 10″d.b.h.+

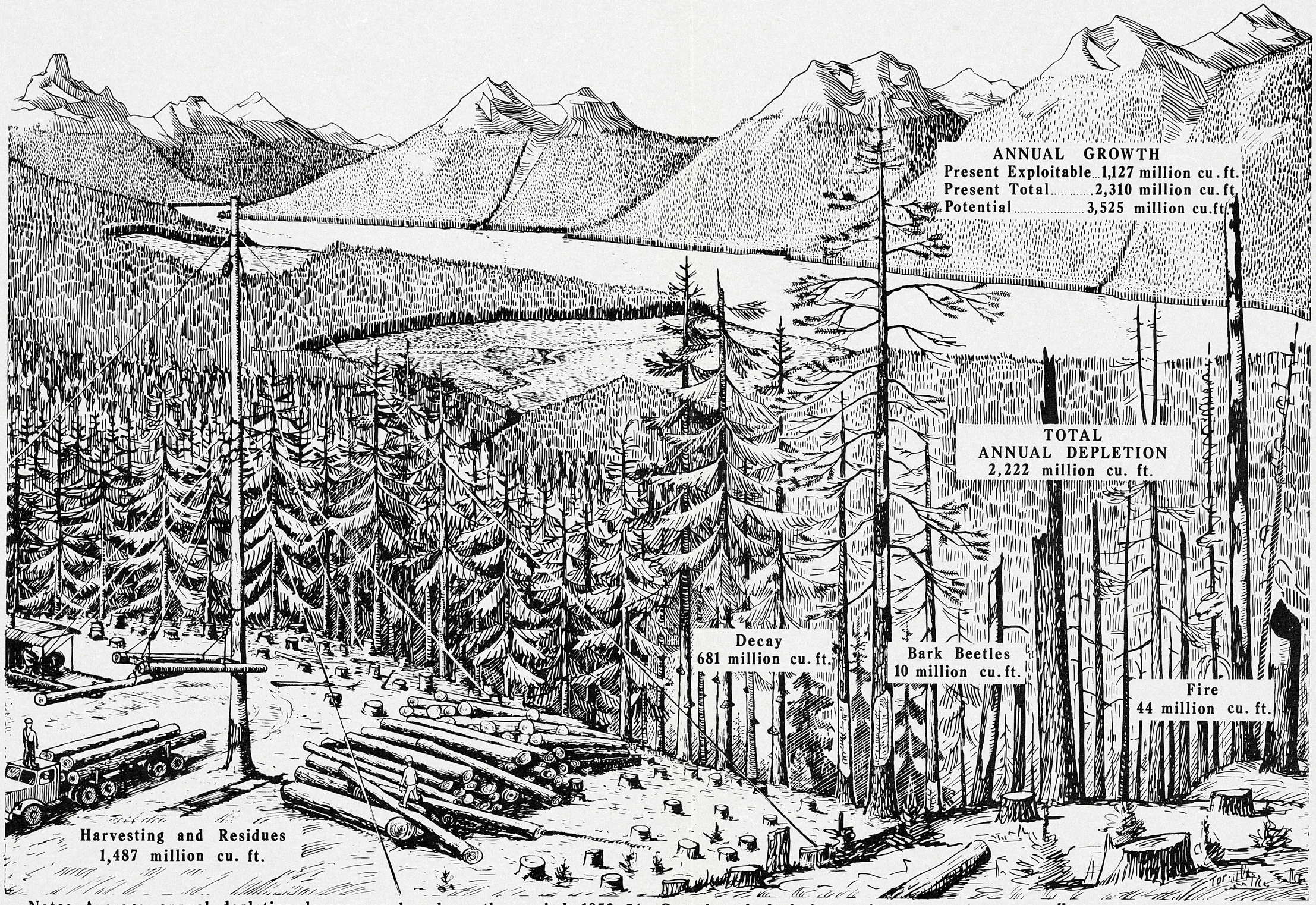


*Excluding presently non merchantable Lodgepole Pine and Deciduous Species.

‡Excluding selectively logged forests.

Figure 2

AVERAGE ANNUAL GROWTH AND DEPLETION IN FORESTS OF BRITISH COLUMBIA



Note: Average annual depletion losses are based on the period 1952-56. Growth and depletion estimates are for trees 4″ d.b.h. and over.

Figure 3

Spruce is the predominant species in British Columbia, contributing 113 billion cubic feet to the total of 377 billion cubic feet of sound wood in trees 4 inches and over in diameter at breast height, in commercial forests.

An area classification by ownership for the Province is presented in Table 67 in the Appendix, and a corresponding volume summary in Table 68.

Diagrammatic representations of the area, volume, growth, and depletion in forests of British Columbia (*see* Figs. 1, 2, and 3) have been made from tables in the forest resources report.

COMPUTATIONS OF STATISTICS

Progress in computation of field data continued with the objectives of providing quick and accurate statistical forest reports for sub-zones in the continuous inventory programme and for Crown forest units.

Computation of volumes on forest-inventory samples by means of electronic punch-card and machine systems was the major operation. Diameter-class loss factors were applied to all inventory samples established between 1953 and 1958. Integrated with the results of these computations was the planimetry of forest types on new forest-cover maps.

A programme for deriving forest and non-forest areas from dot-counts on aerial photographs was developed. Its purpose was to provide area statistics in regions which were classified but for which maps were not yet completed.

Investigations were made into the possible use of a digital computer for the solution of presently time-consuming, complex, and expensive analyses of survey data and research problems. The need for high-speed data-processing equipment became increasingly evident during the computation phase of the recently completed forest resources report.

Thirty-five requests for statistical summaries were received and acted upon. These summaries included a total productive area of over 21 million acres and almost 30 billion cubic feet of mature timber.

LIAISON WORK

Through the Forest Service Work Committee, a close liaison was maintained between this Division and other public agencies. On request, several projects were undertaken. These are listed below:—

(1) Fire-hazard maps were prepared for twelve Crown forest units.
(2) Priority of cutting estimates was presented at the request of various Forest Service offices for all, or part, of seven Crown forest units.
(3) Key maps showing the 8-inch focal length air photography programme by priority of area were assembled for an area of 49,000 square miles.
(4) Operational maps showing the location and nature of 1958 projects, being carried out by five different Government agencies, were prepared and sent to each District Forester in the Province.
(5) Statistics concerning the history of past fires in dry-belt Douglas fir types were prepared at the request of the Kamloops Forest District.

Responsibility for processing all Forest Service air photograph requirements was assigned to the Forest Surveys and Inventory Division.

FOREST RESEARCH

As in the past two years, technical details of research projects will be published in the Forest Research Review. This is a very brief statement of the programme for 1958 as undertaken by the experiment stations and field parties throughout the Province.

COWICHAN LAKE EXPERIMENT STATION

The annual programme of maintenance and improvement in the forest and buildings was shared with the Reforestation Division.

By timber sale, 20 acres have been clear-felled to provide additional out-planting areas for genetic research and 30 acres are being thinned on a commercial basis. An interesting feature of this thinning will be the first use in British Columbia of the " tree farmer," a rubber-tired yarding-machine designed especially for working in second-growth stands.

Site preparation of 5 acres has been completed for the establishment of a trial of mixed species planted alongside pure crops of the same species at three levels of wide spacing. The species to be planted are Douglas fir, western hemlock, and grand fir.

The Vancouver Island Section of the Canadian Institute of Forestry held a field and dinner meeting at the station, where a programme invited members to participate in guided activities such as cruising, marking, pruning, and plant identification.

Students of the Forest Service Ranger School spent four days of field instruction on research and reforestation activities in the Cowichan area. During the same week a conference of all District Silviculturists from other regions of British Columbia afforded an opportunity to discuss and demonstrate projects during part of their programme.

ALEZA LAKE EXPERIMENT STATION

The Aleza Lake Station was open from early June to mid-December and was occupied by a small crew engaged in maintenance and development work, as well as by research personnel. During this period, 1¼ miles of the West Branch Road was constructed, and preliminary ditching and right-of-way clearing undertaken on an additional half-mile. The East Branch Loop Road was located, and a start made in felling 3½ miles of right-of-way. A 10-acre tract was cleared for a permanent nursery-site.

The research on cutting methods was continued, two sales in the clear-cut working circle being completed, while in the long-term selection-cutting working circle one sale is active and a second is being cruised and marked.

Twenty-three permanent growth-and-yield plots were remeasured. In co-operation with the Experimental Farms Service, Canada Department of Agriculture, a study was made of soil and drainage conditions in relation to site quality and the vegetative cover.

The Experiment Station was used as a training-school for district silvicultural crews for one week in October.

FIELD PROGRAMME

Fourteen field parties were employed during the summer season, with work being undertaken in all forest districts.

Ecological studies involving climatic influence were continued in the Elk Valley, on Vancouver Island. Two additional climatic stations were established, and the measurement of evaporation and wind were added to precipitation and temperature records. Phenological observations on pollen-dispersal, radial growth, and date of flushing have now been started. Studies on microclimate and soil conditions were continued on a slash-burned site and in a thinned second-growth stand.

In view of the present interest in scarification as a means of preparing seed-beds for natural regeneration in spruce-alpine fir forest types, a study has been initiated to

determine the length of time such seed-beds remain effective. This is rather important as the occurrence of seed-crops is sporadic and the seed-bed deteriorates progressively as the competitive vegetative cover invades the soil surface.

The ecological classification of lodgepole pine sites of the Southern Interior (reported last year) has been completed. The investigation has now been extended to the Central Interior, where it is apparent that new or modified site-types occur.

Tabulation of Active Research Projects, 1958

Experimental Project No.	Title	Region
226	Cone production, immature Douglas fir, Vancouver Island	Southern Coast.
274	Cone production, mature stands Douglas fir, Vancouver Island	Southern Coast.
368	The adaptability of tree species to forest sites	Southern Coast.
371	Cutting methods in overmature spruce-alpine fir type	Southern Interior.
374	Group seed tree study	Southern Coast.
382	Field nursery experiments, Cranbrook	Kootenay.
383	Fertility studies, Green Timbers Nursery	Southern Coast.
384	Lodgepole pine thinning	Kootenay.
385	Lodgepole pine thinning	Kootenay.
387	Factors affecting the reproduction of conifers in the spruce-alpine fir type	Central Interior.
428	Survival of spruce transplants	Southern Interior.
436	Douglas fir cone stimulation study	Southern Coast.
438	Effects of slash burning on soil productivity	Southern Coast.
458	Seed production and dispersal under various stand conditions in the spruce-alpine fir type	Central Interior.
459	Seed production of spruce in relation to its morphological characteristics in the spruce-alpine fir type	Central Interior.
460	Seed production of conifers in relation to climate	Central Interior.
463	Natural regeneration in a western red cedar-hemlock forest	Kootenay.
465	Plantation of exotic species	Southern Interior.
466	Exploratory direct seeding study	Southern Interior.
467	Regeneration studies in the spruce-alpine fir type	Southern Interior.
468	Annual record of cone crops	Southern Interior.
469	Douglas fir thinning, Campbell River	Southern Coast.
472	Exploratory direct seeding study	Kootenay.
474	Inbreeding experiments with Douglas fir	Southern Coast.
477	A study of phenotypes in Douglas fir	Southern Coast.
478	Phenotypic selection in open grown Douglas fir	Southern Coast.
479	Plus tree selection for Douglas fir seed orchards	Southern Coast.
480	Co-operative seed provenance study of Douglas fir	Southern Coast.
482	Climate and the altitudinal distribution of conifers	Southern Coast.
483	Record of plantations of exotic species throughout British Columbia	
485	Preliminary ecological classification of lodgepole pine sites	Southern Interior.
487	Studies on seed dispersal of Douglas fir	Southern Interior.
489	Stand condition classification of spruce-alpine fir types	Central Interior.
494	Trial of four poison treatments of Douglas fir seed	Southern Coast.
495	Seed spotting of Douglas fir	Southern Coast.
496	Co-operative aerial seeding project	Southern Coast.
497	Crop tree thinning in Engelmann spruce	Southern Interior.
498	A tentative prediction of thinning yields in Douglas fir	Southern Coast.
502	Planting trials	Northern Coast.
506	A study of microclimate and soil conditions in a thinned and unthinned stand of Douglas fir	Southern Coast.
510	Planting trials	Kootenay.
511	Crop tree thinning of western larch	Kootenay.
512	Seeding and planting trials, Wasa burn	Kootenay.
513	Planting of exotic conifers for future hybridization with related coastal species	Southern Coast.
515	The pattern of Douglas fir seedfall from a helicopter	Southern Coast.
516	Direct seeding of Douglas fir in conjunction with the Elk River Timber Co.	Southern Coast.
517	Crop tree thinning and pruning in ponderosa pine	Southern Interior.
518	An investigation of some of the problems affecting regeneration on the west coast of Vancouver Island	Southern Coast.
520	Direct seeding of spruce	Central Interior.
521	Direct seeding of spruce	Southern Interior.
522	Direct seeding of spruce	Kootenay.
523	Seed-bed soil amendment trials, Cranbrook Nursery	Kootenay.
525	Swamp regeneration, Interior wet belt type	Kootenay.
526	Fertilizing a 1952 Douglas fir plantation	Southern Coast.
527	Fertilizing a Douglas fir plantation on a recent slash burn area	Southern Coast.
528	Influence of time on effectiveness of scarified seedbeds	Central Interior.
529	Regeneration problems in decadent red cedar-hemlock stands	Southern Interior.
530	Morphological characteristics of selected trees and their progeny	Southern Coast.
531	Anatomical characteristics of selected trees	Southern Coast.

A preliminary investigation of regeneration problems on the west and north-east coasts of Vancouver Island was completed. Recommendations for future forest practice have been made and a research programme formulated for this region.

Experiments in scarification of spruce-alpine fir types were continued, with three trials in the Kamloops region using conventional tractors and blades.

The plantation of exotic species near Clinton was enlarged by planting a number of Scots pine (*Pinus sylvestris* var. *rigensis* L.), Japanese red pine (*Pinus densiflora* Sieb & Zucc.), Japanese black pine (*Pinus thunbergii* Parl.), and European larch (*Larix decidua* Mill.). Due to the severe drought conditions, survival was poor. An interesting study involves the planting of white spruce throughout the growing season at Prince George. In spite of the exceptionally dry summer, survival of spruce planted in July was 42 per cent, while survival in August and September was 90 and 100 per cent respectively.

There was considerable activity in the field of genetics during the year, and again work was concentrated on Douglas fir. In early spring, scions were shot down from all " plus " trees selected in 1957, and these were successfully grafted on to root stock for testing. A further ten " plus " trees were selected during the summer, completing the initial selections for a high-elevation seed orchard. A joint project with the Forest Products Laboratory, in Vancouver, has been initiated to check on wood characteristics such as specific gravity, fibre length, and the severity of spiral grain as genetic factors in these selections.

In view of the new and enlarged facilities for cone extraction and seed storage established by the Reforestation Division at Duncan, a series of studies has been started which will lead to standardized methods for the handling and storage of cones and the extraction of coniferous seed. The seed will be tested for storage characteristics and for viability by germination tests. This year's work dealt with ponderosa pine.

In co-operation with the Soils Laboratory, University of British Columbia, a comprehensive study of soil fertility at the Green Timbers Nursery was continued. Important information on nitrogen and phosphorus levels with respect to 1- and 2-year-old seedlings was obtained. At the Cranbrook Nursery, a study was initiated dealing with various amendments to correct adverse physical and chemical soil conditions.

Studies of direct seeding with treatment of the seed for rodent-control were continued. The seeding of Douglas fir in co-operation with the Elk River Timber Company, referred to in the 1957 Report, was examined and the results were very promising in spite of a most unfavourable hot, dry, spring period. The area was found to be 68 per cent stocked with seedlings from treated seed. Other trials with spring sowing of treated Engelmann spruce in Prince George and Kamloops were not successful, due to exceptionally dry spring months.

A comprehensive analysis of a large number of Douglas fir thinning plots, both in Europe and this country, resulted in the formulation of a tentative method of forecasting yields according to any thinning regime. This report is in process of publication. Thinning studies of Engelmann spruce and ponderosa pine in the Kamloops region were completed, as well as a larch-thinning in the East Kootenay.

RESEARCH PUBLICATIONS, 1958

Forest Research Review for year ending March, 1958.

Dick,* James; Finnis, J. M.; Hunt,† Lee O.; and Kverno,‡ Nelson B.: Treatment of Douglas fir seed to reduce loss to rodents. Journal of Forestry, Vol. 56, No. 9, 1958.

Knight, H.: Test to determine acceptability of sawdust as a seedbed cover. Tree Planters Notes No. 31, U.S. Department of Agriculture, 1958.

* Research Forester, Weyerhaeuser Timber Company.
† Forester, U.S. Bureau Land Management.
‡ Biologist, Denver Laboratory, U.S. Fish and Wildlife Service.

Molnar,* A. C., and Garman, E. H.: Introduction of exotic trees to British Columbia, British Columbia Lumberman, March, 1958.

Stettler, R. F.: Development of a residual stand of Interior spruce-alpine fir during the first twenty-eight years following cutting to a 12-inch-diameter limit. Research Note No. 34, 1958.

* Forest Biology Laboratory, Victoria.

REFORESTATION

FOREST NURSERIES

The dominant factor in the 1958 nursery-year was the prolonged drought. For the first time in the history of the three Coast nurseries, 2-year-old seedlings had to be irrigated. Even so, there was some loss due to drought. In one nursery, the watering apparently caused some seedlings to break dormancy and start further growth late in the season. As a result, some lots have suffered considerable frost damage.

The three Coast nurseries shipped a total of 2,730,000 two-year, 20,000 two-one, and 1,432,000 one-year seedlings during the spring. In the fall, a further 3,781,400 two-year, 8,000 two-one, and 59,000 one-year seedlings were sent out. Total production on the Coast was 8,030,400.

The East Kootenay shipped 566,100 seedlings, mainly two-year ponderosa pine.

During the spring 1,045 seed-beds were sown on the Coast and 199 in the East Kootenay, for a scheduled 9,200,000 seedlings. Drought damage reduced seedling yields somewhat at two Coast nurseries, as did an epidemic of the variegated cutworm *(Peridroma margaritosa* How.). The cutworms, which operate mainly at night, did considerable damage before they were discovered and controlled with bait. The yield was also poor in the beds at the East Kootenay nursery.

A limited number of nursery beds were established at two Ranger stations in the Prince George Forest District and one in the Prince Rupert District. These beds were set up by nursery personnel from the Coast, and maintenance was provided or supervised by the local Ranger staff or silviculture crew personnel. The purpose of these beds is to learn some of the problems of nursery operation in these districts as well as to provide a limited amount of spruce planting stock.

Spruce planting stock is also being produced for the northern districts at the Green Timbers Nursery. An estimated 134,000 two-year spruce seedlings will be available for planting in the spring of 1959, and 400,000 the following year. Spruce is notorious for uneven growth in the first few years, but the longer growing season in the southern Coastal district permits the production of a high percentage of plantable seedlings in two years. The balance, which are too small for field planting, will be transplanted either at Green Timbers or in the northern districts. Spruce starts growing very early at Green Timbers, but it is hoped that this can be prevented by early lifting and cold storage until the most favourable planting season in the North.

Several new procedures were tested at Coast nurseries to try to improve production of balsam and hemlock. At the East Kootenay nursery, twenty-four beds were set up by the Research Division in an effort to improve the technique for growing spruce.

In the four nurseries, a total of some fifty seed-lots were sown.

SEED COLLECTIONS

The Douglas fir cone-crop on the Coast was a complete failure. In the Interior, however, ponderosa pine produced a bumper cone-crop. A total of 973 bushels of ponderosa pine cones was collected under strict supervision of reforestation personnel in the East Kootenay and Granby areas. Minor quantities of Interior Douglas fir and larch were also collected.

The two seed-production areas already established were pruned and fertilized and all competing brush and herbaceous vegetation sprayed to kill or prevent resprouting. Two new seed-production areas totalling 12 acres were located and laid out in the Chilliwack Public Working Circle.

The seed-extraction plant at Duncan is being modified to increase the capacity.

Germination tests were carried out during the early spring on seed to be sown in the nurseries. Over 100 tests were involved.

Some thirty-five different lots of seed are being stored for the industry at 0° F. in the Duncan seed-store. Each of these lots was subjected to a purity analysis, germination test, and moisture determination before being registered and stored at 8 per cent moisture content.

Numerous reproductive buds on twigs taken from various locations indicate a possible bumper Douglas fir cone-crop on the Coast next spring.

RECONNAISSANCE AND SURVEY WORK

Regeneration surveys were hampered by extended forest closures, which precluded field work during much of the summer. The open spring and fall, however, permitted detailed surveys to be completed on six projects totalling 13,874 acres. Of this total, 8,770 acres were found to be not satisfactorily restocked and in need of planting.

A reforestation crew, under the supervision of the Forest Surveys and Inventory Division, carried out regeneration surveys over 21,675 acres in the Chilliwack Public Working Circle and Fraser Canyon (Yale Sustained-yield Unit), where 10,009 acres, or 46 per cent, were found to be in need of reforesting. A similar survey in the Creston and Grand Forks areas, covering 29,816 acres, revealed 14,145 acres, or 47 per cent, to be in need of reforesting. In all, 65,355 acres were examined.

In the East Kootenay, some fifty-four major N.S.R. ponderosa pine types were examined and classified as to site index and suitability for planting.

PLANTING

The open spring and scarcity of snow even at higher elevations permitted an early start on the spring planting programme. On the Coast, one Reforestation Division project was completed by February 28th and two others on March 28th. In all, Reforestation planted 360 acres of Crown land and 1,346 acres of private land under contract. The industry continued planting later in the season and completed 5,145 acres.

The sustained summer drought depleted soil moisture so much that it was too dry to commence fall planting until mid-October. The Reforestation Division planted 711 acres of Crown land and an additional 782 acres of private land under contract. Industry planted 6,037 acres.

In the Interior, the Reforestation Division planted 597 acres in the spring while industry planted 111 acres. In the fall, the soil generally remained too dry for planting until freeze-up time. Thirty acres were planted at a high elevation by a Nelson District silviculture crew.

Total planting in the Province for the year, by all agencies, amounted to 8,596,500 trees on 15,320 acres (*see* Table 2 of Appendix for statistics of planting over the past ten years).

Planting stock was distributed to some fifty individuals and agencies as well as to twelve Forest Service projects.

Under the guidance of the Research Division, studies were continued to improve the effectiveness of planting techniques. Limited cold-storage facilities at the Duncan Nursery permitted the holding of some stock. This was planted out periodically throughout the late spring, with excellent results. Indications are that, cold storage being available, the spring planting season can be lengthened considerably on the Coast. This test is to be repeated on a more comprehensive scale.

PLANTATION IMPROVEMENT AND MAINTENANCE

At the Green Timbers Forestry Station, a 10-acre red pine plantation was cleaned of competing deciduous brush and pruned to 6 feet. Additional work was done in some of the younger plantations to remove competing brush and weeds.

On Vancouver Island, approximately 64 miles of existing road was maintained and one-quarter mile of new road constructed to by-pass an old bridge. Plantation roads left for as little as five years without maintenance have been found so choked with alder that they are impassable. Often, roads are completely washed out when drainage becomes plugged during heavy rains. Such roads must be kept open for fire protection and general forestry access.

Preparation of Planting-sites

This phase of the reforestation programme, like most others, was affected by the abnormally dry summer and resultant forest closures.

Snag-falling projects were carried on at Vedder Mountain, Cowichan Valley, Ash River, and in the Campbell River area, where reforestation crews felled a total of 56,032 snags over an area of 2,035 acres.

In the Robertson River Valley, 45 acres of vine maple were sprayed to prevent the spread of this troublesome weed species and make the area ready for planting next year. A basal spray using *2,4,5-T* in stove-oil was applied from back-pack pumps and a roadside spray unit during March. An additional 28 acres were bulldozed clear of deciduous brush, mainly vine maple, to prepare for Research Division outplantings on which the Reforestation Division is co-operating.

In the Chilliwack Public Working Circle workers from the Attorney-General's Department, under Reforestation Division supervision, prepared 10 acres for planting by felling and burning all deciduous brush.

PERMANENT IMPROVEMENTS

At the Duncan Nursery, a 24- by 70-foot cone-drying shed was constructed in connection with the extraction plant. Preparatory work commenced on the enlargement of the plant by the installation of a batch-type dry-kiln for cone-drying. A 16- by 16-foot lath house was constructed for use in the tree-breeding and seed-orchard programmes. A small building was moved from Cowichan Lake and set up for use as a nursery office.

At the Cowichan Lake Experiment Station, a permanent thirty-two-man dormitory was completed and the surrounding grounds landscaped.

At the Green Timbers Nursery, a root-cellar was modified and refrigeration equipment installed to permit cold storage of 1,000,000 seedlings.

WORKING PLANS

INTRODUCTION

In addition to the Division's regular activities of sustained-yield planning, a considerable amount of time was spent in collecting and compiling essential information for the Honourable Gordon McG. Sloan, Forest Adviser, in connection with hearings conducted in the Chilliwack and Squamish areas.

During the year, the first of the new tree-farm licences, formerly referred to as forest management licences, was awarded, as a result of new legislation enacted during the 1958 Session. It is expected that others, which were recommended for approval in the Royal Commission report of 1956, will be awarded in the coming year.

There was a somewhat lessened interest in farm wood-lot licences. This was fortunate, as the more pressing nature of other phases of the Division's work made it necessary to redirect the efforts of farm wood-lot personnel. They conducted special field studies on a number of sustained-yield units.

With the greater part of the Province's more accessible forests already committed to sustained-yield management, the need for more intensive forestry practices to be undertaken in the existing units becomes increasingly urgent. During the coming year, this Division, with the co-operation of others, will endeavour to direct a part of its activities toward this objective. Special attention will be given to working-plan preparation for sustained-yield units where the need is greatest.

SUSTAINED-YIELD UNITS*

Four new sustained-yield units were approved during the year, bringing the total to sixty-one. Actually, the 1957 total was increased by three, as the new Yale Sustained-yield Unit includes the area formerly referred to as the Fraser Canyon Public Working Circle.

Sustained-yield Units Approved in 1958.

Name of Sustained-yield Unit	Forest District	Productive Area (Acres)	Annual Allowable Cut (M C.F.)
Yale	Vancouver	402,726	20,000
Hecate	Prince Rupert	1,069,259	15,500
Kitwanga	Prince Rupert	529,416	3,000
Robson	Prince George	486,617	7,000
Totals		2,488,018	45,500

There are now 32,389,900 acres under this form of management with a combined annual allowable cut of 379,650 M cubic feet.

As information from improved forest-inventory surveys was received, allowable annual cuts for twelve existing management units were recalculated. This resulted in allowable cuts being revised for the following areas:—

Name of Sustained-yield Unit	Forest District	Revised Annual Allowable Cut (M C.F.)
Graham	Prince Rupert	8,600
Carp	Prince George	6,600
Cottonwood	Prince George	5,350
Stuart	Prince George	7,500

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

TREE-FARM LICENCES*

Four tree-farm licences were awarded during the year. There are now twenty-seven such licences in good standing, as listed below:—

T.F.L. No.	Forest District	Name of Licence	Licensee	Productive Forest Area (Acres)	Annual Allowable Cut (M c.f.)
1	Prince Rupert	Port Edward	Columbia Cellulose Co. Ltd.	795,208	22,000
2	Vancouver	Duncan Bay	Elk Falls Co. Ltd.	280,558	15,000
3	Nelson	Little Slocan	Passmore Lumber Co. Ltd.	100,085	2,000
4	Vancouver	Blind Channel	I. W. McDonagh	3,881	208
5	Prince George	McKenzie-Cariboo	Western Plywood (Cariboo) Co. Ltd.	81,410	2,500
6	Vancouver	Quatsino	Alaska Pine & Cellulose Ltd.	296,210	18,000
7	Vancouver	Salmon River	Salmon River Logging Co. Ltd.	118,056	10,800
8	Nelson	Boundary Creek	Boundary Sawmills Ltd.	89,530	1,260
9	Kamloops	Okanagan (West)	S. M. Simpson Ltd.	170,633	1,680
10	Vancouver	Toba	Timberland Development Co. Ltd.	49,287	1,900
11	Nelson	Carmi	Olinger Lumber Co. Ltd.	64,787	800
12	Vancouver	Hardwicke	Bendickson Logging Co. (1939) Ltd.	15,487	1,330
13	Nelson	Bull River	Galloway Lumber Co. Ltd.	26,921	888
14	Nelson	Spillimacheen	Cranbrook Sawmills Ltd.	71,715	1,500
15	Kamloops	Inkaneep	Oliver Sawmills Ltd.	90,997	538
16	Kamloops	Monte Lake	Pondosa Pine Lumber Co. Ltd.	122,169	1,000
17	Vancouver	Knight Inlet	Evans Products Co. Ltd.	46,479	1,500
18	Kamloops	Clearwater	Clearwater Timber Products Ltd.	161,047	2,500
19	Vancouver	Tahsis	Tahsis Co. Ltd.	190,910	10,000
20	Vancouver	Tofino	MacMillan & Bloedel Ltd.	377,496	20,548
21	Vancouver	Alberni	MacMillan & Bloedel Ltd.	552,028	37,220
22	Vancouver	Maquinna	B.C. Forest Products Ltd.	276,645	16,100
23	Nelson	Arrow Lakes	Celgar Development Co. Ltd.	889,360	22,000
24	Prince Rupert	Moresby	Alaska Pine & Cellulose Ltd.	133,937	7,500
25	Vancouver-Prince Rupert	Naka	Alaska Pine & Cellulose Ltd.	298,821	14,400
26	Vancouver	Mission Municipal	Corporation of the District of Mission	16,113	425
27	Vancouver	Nitinat	Moore-Whittington Lumber Co. Ltd.	30,003	2,400
	Totals			5,349,773	215,997

TREE-FARM LANDS

Ten tree-farms under the " Taxation Act " were certified during the year, including two which will be managed primarily for the production of Christmas trees.

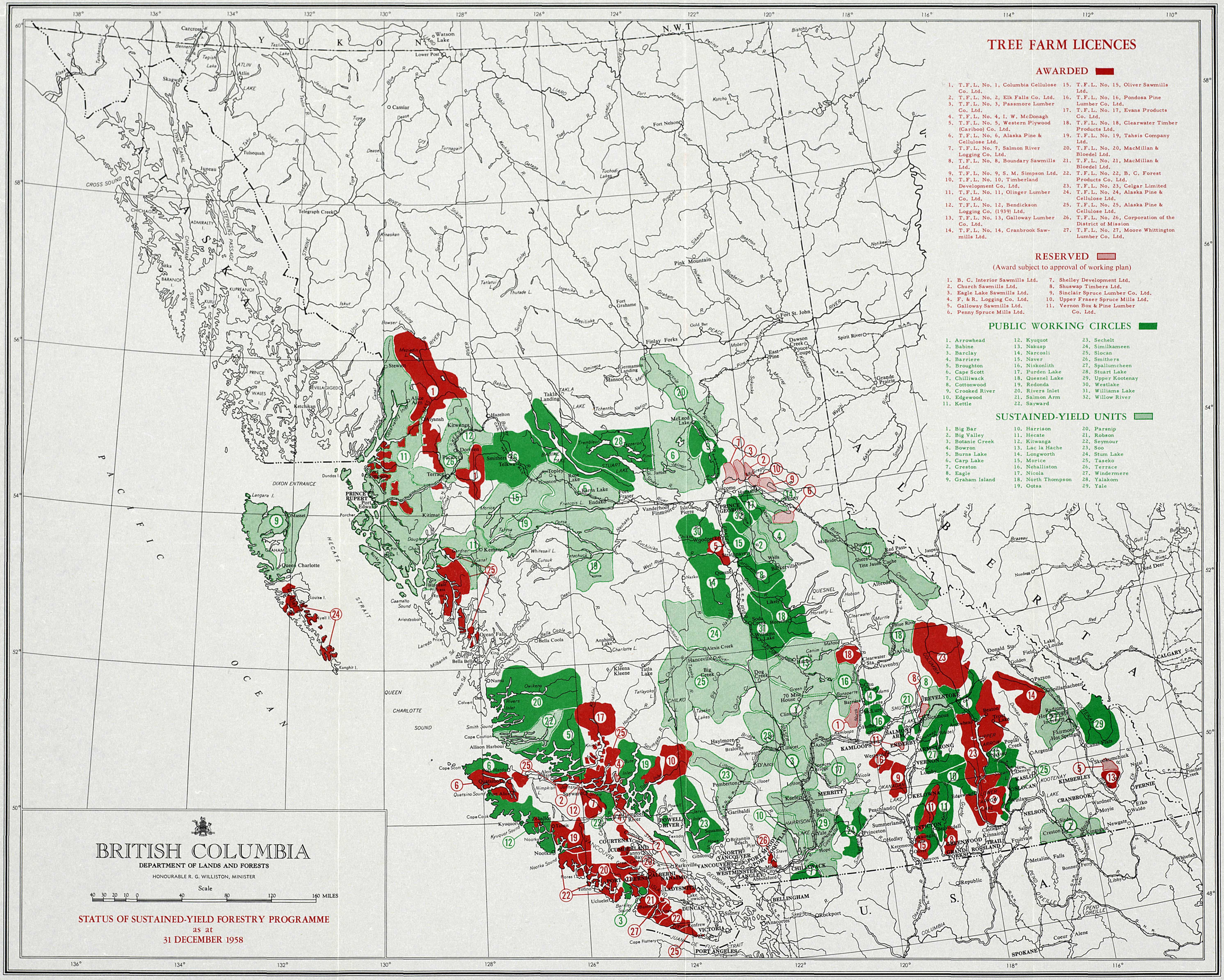
There are now thirty-six certified tree-farms with a total productive area of 738,561 acres and a combined allowable cut of 32,000 M cubic feet plus 387,000 Christmas trees. Ten of these tree-farms, with a productive area of 239,000 acres, are managed under the tree-farm licence legislation and are included in the table shown under that heading.

FARM WOOD-LOT LICENCES

Of the fifty-six farm wood-lot licences awarded since the passing of legislation in 1948, fifty were in good standing at the year's end. Eight licences were awarded during 1958.

A critical review of the procedures followed in processing wood-lot licences resulted in a substantial reduction in man-hours expended per licence awarded.

* Formerly referred to as forest management licences.


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 1958
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 Co. Ltd.
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, Alaska Pine & Cellulose 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, Alaska Pine & Cellulose Ltd.
25. T.F.L. No. 25, Alaska Pine & Cellulose Ltd.
26. T.F.L. No. 26, Corporation of the District of Mission
27. T.F.L. No. 27, Moore Whittington Lumber Co. Ltd.
RESERVED
(Award subject to approval of working plan)
1. B. C. Interior Sawmills Ltd.
2. Church Sawmills Ltd.
3. Eagle Lake Sawmills Ltd.
4. F. & R. Logging Co. Ltd.
5. Galloway Sawmills Ltd.
6. Penny Spruce Mills Ltd.
7. Shelley Development Ltd.
8. Shuswap Timbers Ltd.
9. Sinclair Spruce Lumber Co. Ltd.
10. Upper Fraser Spruce Mills Ltd.
11. Vernon Box & Pine Lumber 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 Lake
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 Creek
4. Bowron
5. Burns Lake
6. Carp Lake
7. Creston
8. Eagle
9. Graham Island
10. Harrison
11. Hecate
12. Kitwanga
13. Lac la Hache
14. Longworth
15. Morice
16. Nehalliston
17. Nicola
18. North Thompson
19. Ootsa
20. Parsnip
21. Robson
22. Seymour
23. Soo
24. Stum Lake
25. Taseko
26. Terrace
27. Windermere
28. Yalakom
29. Yale
YUKON
N.W.T.
ALBERTA
PACIFIC OCEAN
U.S.A.
Carcross
Watson Lake
Lower Post
Skagway
Atlin
Cassiar
Tulsequah
Juneau
Telegraph Creek
Fort Nelson
Pink Mountain
Fort Grahame
Fort St. John
Finlay Forks
Spirit River
Dawson Creek
Pouce Coupe
East Pine
Grande Prairie
Sitka
Ketchikan
Stewart
Alice Arm
Kitwanga
Hazelton
Dorreen
Terrace
Smithers
Telkwa
Topley
Houston
Burns Lake
Fort Fraser
Endako
Vanderhoof
Fraser Lake
McLeod Lake
Chetwynd
Tumbler Ridge
Dawson Creek
Fort St. John
Prince Rupert
Port Edward
Masset
Queen Charlotte
Kitimat
Kemano
Ocean Falls
Bella Coola
Namu
Port Hardy
Port Alberni
Nanaimo
Ladysmith
Duncan
Victoria
Port Angeles
Bellingham
Vancouver
New Westminster
Chilliwack
Abbotsford
Hope
Merritt
Kamloops
Salmon Arm
Vernon
Kelowna
Penticton
Princeton
Oliver
Osoyoos
Grand Forks
Trail
Nelson
Kaslo
Kimberley
Cranbrook
Fernie
Revelstoke
Golden
Banff
Calgary
Spokane
Coeur d'Alene
Cape Scott
Quatsino Sound
Cape Cook
Kyuquot Sound
Nootka Sound
Tofino
Ucluelet
Cape Flattery
Langara I.
Dixon Entrance
Hecate Strait
Queen Charlotte Sound
Cross Sound
Chichagof I.
Baranof I.
Prince of Wales I.
Graham I.
Louise I.
Kunghit I.
Haida Gwaii
Lake Cowichan
Gulf Islands
Strait of Juan de Fuca
Strait of Georgia
Columbia River
Peace River
Fraser River
Stikine River
Skeena River
Nass River
Liard River
Kootenay Lake
Okanagan Lake
Shuswap Lake
Quesnel Lake
Williams Lake
Prince George
Mackenzie
Dawson
Watson Lake
Fort Nelson
Fort Simpson
Fort Smith
Yellowknife
Hay River
Fort Resolution
Fort Chipewyan
Fort Vermilion
Fort Providence
Fort Rae
Fort Reliance
Coppermine
Bathurst Inlet
Cape Dorset
Frobisher Bay
Pangnirtung
Lake Harbour
Fort Chimo
Port Burwell
Fort Ross
Fort Resolution
Fort Chipewyan
Fort Vermilion
Fort Providence
Fort Rae
Fort Reliance
Coppermine
Bathurst Inlet
Cape Dorset
Frobisher Bay
Pangnirtung
Lake Harbour
Fort Chimo
Port Burwell
Fort Ross

PUBLIC INFORMATION AND EDUCATION

INTRODUCTION

Effective April 1st, 1958, the title of the Division was changed from Public Relations and Education to Public Information and Education as being more compatible with the concept of public service and more correctly descriptive of the principal functions of the Division.

Primarily due to the severity of the 1958 fire season, the demands on certain Divisional facilities reached a new high. This was particularly so in the supplying of information to press, radio, and television news media, whose urgent and continuous requirements for the facts on the Province's worst fire season resulted in two members of the staff being completely occupied on press liaison work for some six consecutive weeks.

In addition to the requirements of the news media, the heavy demands for information by the general public throughout the Province, during the five months of the fire season, accented as never before the serious need for the establishing of public information personnel at the forest district headquarters.

PHOTOGRAPHY AND MOTION PICTURES

Using over 4,000 feet of 16-mm. colour film, field-shooting and editing was completed on a new educational motion picture dealing with the matter of stand treatment, to be entitled " Mark of Progress." All this footage was taken in the Prince George Forest District, using district personnel as the cast. A shooting script, prepared by the Division, was used throughout the production and proved to be most worth-while from the standpoint of savings in time and funds. Sounding of the film should be completed early in the new year.

The two major films partially completed during 1957—" Food for Thought " and " Silva Survey "—were sounded early in the year and have been enjoying considerable circulation through the library. In addition, " Silva Survey " was entered in the International Film Festival in Vancouver and, with two other subjects previously produced by the Division, was included in the special Centennial film circuit for showing throughout the Province.

Two motion-picture projects on which the Division served as a co-operating agency reached fruition during the year. All location footage in the film " Counter Attack," released by the Government-Industry Joint Pest-control Committee, had been produced two years previously by the Divisional camera crew. Also, the Division served as a liaison and advisory agency on the Canadian Broadcasting Corporation Television Division's production " Dry Season," which was nationally televised during August, at the height of the fire season.

A thirty-second animated sequence, featuring the Centennial theme with a fire-prevention message, was produced for use in a one-minute 35-mm. trailer shown in commercial theatres throughout the Province.

The volume of photographic laboratory work continued at a normal level, with 170 rolls of film being developed, printed, indexed, and filed for other divisions of the Forest Service. Production of black and white negatives by the Photographic Section photographers reached a total of 620, the highest since 1955. Over 1,000 black and white negatives and 100 35-mm. colour slides were added to the files by the Section photographers. During July and August, Section photographers covered certain fire-line operations with considerable success, with several prints so produced being carried as feature front-page illustrations in metropolitan daily newspapers. Throughout the year over 800 photographic prints were supplied to the press and periodicals for use with news or feature articles.

A special sixty-three-slide set of colour 35-mm. transparencies was made up to illustrate a lecture on log-scaling, and each of the forest districts has been supplied with one of these sets for its use. Another special slide project was the production of eighty-two transparencies of tables and diagrams that appear in " Continuous Forest Inventory of British Columbia," recently completed by the Surveys and Inventory Division.

The Section embarked on a new project in the field of visual education with the completion of three 35-mm. filmstrips designed for use in the schools of the Province. These strips deal with " The Lookout," " The Forest Ranger," and " The Principal Commercial Trees of B.C."

Art work required for the illustrating and animating of motion-picture films and filmstrips required a total of 311 separate drawings by the Section staff.

Film Library

The total viewing audience for Divisional motion-picture film subjects showed a decrease of some 23,000 from the 1957 total of 148,124. The total of 126,216 reached in 1958 also fell short of the 1956 figure, indicating a decrease for the second consecutive year. This was almost entirely due to the fact that for the greater part of 1958 a shortage of staff in headquarters dictated that only one school lecturer was available for work in the field. What appears to be another contributing factor underlying the drop in attendance is the lack of new film material available to the general public. The majority of subjects in the library at the present time have been in stock for several years.

The above totals do not include circulation given five subjects lodged in British Columbia House, London, England.

The film library started the year with eighty individual subjects available for use. Two new special-use films were purchased, and two new subjects produced by this Division were also added to the library, to make a total of eighty-four films available during the year. One film was withdrawn in September, leaving eighty-three subjects in the library as of December 31st, 1958. All eighty-four motion-picture films received circulation during the year.

Films from the Forest Service library were utilized by two television stations during the year, the most distant of which was CKOSA TV., at Yorkton, Sask. The other was CBUT, Vancouver, B.C. Both subjects used were produced by this Division.

During Centennial activities the Division entered three motion-picture film subjects, all productions of the Division, in the Centennial Summer Cinema, a group organized to tell the story of British Columbia through the lens of the 16-mm. motion-picture camera. The three films " Silva Survey," " Timber-r-r," and " Flying Surveyors " were viewed by an audience of some 8,173 individuals in many centres throughout the Province. " Silva Survey " was entered in the Vancouver International Film Festival and received very favourable comment.

Again films were used by organizations in Eastern Canada and many parts of the United States.

Motion-picture films and projection equipment were again utilized to a great extent by members of the headquarters and district Forest Service staff. The officer in charge of the film library gave forty-eight evening showings of a total of sixty-two special programmes given by Division staff during the year. *See* Table 62 in the Appendix for details of film-stock and circulation records.

PUBLICATIONS AND PRINTING

The 1957 Annual Report of the Service was edited, synopsized, its printing supervised, and distributed by late May, the earliest distribution date for this Report for many years. The Annual Report printing run was reduced to 1,200 copies from the previous runs of 1,300 copies, and the number of pages was also reduced for purposes of economy.

In order to meet the rising demand, 30,000 Forest Service calendars for 1959 were run, for a new record for this popular media. Featuring general forestry and protection information, this calendar is distributed widely throughout British Columbia, including one calendar being placed in every public-school room in the Province. The calendar continues to be the most appreciated public information medium produced by the Service.

As usual, editorial and publication services were provided to other divisions of the Service as funds allowed. During the year, editing, supervision of printing, and distribution were completed for one technical publication, one research note, three protection bulletins, two lay bulletins, one annual research review, one personnel directory, one silvicultural manual, and one special information " flyer " on the new Surveys and Inventory report " Continuous Forest Inventory of B.C." In addition, nine publications of various categories were reprinted, with or without revision, as were sixteen display-poster designs, to which one new design was added. One publication had to be reprinted twice during the year in an attempt to keep up to public demand.

Public interest in printed forestry information media rose sharply in 1957 and continued at the new high level throughout 1958. One of the results of this development is that an increasing percentage of the funds allotted for printing purposes is being devoted to reprinting existing media with a necessary drop in funds available for the production of new publications of various types which are sorely needed. In addition, the quantities of each publication produced are held down to such a meagre level that they have no realistic relationship to demand.

RADIO AND TELEVISION

The twenty-two radio stations operating throughout the Province were again utilized to the limit that existing funds would permit. The regular fire season broadcasts consisted of thirty-two fifteen-second flash announcements and sixteen one-minute spot announcements. The seventeen radio stations in the Vancouver, Nelson, and Kamloops Forest Districts carried this series for an eight-week period, between July 7th and August 30th. Stations in Prince George, Dawson Creek, and Quesnel carried special hazard flashes between May 5th and May 17th to coincide with the hazard that exists in these areas during the early spring. These same stations also carried sixteen fifteen-second flash announcements and eight one-minute spot announcements during the period between July 7th and August 11th.

In a successful attempt to gain greater coverage for Forest Service broadcasts, the Division scheduled twenty-four forty-five-second spot announcements on radio station CBU, Vancouver; CFPR, Prince Rupert; and thirty-one repeater stations spread throughout the greater part of the Province. These announcements were made as part sponsorship of twenty-four weekly major-league baseball broadcasts carried on these stations every Saturday during the period of April 19th to September 27th, 1958.

All stations were supplied with eleven special hazard announcements which were to be broadcast during periods of extreme hazard. These announcements are made as replacements or can be added to the regular radio series upon orders from the District Forester or the local Forest Ranger.

All copy for the above broadcasts was written and scheduled by members of this Division.

The Division assisted in preparing detailed radio interviews for CJVI, Victoria, with senior officers of the Research and Reforestation Divisions.

On several occasions, Divisional personnel assisted local stations in on-the-spot broadcasts from fires within the district.

It is worthy of mention here that without the whole-hearted co-operation, understanding, and assistance of the radio industry, a complete, efficient up-to-the-minute

report of British Columbia's most violent fire season would never have reached the public. It is to this industry that the Forest Service owes a vote of appreciation.

The utilization of the television media was restricted for lack of sufficient funds available. The Division, however, did supply television stations at Victoria, Vancouver, and Kamloops with still photographs of timely activities for use on news broadcasts.

During the height of the fire season it was thought advisable to approach television stations in Victoria and Kamloops in an attempt to have two sixty-second forest-protection trailers run as a community service. The co-operation from the management of these two stations was excellent; both trailers were used extensively for more than five weeks.

It is indeed unfortunate that a media with a viewing audience of thousands cannot be used to a greater extent.

COMMERCIAL THEATRES

For the fourth consecutive year, a 35-mm. forest-protection trailer, produced by the Division, was circulated through the commercial theatres in the Province. This trailer, featuring a Centennial theme, was shown for one week in each of seventy-three theatres of the Odeon and Famous Players chains during July and August to a total estimated audience of 870,000.

NEWS MEDIA LIAISON

Activity in news and informational press releases and the supplying of background material for daily and weekly press, radio, television, and the trade journals far exceeded in volume and variety anything previously undertaken by the Division.

In addition to the weekly forest-fire situation reports initiated the previous year, a new series of twice-daily releases to all major media received major attention throughout the Province, nationally, and internationally to such an extent that the 1958 forest-fire story in British Columbia was one of the outstanding news stories of the year.

A member of the Division staff worked out of the Prince George Forest District headquarters at the height of the fire season in that area, servicing local media, large metropolitan outlets, and the wire services to good effect.

During the height of the fire season, arrangements were made for several Forest Service officers to appear on various radio and television programmes throughout the Province.

Also, the Division co-operated with the National Film Board (Newsreel Division) in the production of 35-mm. commercial film newsreels featured throughout Canada.

The need for district public information personnel, particularly during the fire season, was emphasized as never before by the severity of the 1958 season, with its resultant demands for specific and accurate information by all news media as well as from the general public in connection with closures and other necessary restrictive measures.

ROADWAY AND ROADSIDE SIGNS

The " Keep B.C. Green—Use Your Ashtray " roadway sign project was continued during the months of July and August for the fifth consecutive year. Twenty new sites were added to the previous coverage, bringing to 205 the total number of signs placed on the 3,600 miles of paved highway in this Province. The crew, as in the past, was made up of five high-school students and one supervisor from this Division. Added experience and further improvement of paint-spraying equipment enabled the crew to operate with increased efficiency. Again, co-operation received from the Department of Highways, Royal Canadian Mounted Police, and the general public was excellent.

During the year, as funds and staff at the Marine Station became available, standardization of forest district boundary signs was completed.

A constant demand for more " Prevent Forest Fires " Scotchlite signs has resulted in an additional twenty-five such signs being placed throughout the Province, bringing to more than 100 the total number now being displayed through the fire season. During the year there were requests for fifty-nine additional signs, which requests could not be filled due to lack of funds.

It seems to be the feeling throughout the Province that these Scotchlite signs are most effective in acting as a constant reminder to the motoring public to be careful with fire.

SCHOOL LECTURES

The school forest-conservation lecture tour programme was continued for the eighth consecutive year. In all, 250 individual lectures were given in 174 separate schools, to more than 29,000 students, a decrease of 21,000 from the yearly average of 50,000. This drop was attributed to only one lecturer being available for tour, primarily because of lack of sufficient staff in the Victoria office. Because of the economic situation, the tour was concentrated on the northern end of Vancouver Island and the Fraser Valley, where travel and general operational costs are lower than in the Interior.

EXHIBITS

Some financial assistance was given to district displays in various parts of the Province, and a small portable exhibit specially designed for Parent-Teacher Association and Teachers' Federation conventions was completed and circulated. Much more should be done in these directions, however, in order to support the Ranger staffs in their local public relations work.

The permanent Service exhibit in the British Columbia Building, Pacific National Exhibition, Vancouver, underwent a major redesigning in order to permit the accommodation of the new display from the Department of Recreation and Conservation. Due to the pressure of other duties and a shortage of staff, the reorganization was not completed in time for the Exhibition, nor was the Division able to assign attendants to the display, as had been the policy in the past.

LIBRARY

The work of cataloguing the Kamloops District library was finished by the librarian early in the year, and the publications arranged on the new shelves. Basic texts were ordered to complete the coverage of essential forestry subjects.

In May the librarian was replaced for six months by a lady graduate forester, whose specialized knowledge was put to good use in the concluding phases of overhauling the main catalogue. This two-year project was finished by the end of the year, and should result in increased ease of reference work in the library as much out-of-date material was removed.

The librarian spent two weeks at Oxford, England, studying the Oxford System of Decimal Classification for Forestry, under the direction of staff members of the Commonwealth Forestry Bureau and the University Forestry Library. The experience gained and the personal contacts made were invaluable in clarifying the many uses of the Centralized Title Service cards produced by the Bureau. These cards are received in the Forest Service library at the rate of approximately 4,500 a year, and cover the classified abstracts of over 550 periodicals, 700 serials, and innumerable miscellaneous bulletins and books in forty-nine languages.

The volume of accessions received in the library continued at a high level. Monthly accession lists are produced by the library staff and distributed to an ever-increasing number of Forest Service personnel and others interested in forestry literature. The practice of including in accession lists indexed journal references and occasional com-

ments on outstanding publications has had a noticeable effect in increasing demand for such material.

A small collection of books and other publications in the Victoria management office was classified and arranged according to the Oxford system.

Shortage of space, both on library shelves and in the area available for library furniture, is becoming acute and hampers the orderly functioning of the library. Increased price of all classes of publications received resulted in several journal subscriptions being cancelled during the year.

CO-OPERATION

The commercial radio and television stations, and their agencies, and the daily and weekly press offered a degree of co-operation and assistance far exceeding the normal high standards experienced in the past. Their vigorous and imaginative support of the fire-prevention programme and policies of the Service is gratefully acknowledged.

The Division continued its school lecture programme throughout the Province for the seventh consecutive year, with the fullest co-operation of the Department of Education. The Canadian Forestry Association, which had been a co-operating agency in the programme, withdrew from active participation in 1958.

The Division acted as a liaison and advisory agency for the production unit of the National Film Board's Newsreel Division in the completing of footage on British Columbia's fire situation and subsequently released nationally through commercial film houses across Canada.

As in the past, the Division co-operated with the Canadian Forestry Association (British Columbia Branch) in the organizing of the annual Forest Protection Week.

A senior member of the Division was seconded to the Royal Tour Co-ordinating Committee to act as a public relations co-ordinating officer during the visit to Victoria of Her Royal Highness the Princess Margaret.

FOREST MANAGEMENT

GENERAL

The low prices and relatively weak demand for forest products in general which faced the industry throughout 1957 continued on into most of 1958, with the demand and prices showing only a slight improvement during the last six months of the year. Production was also hindered by a long, severe fire season, resulting in numerous closures. There were, however, no major labour troubles. The net result was that during 1958 both the total volume and value of production showed decreases.

The value of production of all forest products amounted to $542,787,427, a decrease of approximately 5 per cent over 1957. The decrease in the value of lumber production amounted to 18 per cent due to a drop in both the volume produced and the price received. In contrast, the value of plywood production increased 25 per cent, reflecting the high level of residential construction across the Nation. The value of pulp and paper products and shingles produced increased by 7 and 6 per cent respectively. Conversely, with the peak production of poles and piling during 1957, the industry suffered from overproduction during 1958, resulting in a drop of 56 per cent in the value of production.

The total cut for the Province amounted to 908,484,634 cubic feet, being a reduction of 5 per cent from 1957. It is interesting to note that the reduction in scale took place entirely in the Vancouver and the Prince Rupert Coast Districts and amounted to approximately 15 per cent, while the scale in the Interior increased 10 per cent. The scale in the Interior amounted to 44 per cent of the total for the Province, a record from a percentage standpoint.

Water-borne lumber shipments for 1958 amounted to 1,314,361 M f.b.m., an increase of 235,443 M f.b.m. Shipments to the United States increased by 326,975 M f.b.m., while those to the United Kingdom and the Continent decreased 57,278 M f.b.m.

The statistical tables in the Appendix of this Report furnish other details of the Forest Management Division activities. In commenting on these tables, the following highlights are considered worthy of special attention.

Of the total cut of 908,484,634 cubic feet, Douglas fir continued to maintain its leading position, with 349,994,472 cubic feet, or 38 per cent. Other major species, in order of output, were 170,732,898 cubic feet, or 18 per cent, hemlock; 144,181,983 cubic feet, or 15 per cent, spruce; 116,651,426 cubic feet, or 12 per cent, cedar. The remaining 17 per cent was spread over balsam, lodgepole pine, larch, white pine, yellow pine, cypress, cottonwood, and hardwoods, in that order.

On the basis of land tenures, 707,818,382 cubic feet, or 78 per cent, originated from Crown lands and, of this total, 476,235,771 cubic feet, or 67 per cent, originated from timber sales, in comparison with 75 and 64 per cent respectively in 1957. Old Crown grants accounted for 126,087,630 cubic feet, a decrease of 30,000,000 cubic feet.

Timber sales to the number of 1,922 were cruised, covering a total area of 609,563 acres and containing 890,285,000 cubic feet of saw-timber. This is a reduction from recent years, due partly to a lower demand as a result of unfavourable market conditions and also due to the regulation of cut in sustained-yield units.

The number of timber sales awarded declined from 2,544 to 2,145. On the other hand, the volume increased 15 per cent to a total of 682,221,469 cubic feet. However, stumpage rates reached a new low, with the result that the total estimated value of timber sold declined also and amounted to $20,517,300.

At the year's end there were 7,584 timber-sale contracts in existence, as compared with 8,396 at the same period in 1957. Total acreage included in timber sales is 3,326,737 acres. The amount of funds held as security deposits under timber-sale contracts amounted to $14,710,518.

MARKET PRICES AND STUMPAGE TRENDS

Lumber Prices

Dressed-lumber shippers in the Interior maintained their same excellent co-operation with the Forest Service in supplying their net total lumber-sales figures. The average net prices f.o.b. car for sales in the preceding three months are compiled each month by the Forest Service for each of the six lumber-price zones. Seasonal corrections are applied to the fir and spruce averages to eliminate the effect of normal seasonal price variations. The resulting averages are used in appraising the stumpage value of timber sold and form the basis for sliding-scale stumpage adjustments.

The seasonally corrected average prices for fir and spruce remained at a low level through the first half of the year but strengthened in the third quarter and, by the close of the year, had increased about $6 per M f.b.m. above their lowest points. Uncorrected quarterly average prices for the Interior of the Province are given in the table below.

1958 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	131,471	$48.82	170,949	$52.91	212,817	$57.39	163,536	$54.67
Spruce	132,693	53.98	179,009	57.77	237,272	59.04	168,966	57.98
Cedar	3,216	55.81	5,056	54.29	5,037	56.78	5,580	57.87
White pine	3,937	99.17	7,549	98.98	7,692	100.99	4,961	98.20
Yellow pine	1,684	59.23	3,288	60.00	3,634	62.63	2,786	61.95

Log Prices

With the exception of Douglas fir, average log prices on the Lower Coast remained at a low level throughout the year. Prices for fir logs reached their low point at the beginning of the year, then gradually increased through the year. Quarterly average prices for log sales reported to the British Columbia Loggers' Association are given in the table below.

1958 Quarterly Average Log Prices per M B.M. (Lower Coast)

Species	Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.
Fir	$52.39	$55.56	$55.03	$58.45
Cedar	40.44	41.61	41.82	45.75
Hemlock	41.23	40.34	39.86	39.39
Balsam	38.18	36.78	38.01	36.52
Spruce	38.35	40.09	39.21	40.81
White pine	55.40	54.11	53.98	53.31

Stumpage Prices

Stumpage rates for timber to be cut from unalienated Crown land are appraised by the Forest Service. In the case of tree-farm licences, the stumpage rates for timber to be cut from lands not held under other tenure are appraised and designated each year in the cutting permits. For timber sales, the stumpage rates are appraised before the timber is advertised for sale and bids are not accepted below the upset stumpage rates. A brief description of the general appraisal method is contained in the 1957 Report of the Forest Service.

As a result of the depressed market prices to the producer which were experienced throughout the year, appraised stumpage rates remained at a very low level. The majority of the stumpage appraisals indicated very little prospect of a reasonable profit margin and, consequently, minimum stumpage rates were designated in most instances.

An effort was made to expedite sales of timber which had been killed or heavily damaged by the many forest fires in the year. Substantial quantities of this timber were sold at 75 cents per hundred cubic feet.

These features all contributed to a further decline in the average stumpage prices bid for timber sales. Detailed figures are contained in Tables 21 and 22 of the Appendix to this Report. The average price bid for all species in timber-sale contracts in the Province was $2.98 per hundred cubic feet. Comparable figures for 1956 and 1957 were $6.92 and $3.88 respectively.

Sliding-scale Adjustments

During the past seven years, timber-sale holders have been given the option of having stumpage rates subject to adjustment, up or down, according to the sliding-scale formula, or of having the stumpage rates reappraised every two years. Under the latter option, stumpage rates would not be reduced. In spite of this disadvantage, many chose the reappraisal method, presumably to preclude the possibility of an increase during the first two years. As a result, the stumpage rates on many timber sales were pegged at the high 1956 level and could not be reduced by the reappraisal method.

The reappraisal stumpage-adjustment method was therefore eliminated in respect to sawlog timber on July 1st, 1958. Henceforth, the sliding-scale stumpage adjustment is compulsory on new timber sales. It was also decided to apply the sliding-scale system to all tree-farm licence cutting permits issued after the end of 1958.

At the same time, holders of existing contracts on a reappraisal basis were given the opportunity to have the contracts changed to sliding scale. Many licensees took advantage of this offer and, as a result, 1,132 downward-rate adjustments were made on these contracts. Three hundred and thirty-nine of these were based on Coast log prices, and the remaining 793 were on the basis of Interior lumber prices. A total of 3,877 rate adjustments were made in the Province during the year. About 3,600 of these were reductions in stumpage, but there were a few increases at the close of the year in harmony with the more favourable market prices.

Stumpage-appraisal Cost Studies

Field time and cost studies were continued in order to obtain information relating to the effect of variable factors on production rates and operating costs so that these factors can be equitably reflected in the appraisals of stumpage values. A second field party was established at Vernon to supplement the work done in the Prince George District but, at the close of the year, the crew in Prince George was temporarily disbanded.

ADMINISTRATION OF MANAGED UNITS

Four new tree-farm licences were granted, in line with the Honourable Gordon McG. Sloan's recommendations in his 1956 report. One of the licences granted was a municipal tree-farm licence to the Corporation of the District of Mission and was the first of its kind.

Three tree-farm licences started on their second five years and had complied with their first five-year conditions satisfactorily. During 1958, a total of 184 cutting permits were in force, of which fifty-two were extensions, and the recorded cut from the permits was about 144,000 M c.f.

In publicly managed areas, the Forest Adviser held public hearings on the Fraser Canyon area, with the result that the Fraser Canyon Public Working Circle was cancelled

and a new enlarged area was set up as the Yale Sustained-yield Unit. A further public hearing was held to determine if the area round Hope should become a closed "marketing area," but the Forest Adviser rejected this suggestion in favour of continuing with the present procedure. Considerable work has been done in drawing up a policy for the operating of a quota system in overcut areas, such as the Williams Lake Public Working Circle, but a final policy has not been established as yet.

By cancelling the Fraser Canyon Public Working Circle there are only thirty-two public working circles, but four new sustained-yilde units were set up, including the Yale, to make a total of twenty-nine sustained-yield units. In 1958 the cut from the sixty-one units was about 255,000 M c.f., with about 50 per cent of the units being fully committed and about 14 per cent fully or over cut.

Of the total cut for the Province of a little over 900,000 M c.f., 400,000 M c.f. came from managed units.

SILVICULTURE

The programme implemented during 1958, through moneys from the Silviculture Vote, included stand treatment, silvicultural studies, working-circle planning, slash-disposal projects, and road location in public working circles and sustained-yield units.

The main effort during the year centred on stand treatment. The Interior districts were again active in this field and some 465 timber sales were treated involving 141,577 acres. Among the noteworthy events in this field was the production of a 16-mm. film, "The Mark of Progress," designed to afford both the industry and the public a better appreciation of the importance of stand treatment. Two publications for in-service instruction were also produced during the year—one for the guidance of stand-treatment crews and featuring the use of cartoons, and the other for the field staff as a general guide to the treatment of stands both on the Coast and in the Interior.

This was the first year in which the stand-treatment crews engaged in planting on any scale, and plans are now being formulated for up to 500,000 spruce to be planted annually throughout the Interior by 1961.

GRAZING DIVISION

INTRODUCTION

Administration and management of the Crown range, over 80 per cent of which is forested, has now been the responsibility of the Forest Service for forty years. Conditions encountered during this period have brought about vast changes in the ranching industry, but range remains its foundation.

Most ranches depend in large measure on the Crown range for summer grazing. This range must be managed to ensure sustained forage production and to accommodate, as far as possible, the taxing requirements of other necessary live-stock production practices. Grazing use must also be correlated with the various other uses of which the same land is capable. The activities of the Forest Service in this field during 1958 are briefly outlined herein.

ADMINISTRATION

Owing to a lack of suitable personnel, two positions in the grazing establishment remained vacant throughout most of 1958. This shortage of experienced professional staff resulted in the postponement of much necessary work of a technical nature. This undesirable situation was further accentuated by the drastic fire season, which made it impossible for the Ranger staff to give much attention to grazing matters. Many routine inspections, normally carried out by Rangers, were done by district office grazing staff, but much necessary field work could not be completed. Effort had to be concentrated on the more pressing items.

A grazing officer was again assigned, part time, to the Prince George District in 1958. It was therefore possible to continue the more intensive grazing administration commenced in the most important range areas of that district in 1956. No new areas were brought under grazing administration, but some boundary adjustments were made in the two stock ranges in the Peace River region.

The growing demand for both private and public camp-sites on water-front lands in range areas has necessitated special provision being made for access by live stock to water. This matter was given considerable attention during 1958 by both Land Inspectors and Forest Service staff, and a number of land reserves were established for this purpose. It was also necessary during the year to secure water licences for stock-watering purposes on a number of essential springs where there was danger of the water being alienated for other purposes. In collaboration with the Lands Service, studies were made to find ways to minimize the impact of residential, private camp-site, and commercial development on grazing interests. Some progress was made, but correlation of these conflicting land uses with grazing remains a difficult problem.

As a result of growing understanding between logging and grazing interests and the experience gained by the Forest Service in recent years, conflicts between these interests were reduced to a minimum in 1958. As might be expected, the main difficulties experienced were in those more remote range areas where logging has only recently commenced.

Further attention was also given to the effect of the yellow pine planting programme on grazing interests in the East Kootenay area. Studies were instituted in an effort to find ways to improve forage production concurrent with the yellow pine planting programme.

During the year, the Grazing Regulations were revised to bring them in line with the requirements of the "Regulations Act."

Grazing and Hay Permits

During 1958, 1,571 grazing permits were issued authorizing the depasturing of 122,489 cattle, 4,169 horses, and 20,927 sheep on Crown range. The number of per-

mits issued represents a drop of 69 from the previous year. Cattle numbers were down 6,489 head, or approximately 5 per cent from 1957. This was due to heavy marketings late in 1957 resulting from both hay shortages and a rise in prices which occurred at that time. The number of horses and sheep under permit were both up slightly over 1957 figures.

Table 65 in the Appendix shows a breakdown of the above figures by forest districts and a comparison with figures for the past ten years.

A total of 163 hay-cutting permits were issued, authorizing the cutting of 1,651 tons of hay and 38 tons of rushes. The number of permits issued was twenty less than in 1957, but the tonnage of hay cut was down only slightly. Owing to the dry weather, haying conditions were generally good, and only one permit had to be cancelled because the meadow concerned remained flooded.

Grazing and Hay-cutting Fees

In accordance with the Grazing Regulations, grazing fees fluctuate with the price of live stock to the extent that fees for the current year are in the same ratio to 1939 fees that the weighted average price received by stockmen in the previous years are to the corresponding 1939 prices. In 1958 grazing fees per head per month were 12 cents for cattle, 15 cents for horses, and 3 cents for sheep. This represents a slight increase from 1957 fees, reflecting the improved prices received for stock in the latter part of 1957. 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 1957 level, the increase in grazing fees more than compensating for the reduced number of stock on the range. Collections again exceeded billings, resulting in a further reduction in outstanding fees at the end of the year.

A summary of the fees billed and collected for the past ten years is to be found in Table 67 in the Appendix.

Live-stock Counts

Cattle-counts, involving a considerable number of permittees, were carried out in four areas during the year to ensure actual grazing use was in line with the permitted use. This time-consuming work is necessary as a check, particularly on fully stocked ranges.

Violations and Prosecutions

A number of cases of trespass occurred during the year, but in all instances the situation was corrected without the necessity of resorting to Court action. In one case, it was necessary to seize a trespassing bull of unknown ownership under the provisions of section 17 of the "Grazing Act."

RANGE MANAGEMENT

Although management of live stock on the Crown range is the responsibility of the individual grazing permittees, it is the duty of the Forest Service to determine the management practices required and to specify these practices as conditions in grazing permits. Determination of permissible rates of stocking and correct seasons of use are the sole responsibility of the Service, as is also the necessary field supervision to ensure required practices are carried out. Unfortunately, the personnel and fire situations referred to earlier curtailed both the planning and supervisory aspects in 1958.

Range Surveys

An up-to-date range inventory is a prerequisite of good range management. During 1958, 819,900 acres were covered by grazing surveys as follows:—

	Acres
Darfield-Mount Olie Stock Range	246,500
Riske Creek and Meldrum Creek Stock Ranges (part)	573,400
Total	819,900

This brings the total covered by range surveys and resurveys, from 1945 to 1958, inclusive, to 8,979,885 acres.

Maps and reports for the Okanagan Falls, Big and Beaver Lakes, and Brisco Stock Ranges were finalized during the year.

Range Improvements

To make full use of the Crown range, and to facilitate proper management thereof, a wide variety of improvements are required. During 1958, $52,988.29 was spent from the Range Improvement Fund as follows:—

Three stock-bridges	$150.00
Sixteen cattle-guards	5,858.40
Thirty-four drift-fences	12,242.37
Three experimental plots	517.92
One hazard-removal	72.00
Five holding-grounds	2,152.57
Two meadow improvements	275.00
One mud-hole fence	240.00
One hundred and eighteen range seedings	7,812.86
Twenty stock-trails	5,363.01
Eleven water developments	1,171.00
One weed-control	2.61
Wild-horse disposal	318.20
Machinery and equipment (purchase)	2,386.84
Maintenance and operation of equipment	1,069.65
Materials purchased but not assigned to projects	1,428.72
Range-management film (part cost)	700.00
Supervision, surveys, and technical studies	11,227.14

In addition, material on hand at the end of 1957, valued at $1,255.03, was assigned to and used on projects during 1958.

Authority was also extended to permittees to construct, at their own expense, four corrals, twelve drift-fences, two grazing enclosures, and one stock-trail.

Range seeding continued to be a major feature of the range-improvement programme. In all, 21,615 pounds of seed, almost exactly the same amount as in 1957, was used. Recently logged areas, pipe-line rights-of-way, burns, and other areas where soil had been disturbed received attention. Fixed-wing aircraft were used to seed two large burns. For the first time, a helicopter was used to seed a third burn. There are still some problems to be overcome in the use of the helicopter for this purpose, but preliminary results indicate that a superior job of seed distribution can be done and costs would appear to be in line with those for fixed-wing aircraft. The costs for seeding, reported above, include the cost of seed, aircraft hire, and only a minor amount of the total labour required. The bulk of the labour was supplied by co-operating stockmen, except for experimental seedings, which were carried out by Forest Service personnel. Canada Range Experimental Farm personnel provided valuable assistance in the aerial seeding programme.

In an effort to reduce cattle-guard maintenance costs, a new type of steel rail deck was designed and installed in three guards. These appeared to be highly satisfactory, and

further use of this design is proposed. A new type of electric cattle-guard was also extensively tested and shows considerable promise, particularly for temporary installations. A new light-weight high-strength barbed wire was installed on two drift-fences on a trial basis. This material costs less than the wire now in general use, and if it proves satisfactory, its lighter weight will greatly facilitate fence construction in remote areas.

All of the Kamloops Grazing District and all of the Nelson Grazing District, with the exception of some areas where horses can be grazed during the winter without damage to Crown range, were closed to horses during the winter of 1957/58. Sixty horse-disposal licences were issued, and 102 horses were cleared for shipment. Bounties remained at $5 on mares and geldings and $7.50 on stallions. This programme of horse-disposal was reduced from previous years because there is a good market for useless horses, and horse-owners sold them rather than abandon them on the range. Also, the open winter reduced the effectiveness of control where horses were at large on Crown range, as these animals were not forced to concentrate on low-elevation ranges.

During the year, the decision was reached to virtually abandon the effort to control goatweed *(Hypericum perforatum)* by use of chemicals, which has proven both costly and relatively ineffective. Efforts were concentrated on studies on the biological control of this weed. The two species of beetles introduced a number of years ago, *Chrysolina gemellata* and *C. hyperici,* have not yet multiplied to the point where they are controlling goatweed, except on very limited areas. However, some 5,500 of these beetles were transplanted to new goatweed infestations. In August, 5,000 beetles of a new species, *Chrysolina varians,* were supplied by the Division of Entomology, Science Service, Canada Department of Agriculture. These beetles, which originated in Sweden, were released under the direction of the Division of Entomology, and observations on their progress are being made.

Range Research

The Canada Range Experimental Farm, which is responsible for basic range research, continued studies on a number of problems of interest in the management of Crown range. Valuable assistance was obtained from the Farm during the year on a variety of subjects, including range seeding, effect of fire on range, and range-improvement trials in the East Kootenay Valley. A bulletin prepared by personnel of the Farm on stock-poisoning plants was also published. This bulletin will be valuable to both the Forest Service and live-stock operators.

CO-OPERATION

Close co-operation between the Forest Service and grazing permittees is essential for the proper use and management of the Crown range. Such co-operation is achieved through the medium of local range-livestock associations. There are fifty-two such associations approved under the " Grazing Act." No new associations were officially recognized during the year. The British Columbia Beef Cattle Growers' Association and the British Columbia Sheep Breeders' Association remained active and were consulted on a number of matters affecting the whole industry. These organizations were very helpful in dealing with a variety of problems. A total of 130 association meetings were reported, of which 114 meetings were attended by Forest Officers. In addition, sixteen other meetings were held with groups of stockmen to deal with special local problems.

Close contact was maintained with a number of agencies dealing with matters affecting range use. In addition to consultations, twenty-one joint field examinations were made in company with representatives of such agencies.

The annual field meeting of the Pacific Northwest Section of the American Society of Range Management was held in the vicinity of Kamloops in July. Grazing personnel assisted in organizing and participated in this international meeting, which was well attended by range technicians and ranchers from both sides of the border.

The range-management film "Food for Thought" became available early in April and was shown at various live-stock association meetings. The film was highly appreciated by these stockmen-audiences and should do much to promote improved range-management practices.

GENERAL CONDITIONS

The winter of 1957/58 was one of the mildest ever recorded in the range area. Hay-supplies proved adequate under these circumstances and stock came through the winter in good condition. Forage growth commenced earlier than normal on low-elevation ranges and there was no abnormal pressure for premature turnout of stock on to the spring ranges.

Extremely dry weather was experienced throughout the spring and summer of 1958. This situation, combined with the light snowfall of the previous winter, resulted in a severe shortage of soil-moisture. Range forage production was greatly reduced, particularly on low-elevation ranges. Regrowth, for fall use, did not occur following spring grazing. Some ranges became short of watering-places as springs, creeks, and pot-holes dried up. However, ranges in good condition were notably less adversely affected than were depleted ranges, where forage production was drastically curtailed. The unavoidable over-utilization which occurred did no permanent damage to ranges in good condition. On the other hand, deteriorated ranges received a severe set-back.

Stock came off the ranges in surprisingly good condition except, again, where the range was suffering from past mismanagement. On some badly depleted ranges, stock did very poorly. The experiences of this year emphasize the vital necessity of maintaining ranges in top condition, not only for higher forage production at all times, but also for greater resilience in meeting abnormal drought conditions.

Haying conditions were good, and where water was sufficient, bumper crops of high-quality hay were put up. However, in some regions irrigation-water was inadequate and only light crops were harvested. For the first time in several years, it was possible to harvest hay from many of the wetter natural meadows. In general, hay-supplies should be adequate to meet the demands of a normal winter in 1958/59.

Markets and Prices

Cattle prices rose markedly during the year and there was a strong demand, particularly for yearling feeders and calves. This situation, and the continuing discrimination against grass-finished beef, has resulted in a growing number of cattlemen selling their stock at a lower age, for finishing in surplus-grain areas. Cattle marketings were heavy, but it is not anticipated that there will be a substantial reduction in the demand for Crown range next year.

Lamb prices rose slightly during the year but did not keep pace with the large advances in cattle prices.

Live-stock Losses

Losses of stock on the range appeared to be about normal during 1958. Reports of losses to bears were received from several areas, but other predators caused little trouble. Some stock was lost to poisonous weeds and mud-holes. Highway and railway traffic took their usual toll. Reports of animals shot by careless hunters were also received. Cattle-rustling was reported from several areas, and there were several convictions for this offence.

Diseases of Live Stock

There were no outbreaks of disease necessitating extensive adjustments in range allocation or management plans during the year. A number of herds continue to be grazed under isolation conditions to facilitate complete clean-up of disease problems. Federal and Provincial Departments of Agriculture disease-control programmes continue with a minimum of disruption in range practices.

ENGINEERING SERVICES

ENGINEERING SECTION

Engineering projects included 350 miles of route reconnaissance, 157 miles of road location, 54 miles of new road constructed, and general maintenance work on 153 miles of roads previously constructed. In co-operation with the Government of Canada, operations were expanded during winter months. The following table shows the work accomplished since inception of the forest road programme:—

Forest-development Road Programme, 1950–58

Public Working Circle or Sustained-yield Unit	Forest District	Reconnaissance	Location Survey	Constructed
Cape Scott	Vancouver	25	24.6	------
Chilliwack	Vancouver	46	21.5	5.0
Broughton	Vancouver	47	3.5	------
Barkley Sound	Vancouver	7	------	------
Yale	Vancouver	28	------	------
Redonda	Vancouver	10	------	------
Soo	Vancouver	16	------	------
Fraser Canyon	Vancouver	27	------	------
Babine	Prince Rupert	12	------	------
Rivers Inlet	Prince Rupert	44	------	------
Smithers	Prince Rupert	64	5.0	------
Burns Lake	Prince Rupert	16	------	------
Terrace	Prince Rupert	21	------	------
Morice	Prince Rupert	86	78.3	52.0
Crooked River	Prince George	11	------	------
Robson	Prince George	6	------	------
Longworth	Prince George	14	------	------
Purden Lake	Prince George	58	------	------
Naver	Prince George	92	81.9	37.0
Big Valley	Prince George	9	7.8	------
Cottonwood	Prince George	35	30.8	13.0
Stuart	Prince George	9	------	------
Bowron	Prince George	61	------	------
Willow	Prince George	67	47.4	23.1
Ashnola	Kamloops	37	------	------
Botanie	Kamloops	14	------	------
Eagle River	Kamloops	8	------	------
Lac la Hache	Kamloops	57	25.2	3.0
Salmon Arm	Kamloops	23	21.2	13.6
Niskonlith	Kamloops	31	24.9	19.1
Similkameen	Kamloops	22	20.9	16.0
North Thompson	Kamloops	38	10.2	------
Quesnel Lake	Kamloops	51	4.0	------
Yalakom	Kamloops	8	------	------
Kettle	Nelson	48	------	------
Westkettle	Nelson	24	------	------
Creston	Nelson	57	5.0	------
Flathead	Nelson	116	4.0	------
Elk River	Nelson	7	------	------
Slocan	Nelson	3	------	------
Arrowhead	Nelson	63	------	------
Windermere	Nelson	15	2.0	------
Nakusp	Nelson	22	------	------
Edgewood	Nelson	12	------	------
Upper Kootenay	Nelson	72	55.8	25.5
Totals		1,539	474.0	207.3

General Engineering

Design work was finished for a single 90-foot span in the Upper Kootenay Public Working Circle. This bridge was planned with laminated girders for a canyon crossing of the White River at Mile 20 of the White Forest Development Road. Design was completed on a three-span 170-foot bridge having laminated girders set on steel H-pile piers for a crossing of the Kootenay River north of the confluence with the Cross River. This bridge would provide access for fire protection and to timber sales adjacent to the National park.

In the Chilliwack Public Working Circle, design for a 180-foot bridge crossing of the Chilliwack River was completed. Some bridge design and preliminary estimates were made for the Quatse and Glenlion River crossings in the Cape Scott Public Working Circle. Work continued on two bridges in the Cottonwood Public Working Circle.

Other work included final plans and specifications for a log A-frame type bridge set on log cribs for the Lawless Forest Development Road and design of a wharf and derrick installation for the Forest Service Marine Station in Vancouver. Studies were made for irrigation-water sources for the Quinsam and Cranbrook Forest Nurseries. Design of an F.M. radio antenna tower, suitable for mountain-top locations where extreme icing and wind conditions exist, was accepted for installation.

Road Reconnaissance

Feasible routes for forest-development roads were established in fourteen stands of timber covering 1,186,000 acres of productive forest land with a current merchantable volume of 1.7 billion cubic feet. In the Vancouver Forest District, reconnaissance was completed for further development of the Cape Scott Public Working Circle, from Port Hardy along the Tsulquate River to Kains Lake. A route was investigated in the Wakeman River drainage. In the Yale Sustained-yield Unit, feasible road access was examined from Boston Bar and Alexandra Bridge into the Anderson Valley. In the Orford River drainage, a short route was reconnoitred utilizing 9 miles of old railroad grade. In the Prince George Forest District, preliminary development studies were made of routes in the Slim Creek, Kenneth Creek, and Goat River areas. A route from Fraser Lake along the Dog Creek Road and up into the Upper Sutherland was examined. The Chuckwalla and Kilbella drainages, both in the Prince Rupert Forest District, were studied for feasible road access. A route running along the north side of Kleanza River was examined and a preliminary development study completed from Smithers to Sandstone Creek and from Doughty Station to Taltzen Lake in the McDonnell Lake area. Access along Shovel Creek and over the divide into Henrietta Creek was investigated. In the Nelson Forest District, two routes in the Flathead Sustained-yield Unit were studied from McGillivary Station and Fernie on the Canadian Pacific Railway up into the Upper Flathead drainage. In the Kamloops Forest District, two routes were examined for access to the Upper McKusky—one was an extension of the proposed Hendrix Creek Forest Road from Bosk Lake, and one route from the proposed Horsefly River Forest Road following McKusky Creek.

Road Location

During the year, roads were located and designed for the following public working circles and sustained-yield units:—

1. *Cottonwood Public Working Circle.*—On the Swift River Forest Development Road, 3.5 miles of main line and 8.6 miles of branch road were located. To date, 21.2 miles of main road have been located to the crossing of the Swift River.

2. *Morice Sustained-yield Unit.*—Primary location on the Morice Forest Development Road was terminated at Morice Lake (Mile 51.1). A further 18.4 miles were added to the secondary road system.

3. *Cape Scott Public Working Circle.*—Road location continued for 17.1 miles from Port Hardy into the headwaters of the Nahwitti drainage and Georgie Lake area.

4. *Lac la Hache Sustained-yield Unit.*—The primary survey for the Hendrix Forest Development Road was completed to Mile 19.6 (approximately 2 miles south of Hendrix Lake). A secondary road location was commenced into the Boss Creek drainage.

5. *Naver Public Working Circle-Big Valley Sustained-yield Unit.*—Initiated from a junction at Mile 12 of the Naver Road in the Naver Public Working Circle, the Ahbau Forest Development Road was located across the Willow River to Mile 22.6. Secondary roads were extended into the Rebman Creek area.

6. *Upper Kootenay Public Working Circle.*—A further 21.8 miles of main and secondary road location extended the White Forest Development Road system into the White River and the Coyote and Lussier Creek drainages.

7. *Experimental Reserve.*—Two branch roads were located for 3.2 miles on the Aleza Lake Experiment Station area.

8. *Creston Sustained-yield Unit.*—In the Goat River area, 5 miles of primary road were located.

9. *Quesnel Public Working Circle.*—Four miles of main-road survey was completed along the Horsefly River.

10. *Windermere Public Working Circle.*—A road along Horsethief Creek was located for 2 miles.

11. *Flathead Sustained-yield Unit.*—The initial 4 miles of primary-road survey were completed on the Lodgepole road.

12. *Broughton Public Working Circle.*—A winter survey was commenced in the Kingcome River Forest with 3.5 miles of main road located.

Road Construction and Maintenance

Favourable weather and ground conditions contributed to a successful construction season in the following areas:—

1. *Morice Sustained-yield Unit.*—Construction on the Morice Forest Development Road main line continued from Mile 38 to Mile 51.2 and from junction (Mile 27.6) to Mile 28.9 on the Morice West secondary road. This work involved the clearing of 83 acres of right-of-way, excavating approximately 92,700 cubic yards of common material and 1,700 cubic yards of solid rock, placing 21,400 tons of surfacing, and installing 1,700 lineal feet of culvert pipe. On completion of the above works at the end of October, the project was demobilized and the equipment transferred to other projects.

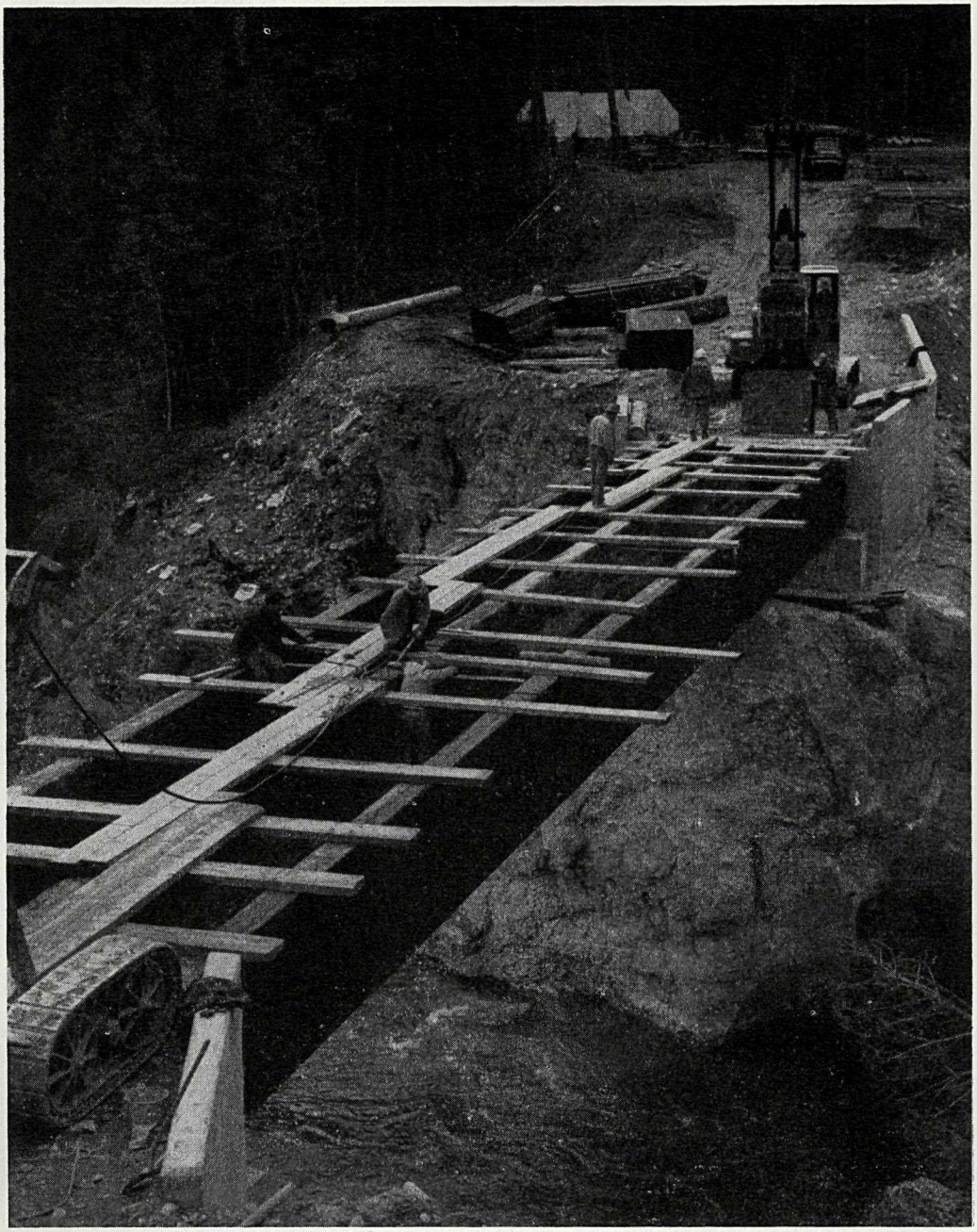
2. *Cottonwood Public Working Circle.*—The Service's forces continued the construction of the Swift Forest Development Road from Mile 7.5 to Mile 11.5 and from Mile 8.2 to Mile 9.2 on the Swift–Atis secondary road. This work involved the clearing of 32 acres of right-of-way, 62 acres of grubbing, excavation of 171,000 cubic yards of common material and 5,200 cubic yards of solid rock, and the placing of 37,400 tons of 1-inch crushed surfacing and installing 1,300 lineal feet of culvert pipe.

3. *Similkameen Public Working Circle.*—Construction operations extended the Lawless Creek Forest Development Road by 6 miles of main and 3 miles of secondary road. Seventy-two acres of right-of-way were cleared. Work also included 65.9 acres grubbed, excavation of approximately 145,000 cubic yards of common material and 2,400 cubic yards of solid rock, placing 13,000 tons of surfacing, and installing 1,500 lineal feet of culverts.

4. *Chilliwack Public Working Circle.*—The Service's forces continued construction of the Chilliwack Forest Development Road from Mile 2.5 to Mile 7.5. In co-operation with the Department of the Attorney-General, and as part of a scheme for the rehabilitation of prisoners from the Provincial Gaol, 20 acres of right-of-way were cleared, 53 acres were grubbed, and 2,300 lineal feet of culverts were installed. Forest Service crews also excavated 133,000 cubic yards of common material and 4,000 cubic yards of solid rock.

5. *Upper Kootenay Public Working Circle.*—(*a*) The contractor building the first 20.5-mile section of the White Forest Development Road completed the work started two years ago. Clearing of right-of-way for extension of the main line and for a number of secondary roads was commenced early in the year. This programme of winter hand-clearing under small contracts resulted in 89 acres of right-of-way cleared.

(*b*) A single-lane permanent-type timber bridge with a 90-foot span was constructed across the White River by October.



A permanent timber bridge featuring 94-foot glu-laminated, creosoted timber girders, under construction across White River Canyon on the White River Forest Development Road.

(*c*) Operations by the Service's forces extended main and branch roads 4 miles. This work involved 40 acres of grubbing, excavating 50,000 cubic yards of earth, and installing 300 lineal feet of culverting.

6. *Lac la Hache Sustained-yield Unit.*—(*a*) The winter programme included clearing contracts on 60.7 acres of right-of-way.

(*b*) Construction operations were commenced by Forest Service crews during November. To date they have grubbed 40 acres and excavated 41,000 cubic yards of material for construction of the Hendrix Forest Development Road.

7. *Naver Public Working Circle.*—The Naver Forest Development Road was completed with clean-up and grading from Mile 0 to Mile 22.4.

8. *Naver Public Working Circle-Big Valley Sustained-yield Unit.*—Forty acres of right-of-way on the Naver–Ahbau Forest Development Road were hand-cleared during the winter operations. A small Department crew commenced construction of the subgrade.

9. *Experimental Reserve (Prince George Forest District).*—Construction commenced on 1.5 miles of secondary road in the Aleza Lake Experimental Forest.

10. *Willow River Public Working Circle.*—(*a*) Road construction by contractor was completed from Mile 17.5 to Mile 20.2 on the Willow South and from Mile 20.2 to Mile 22.5 on the Willow–George roads. This work involved clearing and grubbing of 26 acres of right-of-way, excavating 40,000 cubic yards of material, placing 16,000 tons of surfacing, and installing 500 lineal feet of culvert pipe.

(*b*) On the Willow–Pitoney Forest Development Road, 85 acres of right-of-way were cleared.

(*c*) A single-lane creosoted-wood three-span bridge, with over-all length of 242 feet, was erected at Mile 18.2 across the Willow River.

11. *Salmon Arm Public Working Circle.*—Road surfacing was completed from Mile 10.1 to Mile 13.6 of the Fly Hills Road.

12. *Niskonlith Public Working Circle.*—Road construction by contractor continued from Mile 12 to Mile 19.1 of the McGillivary Road. This work involved excavation of approximately 27,000 cubic yards of material and 8,000 cubic yards of rock, placing approximately 21,000 tons of surfacing, and installing 200 lineal feet of culvert.

13. *Additional Works.*—With inception of another winter programme, progress began on the following:—

(*a*) The Lodgepole Forest Development Road, near Fernie.
(*b*) The Horsethief Forest Development Road, near Wilmer.
(*c*) The Goat River Forest Development Road, near Creston.
(*d*) The Kingcome Forest Development Road in the Broughton Public Working Circle.

14. *Maintenance.*—Maintenance work, including spring snow-ploughing, freeing frozen culverts, clearing ditches, repairing road surfaces and improving drainages, continued on 153 miles of completed forest-development road.

MECHANICAL SECTION

Equipment Selection

Vehicle purchases in 1958 were light, consisting largely of four-wheel-drive and commercial units as shown in the above table. The long, low styling of the modern passenger-car has definitely reduced the suitability of such vehicles for use by field staff.

To date, experience with the various types of " limited slip " differentials now on the market has been encouraging. There is every indication that this type of rear-axle assembly will become standard equipment on most Forest Service vehicles and thereby reduce the need for four-wheel-drive units.

With the exception of one high-deck 20-ton trailer, built by a Vancouver trailer-construction company, other purchases of equipment were routine. It may be noted that chain-saws are not being replaced when they reach the end of their useful life. This marks a change from previous policy and follows the trend toward either renting such equipment or, alternatively, contracting the clearing work.

Forest Service Mechanical Equipment

Type	Total Units, Jan. 1, 1958	Units Transferred to Parks[1]	New Total, April 1, 1958	Removed from Service	New Purchases	Total Units, Dec. 31, 1958
Sedans, coaches, and coupes	82	5	77	15	.....	62
Suburbans, station wagons, and sedan deliveries	86	5	81	9	11	83
Small-type passenger-vehicles	28	.....	28	5	2	25
Panel deliveries	41	.....	41	1	9	49
Four-wheel-drive passenger types	58	5	53	5	17	65
Four-wheel-drive ¾-ton pick-ups, etc.	223	5	218	12	27	233
Power-wagons	23	1	22	1	1	22
½-ton pick-ups	178	6	172	24	7	155
¾–1-ton pick-ups	82	45	37	3	4	38
14,000–24,000 G.V.W. trucks (2, 3, and 4 tons)	53	2	51	5	5	51
25,000–40,000 G.V.W. trucks (H.D.)	23	14	9	1	.....	8
Fire-fighting tank-trucks	11	1	10	.....	.....	10
Snow-ploughs—Sicard (848 and 1844)	2	2	.....	.....	.....	.....
Total vehicles	890	91	799	81	83	801
Tractors	47	9	38	1	1	38
Graders	22	6	16	.....	.....	16
Scrapers—self-propelled	4	.....	4	.....	.....	4
Shovels—power	4	2	2	.....	.....	2
Loaders—self-propelled	3	2	1	.....	.....	1
Outboard motors	347	14	333	17	32	348
Fire-pumps	697	21	676	13	96	759
Chain-saws	403	21	382	36	8	354
Lighting plants	97	16	81	.....	2	83
High-pressure Bean fire-fighting units	38	4	34	.....	.....	34
Snow-sedan—propeller-driven	1	.....	1	.....	.....	1
Speeders—railway	17	.....	17	.....	.....	17
Trailers—low-bed and high-bed	10	1	9	.....	1	10
Trailers—dwelling, bunk-house, etc.	115	7	108	2	9	115
Trailers—miscellaneous	127	.....	127	1	19	145
Air-compressors	10	6	4	.....	.....	4
Gas-powered rock drills	5	.....	5	.....	1	6
Muskeg-tractors (personnel carriers)	4	.....	4	.....	.....	4
Yarders	1	.....	1	.....	.....	1
Crushing plants	1	.....	1	.....	.....	1
Mechanical wheelbarrows	22	.....	22	.....	.....	22
Welders	14	6	8	.....	1	9
Cement-mixers	7	2	5	.....	1	6
Augers—power, planting	3	.....	3	.....	.....	3

[1] A result of establishing new Department of Recreation and Conservation and transfer of Parks Division of the British Columbia Forest Service to that Department.

The increased efficiency of the one-man chain-saw has resulted in two-man saws becoming obsolete. Because of this, nineteen two-man saws were called in early in the year and converted into high-pressure fire-pumps by the substitution of a centrifugal pump for the transmission, bar, and chain assembly. The pumps so obtained were a welcome addition to stock during the unusually severe fire season which followed.

Sixty-four new fire-pumps were requisitioned, which is about double the normal requirement. The small " hi-pressure " fire-pump field was augmented this year by a new light-weight centrifugal pump of considerable promise. Ten were obtained toward the end of the season, and reports so far received indicate a ready acceptance of this new unit.

The early advent of fires in the northern districts delayed the completion of a scheme to produce a new light-weight slip-on tank unit of simple, yet flexible design. The assembly consists of a 100-imperial-gallon aluminum or fibreglass tank with a standard production, 185 p.s.i. small pump, plus a hose reel or rack carrying 250 feet of 7/16-inch hose. A special pistol-grip triggered discharge gun was designed and produced by the Forest Service Marine Station, which expects to have ten complete units ready for delivery in time for the forthcoming year.

Two serious trailer towing accidents pointed up the need to inquire closely into towing-hitches and their effects on the swaying action of a trailer when travelling at speeds

over 20 miles per hour. The conclusions reached were embodied in a cirular of instruction which should materially reduce the possibility of further accidents of this kind.

In the trailer field, a change has been made from vacuum to electric brakes due to a shift in that direction by the trade itself. Present-style electric brakes seem to be very satisfactory, showing much improvement over earlier designs.

The fire season was a severe test of all mechanical equipment. It is gratifying to note that reports of failure were relatively few and generally attributable to unskilled operation by transient help—a feature which is unavoidable in abnormal fire periods.

General Supervision

A review of the mechanical-inspection reports submitted during the year indicates that equipment maintenance was adequate despite the pressure of a bad fire year. A better-than-average record was established by the Surveys and Inventory Division as a result of the employment of a mobile crew of two mechanics. These men made numerous trips to areas where the Division's vehicles were concentrated. Close inspection and on-the-spot maintenance largely prevented major mechanical breakdowns with consequent reduction in productive work.

As in the previous year, a series of short instructional courses on the care and operation of four-wheel-drive vehicles were given at Langford by the Victoria headquarters staff. These were primarily organized to improve the proficiency of the field personnel of headquarters divisions of the Forest Service but have also been popular with both the Lands and Finance Departments. A short course on the maintenance and use of chainsaws was added this year and was also well attended.

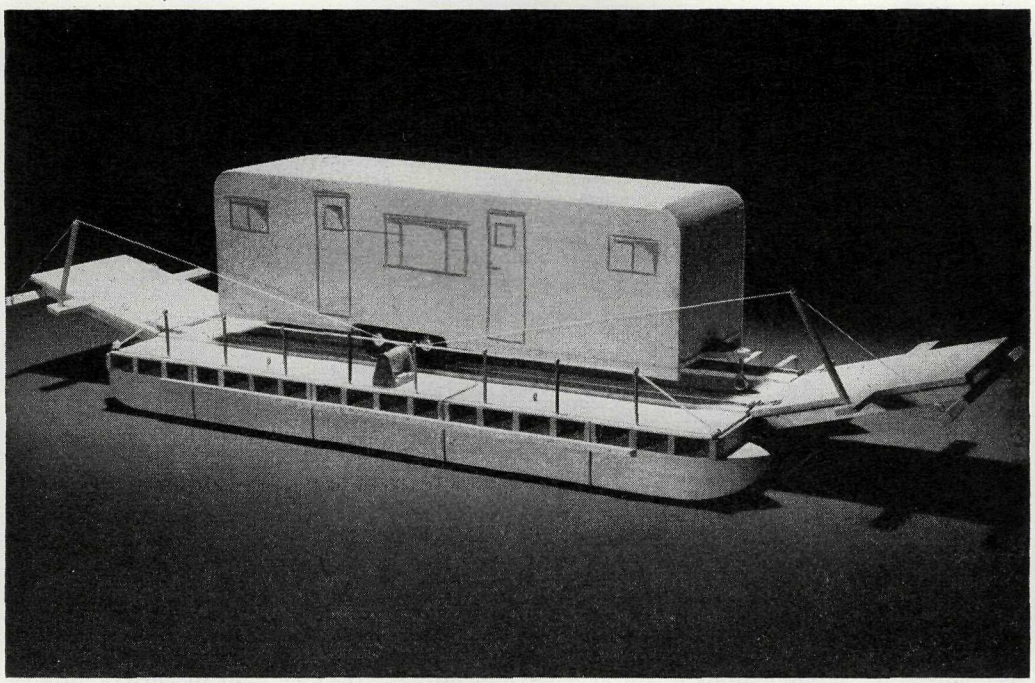
BUILDING CONSTRUCTION AND MARINE DESIGN

New building design and construction during 1958 was limited, as shown in the table on page 55. Also, the carry-over of projects started in 1957 was not heavy. As a consequence, staff had the time to give closer supervision to projects carried out by Forest Service crews and handle numerous small renovation and maintenance jobs. Except for one painting contract and a long list of minor maintenance jobs under $1,000 in value, no new contracts were awarded. However, tenders were called for the erection of a vehicle- and equipment-storage shed in Vancouver at the end of the year, and work on the project will probably get under way in January.

A further programme of Porta-building construction was undertaken to meet the demand for emergency accommodation. This type of building has been favourably received, although various modifications have been suggested. As a result, some of the new models were altered to accommodate a new type of lighting system. To enable use at sites not supplied with electrical power, liquid propane will be used in these units for lighting as well as for cooking and heating.

In the field of marine design, considerable work was done in regard to two major problems in particular. One problem was to design a suitable craft for personnel and equipment transportation on Ootsa Lake, where travel is relatively hazardous due to the flooding of timbered lands. A 45-foot vessel containing special provision for buoyancy units of Styrofoam, and powered by a hydrojet unit in place of the usual power-driven propeller, was finally designed and is under construction at the Marine Station. The hydrojet should enable the vessel to manoeuvre in debris-strewn water without danger of entanglement. There is sufficient buoyancy provided to make the vessel unsinkable, even if badly holed on a submerged snag.

The second problem was a suitable means of providing adequate camp facilities for silviculture crews working in the upper and isolated reaches of Babine Lake. It was finally concluded that maximum flexibility would be obtained if housing consisted of



Scale model of proposed lake barge for the transportation of trailers, vehicles, or bulldozers weighing up to 12 tons.

standard trailers or Porta-buildings and that the problem could be narrowed down to a feasible means of transporting such units. In line with this reasoning, a 16- by 40-foot barge, capable of carrying 12 tons, has been designed. The unit will have flotation from five pairs of Styrofoam-filled pontoons attached to a framework featuring two glulam longitudinal girders as a twin keel. Besides providing for safe and reasonably fast movement of trailers up and down the lake, the barge should be useful in the event of fires, as medium-sized tractors, properly lashed down, can be hauled without danger.

Building construction at various points throughout the Province is detailed in the following table:—

Building and Construction Undertaken during 1958

Location	Project	Construction Agency	Stage of Construction
Carry-over from 1957/58			
Barriere	Addition to office	Forest Service	Completed.
Chase	Assistant Ranger residence	Forest Service	Completed.
Chetwynd	Assistant Ranger residence	Forest Service	Completed.
Duncan	Electrical work for below	Contract	Completed.
Duncan	Greenhouse, lath house, and potting-shed	Forest Service	Completed.
Duncan	Heating	Contract	Completed.
Fishermans Cove	Float	Contract	Completed.
Fort St. James	Water system	Forest Service	Completed.
Golden	Assistant Ranger residence	Contract	Completed.
Lumby	Four-car garage	Forest Service	Completed.
Mesachie Lake	Cook-house extension	Forest Service	Completed.
100 Mile House	Office conversion	Forest Service	Completed.
Pemberton	Office and stores building	Contract	Completed.
Summit Lake	Four-car garage	Forest Service	Completed.
Telkwa	Four-car garage	Forest Service	Completed.
Vancouver	Addition, Forest Service Marine Station	Forest Service	Completed.

Building and Construction Undertaken during 1958—Continued

Location	Project	Construction Agency	Stage of Construction
Programme for 1958/59			
Arrowhead	Office extension	Forest Service	Completed.
Campbell River	Irrigation pumping system	Forest Service	Completed.
Cranbrook	Irrigation pumping system	Forest Service	Work proceeding.
Duncan	Extension, seed-extraction plant	Forest Service	Work proceeding.
Green Timbers	Refrigeration	Contract	Completed.
Lillooet	Four-car garage	Forest Service	Completed.
McBride	Staff-house	Forest Service	Completed.
Mesachie Lake	Fire-protection system	Forest Service	Design under way.
Quatsino Sound	Boat-house	Forest Service	Completed.
Vancouver	Retaining-works and derrick	Forest Service	Work proceeding.
Vancouver	Vehicle- and equipment-storage shed	Contract	Tenders called.
Various points	Six Porta-buildings (residences)	Forest Service	Work proceeding.
Various points	Painting	Contract	Completed.

FOREST SERVICE MARINE STATION

Marine Work

Thirty-six major overhauls and twenty-two annual routine maintenance jobs on launches of the Forest Service fleet kept a major part of the staff busy throughout the year. In addition, ninety-six small craft, including fifty belonging to the Surveys Division, were repaired and reconditioned. The M.V. "Syrene" was re-engined with twin diesels of 100 horse-power each. The newly purchased 38-foot scaling launch "Conifer" was receiving some modifications to cabin work and fittings, together with the installation of twin 200-horsepower gasoline-engines, as the year ended.

Due to the extensive maintenance programme indicated in the preceding paragraph, new construction was limited. Nevertheless, the 40-foot Ranger launch "Western Hemlock," which was commenced in 1957, was finally launched and delivered to Prince Rupert. A special design of lake craft for Ootsa Lake, mentioned previously in this report, was started and three-quarters complete by the end of the year. Two 23-foot and three 18-foot outboard cruisers plus three 9-foot plywood dinghies comprised the remaining production of complete craft, but five "Dreemboat" hulls, purchased in the unfinished state, were also completed.

Prefabrication and Carpenter-shop

Production by the woodworking-shop was, as usual, varied, ranging from simple crates to special items for the Pacific National Exhibition. Thirteen lookout buildings, complete with sets of furniture, were prefabricated. The programme of Porta-building construction, started late in 1957, was continued. Six of these buildings have been completed and three were in production at the year's end. Miscellaneous minor items included over 300 special tool, pump, and outboard-motor boxes, sixty-six signs of various types, thirty two-piece level rods, and a number of pieces of special office furniture.

Machine-shop

The severe 1958 fire season put a heavy load on the machine-shop during the summer months and assured capacity operation throughout the remainder of the year. Over 400 overhauls on pumps, outboard motors, chain-saws, and lighting plants were completed. One hundred and seventy new units were tested prior to shipment to the field. Over 2,000 pieces of hose and pump accessories were machined. In addition, the machining of hundreds of specialty items for marine use, Porta-buildings, and lookout buildings (including twenty sets of lightning-arresters) amount to a significant percentage of the work performed.

A special feature of the shop's performance was the development of a new hose nozzle. This nozzle has a pistol-grip, is trigger-operated, and provides either a solid stream of water or fog. Improvements have also been made in the design of the epidiascopes produced by the shop, and forty units are now in process of manufacture.

General Plant Maintenance

A long-range improvement development was started this year by excavating and riprapping 300 feet of the river-bank and erecting a new section of wharf. A new derrick is also in the process of erection. Dry-rot in the foundation timbers of No. 1 and No. 2 buildings created a major repair problem. General maintenance and repair was carried out throughout the Station.

RADIO SECTION

The severe fire season of 1958 delayed summer installation in the Kootenay region and created a great deal of radio-propagation survey work which had not been anticipated in the 1958 plans. The unusual heat and dryness caused the disappearance of previously tested circuits and cancellation of part of the plan for installation of V.H.F., F.M. in the Nelson area. Based upon the probable repetition of similar conditions in the future, our standards of acceptance of any surveyed V.H.F. circuit were revised upwards.

New transmitting units of all types purchased in 1958 total 146, as shown in the table below:—

New Radio Units, 1958

Portable, F.M.	79
Ranger Station, 60-watt, F.M.	19
Ranger Station, 25-watt, F.M.	1
Mobile, F.M.	3
Portable, A.M.	37
Marine, 85-watt, A.M.	3
Fixed Station, 85-watt, A.M.	4
Mobile, A.M.	—
Purchased, 1958, F.M.	102
Purchased, 1958, A.M.	44
Add 1957 total	1,090
Less obsolete units written off, 1958	20
Net total, all districts	1,216

In keeping with the policy of gradually reducing A.M. equipment, purchases of A.M. units would have been negligible during 1958 but for the emergent needs of the unusually severe fire season. Of the sets purchased, F.M. equipment comprised 70 per cent of the total, as against 58 per cent in 1957 and 17 per cent in 1956.

The Department of Transport regulation in the form of Specification 116, affecting fixed land stations, was implemented during the year without the setting of a firm date for expiry of the amortization date. This specification included terms which had the effect of classing lookout portables in the category of fixed stations and, as these units cannot possibly conform with the terms of Specification 116, which deals with power-operated units, the Service was faced with the possibility of a large proportion of its lookouts being made inelegible for licensing in the comparatively near future. Immediate representation was made to the Western Canada Telecommunications Council and, through them, to Ottawa, and the assurance was received that exceptions would be made in cases where hardship could be shown.

Nelson excluded, new installation of V.H.F., F.M. equipment in the form of Ranger stations and repeaters was not materially increased during 1958. Seventy-nine lookout and fire portables were purchased, to be divided essentially among four districts. This permitted, to a small extent, the use of F.M. on fires, but it was evident that these will not become really useful on large or remote fires until they can be supplied to each fire in greater concentration.

In the Kamloops area, the reliability of Silver Star repeater, always a problem in the past, was improved by the addition of an automatic change-over, stand-by propane motor and extra gas-storage tank. Campbell Mountain repeater was abandoned when it was found that a signal could be beamed into Penticton from Silver Star with greatly improved signal strength. Equipment from Campbell Mountain was used to convert Greenstone Mountain into a full repeater, paving the way, through the proposed Timothy repeater, to Williams Lake and intermediate points. Thirteen lookouts were F.M.-equipped, and excellent results were obtained, with unlimited time on the air for each, without jamming the A.M. network. Results from the A.M. net during the summer were intermittently poor, depending on weather conditions.

In the Prince George area, a repeater was added at Fort Fraser Lookout, which gave solid V.H.F. communication to Fort St. James, Vanderhoof, and Fort Fraser. This unit is still powered with a gasoline generator and is not regarded as a final installation for that reason. In the autumn, after suitable tests, Pilot Mountain repeater was abandoned in favour of Tabor Mountain, giving equal coverage in the west and south and increasing V.H.F. range to Fort St. John and other northern points and to Penny in the east. Over the entire summer, regardless of the unfavourable weather conditions, the V.H.F. network performed extremely well.

In the Vancouver District, which is now largely V.H.F.-equipped, reliability was excellent. Alberni and associated lookouts were equipped with F.M. for the first time, and tests were carried out in September to determine the feasibility of transferring Mount Newton repeater to Mount Bruce, thus increasing the coverage to Elk Falls repeater direct, and eliminating Cottle Hill repeater at Nanaimo. Preliminary steps for this transfer have been taken and will be completed early in 1959.

The A.M. system in the Prince Rupert District gave satisfactory results within the usual limits of this method of communication. A new remote receiver installation at Smithers and increased power througout the Ranger districts offset, to some extent, the drawbacks of adjacent channel and other forms of interference. Some F.M. tests were made with the object of supplying, in the near future, F.M. communication between Ranger stations and lookouts, point-to-point F.M. transmission not being practical until commercial interests establish power-equipped repeater sites as in other areas. One F.M. circuit between Prince Rupert and Queen Charlotte City proved partially successful and may later be made permanent by the use of beam antennas.

At Nelson, which was equipped with A.M. only until the summer of 1958, installation of V.H.F., F.M. equipment started in July. Ranger stations from Invermere south to Cranbrook and from Cranbrook west to Beaverdell were F.M.-equipped, these being fed by repeaters at Moyie, Thompson, and Phoenix Mountains. The original plan to use Red Mountain as the connecting-link between these repeaters and Nelson headquarters had to be abandoned, as signals which were satisfactory over this route the previous year were non-existent during the intensely hot weather.

While Ranger stations used the new system among themselves and in conjunction with a number of F.M.-equipped lookouts, a survey was carried out with the object of finding some means of connecting Nelson headquarters to the rest of the system by means of alternate or additional repeaters. Sites were finally chosen at Beasley, 9 miles from Nelson, and on Santa Rosa Mountain in the Cascades. Though the system could not be completed during the summer, Beasley repeater has been constructed and will be ready for use in the spring of 1959.

The F.M. system gave relief to the crowded A.M. channel, which provided most of the communication under adverse conditions of lightning and man-made interference. Although communication was maintained, the never-ending battle against electrical noise made all contacts extremely difficult and the need for the replacement of many A.M. stations by V.H.F. was even more evident than in the past.

Following their work in the Kootenay region, Victoria crews completed repeater changes in the Kamloops District and an extensive repeater-coverage survey from Mount Bruce on Saltspring Island to Williams Lake, and from Tabor Mountain near Prince George to Little Prairie Mountain, Fort St. John, and other points in that area. Particular importance is attached to the results of the long-distance tests, which show that an F.M. circuit can be established between Victoria, Kamloops, and Prince George with the addition of one repeater at Manning Park, and that Nelson also can be connected when district repeaters are completed.

FOREST PROTECTION

WEATHER

A mild winter, with little or no snow at the lower levels, preceded the 1958 fire season. In the north, the usual early spring hazard was either normal or missing altogether, in spite of much below-average rainfall over those districts.

The fire season began in earnest in May, as an area of high pressure dominated first the southern districts and, later, the northern half of the Province. New record high mean temperatures for May were set at a number of points in the southern part of the Province, while sunshine was generally 20 to 40 per cent more than normal. As the high-pressure area shifted northward in the last week of May, widespread lightning activity occurred on the 28th of that month in the three southern districts. Earlier, on the 21st, a lightning-storm centred in the Prince George District set off a number of serious fires.

The usual June rains were absent this year as abnormally high pressure persisted in the Gulf of Alaska until the last week of the month, when it broke down sufficiently to permit one weather system to reach British Columbia from the west. This system brought severe lightning activity to almost all of the Province and, in only 36 hours, gave the Prince George area close to its normal June rainfall. Record rainfall deficiencies were reported over the Northern and Central Coast and exceptionally high mean temperatures were reported over the whole Province, setting new records at almost all first-order weather stations. Hours of sunshine ranged from near normal in the south to 50 per cent above normal in the north.

July was a month of record drought, caused by the persistent blocking effect of a ridge of high pressure extending well to the north of its usual position along the British Columbia coast. At Victoria it was necessary to go back to 1889 to find another rainless July. Much-above-normal temperatures were accompanied by sunshine ranging from near normal over the Southern Interior to 60 per cent above normal on the Northern Coast, and 40 per cent above normal over the Northern Interior and Southern Coast. Widespread lightning activity July 4th to 8th set fires over the whole Province with a reversal of the normal pattern—Nelson District relatively untouched and the Prince Rupert District reporting more than 160 fires. On July 10th and 11th another storm hit the Prince George, Kamloops, and Nelson Districts, leaving some 120 fires in the Nelson District alone. A third serious blow was delivered on July 28th and 29th when Vancouver, Kamloops, Prince George, and Nelson reported widespread lightning activity.

Above-normal temperatures continued into August, although the rainfall pattern was quite variable, with deficiencies general throughout the Southern Interior. Sunshine-amounts remained 10 to 20 per cent above normal, except over the North Coast, where they were 10 to 20 per cent below normal August values. Pressure remained high along the Coast, but the ridge broke down at intervals to permit the approach of the occasional weather system. These systems brought lightning activity to the Nelson and Kamloops Districts on August 10th to 12th, 18th and 19th, and on the 25th.

In the first week of September, the persistent weather pattern of the summer broke down, permitting Pacific storms to reach the Northern Coast. A week or so later these storms were able to reach the Southern Coast. Late in the month, the blocking high-pressure area redeveloped along the Coast, and this pattern continued into the first week in October, when the fall rains brought the season effectively to an end.

There were three principal features of the weather that contributed to the record fire season. First, there was the length of the several extended dry spells coupled with the frequency of strong inversions and resulting lack of overnight recovery of fuel moisture. This permitted the heavier fuels and the green timber to dry out to a state seldom reached previously in many sections of the Province. A second factor was the

number of widespread lightning-storms which found readily inflammable fuel even in areas where lightning-strikes normally have little effect. A third factor was the occurrence of strong winds which, combined with the dry state of the heavy fuels and green timber, produced fires of major proportions often within a matter of hours.

FIRES

Occurrence and Causes

The number of fires was slightly more than twice the ten-year average. The occurrence by months again deviated somewhat from normal (*see* Table 50 of the Appendix). Shown below for comparative purposes are figures of fire occurrence by districts for the past decade:—

Forest District	Fire Occurrence during Ten-year Period, 1949–58	Percentage of All B.C.
Vancouver	6,679	34.9
Prince Rupert	995	5.2
Prince George	2,035	10.6
Kamloops	5,679	29.6
Nelson	3,782	19.7
Totals	19,170	100.0

The principal cause of fires in 1958 was railways operating, which accounted for 29.7 per cent, followed by lightning with 27.9 per cent. It should be noted that of the total of 1,224 railway fires, 1,086 were on the Pacific Great Eastern Railway.

Cost of Fire-fighting

The cost of fire-fighting to date amounted to $4,528,137 or $3,755,064 more than the ten-year average. For detailed tabulations of costs, *see* Tables 41, 56, and 58 in the Appendix.

The heaviest costs of suppression were attributable to fires caused by lightning, being 75 per cent of the total cost, although that cause only represented 27.9 per cent of the total number of fires.

Damage

The total area burned was estimated to be 2,065,423 acres (*see* Table 55 in the Appendix). This is about five times more than the ten-year average. The damage is estimated to be $7,917,235, or about seven times the ten-year average. Seventy-five per cent of the area burned carried non-commercial cover or were non-productive sites.

FIRE-CONTROL PLANNING AND RESEARCH

Fire Atlas and Statistics Ledgers

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

Visibility Mapping and Lookout Photography

Visibility-mapping crews spent a large portion of their time in the north-east part of the Province. The areas adjacent to the Alaska Highway were examined from Fort St. John to Lower Post with the purpose of eventual development of a network of primary and secondary lookouts to cover this region. The Rocky Mountain Trench was also examined as far as Fort Ware. A breakdown of points examined, by forest districts, is as follows: Prince George, 34; Kamloops, 8; and Nelson, 7.

Lookout photography was carried out in conjunction with visibility mapping, fourteen lookouts being photographed.

Protection Planning in Public Working Circles and Sustained-yield Units

Preliminary field work, preparatory to drawing up protection plans, was carried out in the Chilliwack, Babine, and Naver Public Working Circles, and the Nicola Lake and Creston Sustained-yield Units.

In the fire-protection access road programme, work was centred in the Yahk River area in the Nelson Forest District. Some 27.5 miles of road was constructed, with several good connections to adjacent road systems.

Air-photo Mosaics

Coverage was increased in the Prince George area, and additionally complete coverage was made of the Queen Charlotte Islands.

Prints of these mosaics are available to the general public through the Air Photo Library, Department of Lands and Forests.

FIRE-WEATHER RECORDS AND INVESTIGATIONS

Two field parties from the Federal Forestry Branch, Research Section, continued to obtain the basic data necessary for the development of a fire-danger rating system for British Columbia.

Following representations by industry and the Forest Service, the fire-weather forecasting service provided by the Vancouver public weather office was expanded this season to include a forecast of the percent-chance of rain at a number of selected points. This service was evaluated and found to give a definite increase of information over and above a categorical forecast of "rain" or "no rain."

A paper on the subject of fire-danger build-up was presented to the Western Fire Weather Conference in Portland in April.

Preparation and distribution of fuel-moisture indicator sticks continued to be a function of the Protection Division. Demand for these appears to have levelled off, with a total of 637 sets distributed, 428 of which went to industrial operators.

FIRE-SUPPRESSION CREWS

Sixteen suppression crews, averaging ten men each, were again employed during the summer for approximately 100 days each. They attended 268 fires, of which 82 per cent were held to a size of 5 acres or less.

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)	165	151	6	6	2	----
Over ¼ acre and up to 1 acre	23	----	21	2	----	----
Over 1 acre and up to 5 acres	29	----	----	14	13	2
Over 5 acres and up to 50 acres	45	----	----	----	39	6
Over 50 acres	6	----	----	----	----	6
Totals	268	151	27	22	54	14

AIRCRAFT

Protection flying was continued under contract with Pacific Western Airlines Limited, who supplied six float-planes. A total of 2,300 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	300
Prince Rupert	Lakelse Lake	Beaver	375
Prince George	Prince George	Beaver	405
Kamloops	Kamloops	Beaver (2)	660
Nelson	Nelson	Beaver	560
Total			2,300

One helicopter, under a two months' contract, was used in the Nelson District for a total of 206 flying-hours, occupied in cargo-hauling, reconnaissance, ferrying, and fire patrol.

In addition to these machines under contract, extensive use was made of both fixed-wing aircraft and helicopters on all types of fire-suppression work. Approximately 3,224 hours were logged on fixed wing and 1,184 hours on helicopters.

For the first time in British Columbia, free dropping of water was used extensively in combating forest fires. Previously, water bombing using water in bags had been tried on lightning-strikes with little success. Free drops were successful in holding some lightning-strikes until fire-fighting crews could be brought in. On some larger fires, fire-fighters were assisted by free-water dropping attacks on hot spots, but the idea of stopping a forest fire by water-dropping alone proved fallacious. The consensus of opinion is that the best use of this method of attack is to gain time on lightning-strikes or spot fires which are difficult of access until a fire crew can get to them. The following tables give some statistics on this type of aircraft use:—

Use of Fixed-wing Aircraft in Fire-fighting, 1958

Forest District	Reconnaissance		Transport of Men and Supplies		Water Bombing		Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Vancouver	103.53	$7,876.40	192.39	$14,959.57	681.44	$87,544.14	978.16	$110,380.11
Prince Rupert	103.02	7,369.03	938.53	68,436.32	18.15	1,443.75	1,060.10	77,249.10
Prince George	224.59	16,580.19	443.05	33,809.35	9.20	812.00	677.24	51,201.54
Kamloops	68.40	5,435.47	133.15	10,343.55			201.55	15,779.02
Nelson	67.40	2,996.10	54.20	4,050.75	184.40	19,901.89	306.40	26,948.74
Totals	568.14	$40,257.19	1,762.12	$131,599.54	893.59	$109,701.78	3,224.25	$281,558.51

Use of Helicopters in Fire-fighting, 1958

Vancouver	15.15	$4,159.85	112.12	$28,584.43	8.05	$3,233.32	135.32	$35,977.60
Prince Rupert			405.14	39,860.13	4.30	429.75	409.44	40,289.88
Prince George	65.03	5,646.83	364.05	45,400.22			429.08	51,047.05
Kamloops	36.30	3,747.75	70.35	7,293.05	14.00	1,450.85	121.05	12,491.65
Nelson	59.00	5,974.68	9.05	908.32	20.55	2,091.67	89.00	8,974.67
Totals	175.48	$19,529.11	961.11	$122,046.15	47.30	$7,205.59	1,184.29	$148,780.85

Various types of helicopters, such as the Sikorsky S58 and S55, Bell G1 and G2, were used on fires for moving in personnel, equipment, and water bombing. Water-filled paper bags were used from helicopters on several occasions with success on lightning-strikes.

Eighteen tons of sodium calcium borate (known as Firebrake) was used experimentally this fire season. It was applied in free drops from aircraft, in bags from aircraft, and from the ground. The reports of its use are not conclusive. It does have fire-retardant properties. Small fires can be held in check by use of Firebrake until a crew gets in. On a large, hot fire front, results were not good because the fire was burning in reproduction and the Firebrake, although used in quantity, did not reach the ground in sufficient volume to coat the fuel and stop the fire. It is an aid to other supression activities, and further experiments will be carried out.

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	58.5	132.2	50.5	241.2
Road maintenance	529.6	244.6	75.4	849.6
Total road construction and maintenance	588.1	376.8	125.9	1,090.8
New trail construction	23.1	8.5	17.7	49.3
Trail maintenance	429.2	183.4	71.6	684.2
Total trail construction and maintenance	452.3	191.9	89.3	733.5

SLASH-DISPOSAL AND SNAG-FALLING

The mild winter of 1957/58 allowed a very early start of full-scale logging in 1958. The hazardous summer weather conditions, however, resulted in lengthy interruptions due to fires and closures. As logging was quickly resumed in early September, the net result was that the total area logged in the Vancouver District was only 18 per cent less than in 1957.

Being preoccupied with fire suppression, Rangers and district staff could not devote the usual amount of time to inspecting and reporting on logged areas and issuing instructions to burn, with a result a larger acreage of slash will be carried over to 1959.

Compliance with snag-falling regulations has been satisfactory, and it is anticipated that the acreage assessed for non-compliance in 1958 will be considerably less than in 1957.

Three snag-falling contracts, totalling $20,595 and comprising a total area of 4,152 acres, were awarded in 1958. All three areas were located on the Sechelt Peninsula, in the Vancouver District. Reforestation Division crews felled snags on 2,035 acres in the Lower Coastal area.

For statistical data on slash-disposal and snag-falling in the Vancouver Forest District, *see* Tables 43 to 49, inclusive, in the Appendix.

FIRE-LAW ENFORCEMENT

The 124 prosecutions of 1958 were double the ten-year average. The prosecutions are further analysed in Table 59 of the Appendix.

FOREST CLOSURES

Thirty-two regional closures were imposed in the Nelson Forest District, nine in the Vancouver Forest District, and one in the Coastal area of the Prince Rupert Forest District. Because of the severe fire season, a record number of forest closures was necessary.

In addition to the restricted industrial and recreational closures, it was necessary to impose two general closures in the Vancouver Forest District. Every effort was made to lift the closures as soon as practical because of the hardships and inconveniences caused by these protective measures.

The summary of closures is shown in the following table:—

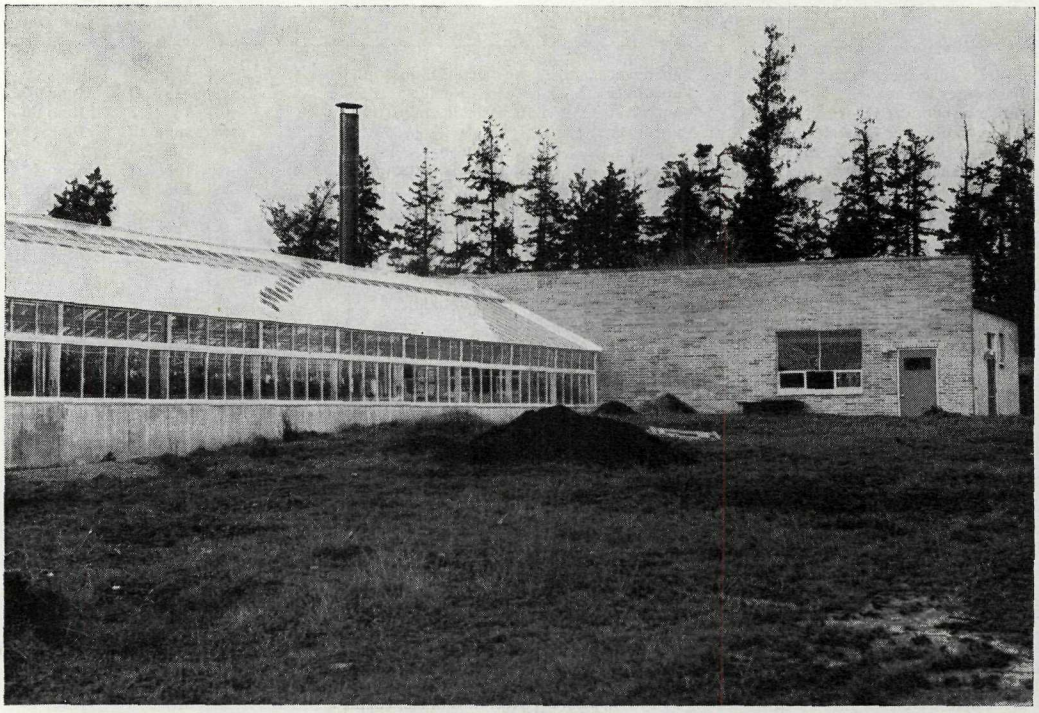
Forest Closures, 1958

Area	Forest District	Type of Closure	Effective Date	Termination Date
Entire Vancouver District	Vancouver	Restricted Industrial	May 26	May 29
Blackwater Creek	Vancouver	Recreational	May 27	June 6
Entire Vancouver District	Vancouver	Restricted Industrial	June 18	June 30
Entire Vancouver District	Vancouver	Travel	June 19	June 27
Woodbury Creek	Nelson	Recreational	June 26	July 7
Entire Vancouver District	Vancouver	Restricted Industrial	July 7	Aug. 7
Entire Vancouver District	Vancouver	Travel	July 15	Aug. 7
Entire Vancouver District	Vancouver	General	July 16	Aug. 7
Little Slocan River	Nelson	Recreational	July 16	Aug. 29
Prince Rupert District west of Cascade Mountains, including Queen Charlotte Islands	Prince Rupert	General	July 18	Aug. 4
Tiger, Cambridge, Gorge, Ryan, McAlister, and Casino Creeks	Nelson	Recreational	July 18	Aug. 29
Blueberry, Poupore, Sullivan, Johnson, Murphy, McNally, Hanna, and Topping Creeks	Nelson	Recreational	July 18	Aug. 29
Big Sheep Creek	Nelson	Recreational	July 18	Aug. 29
Woodbury Creek	Nelson	Recreational	July 22	Aug. 29
Crawford Creek	Nelson	Recreational	July 23	Aug. 29
Hawkins Creek	Nelson	Recreational	July 23	Aug. 29
Goat River	Nelson	Recreational	July 23	Aug. 29
Sullivan Creek	Nelson	Recreational	July 23	Aug. 29
Sheep Creek	Nelson	Recreational	July 24	Aug. 29
Hidden Creek	Nelson	Recreational	July 24	Aug. 29
Porcupine Creek	Nelson	Recreational	July 24	Aug. 29
South Fork of Salmo River	Nelson	Recreational	July 24	Aug. 29
Wilson Creek	Nelson	Recreational	July 24	Aug. 29
Arrowpark Creek	Nelson	Recreational	July 25	Aug. 29
Slewisken Creek	Nelson	Recreational	July 25	Aug. 29
Big Sand Creek	Nelson	Recreational	July 31	Aug. 29
St. Mary River	Nelson	Recreational	Aug. 1	Aug. 29
Ladybird and Norns (Pass) Creeks	Nelson	Recreational	Aug. 1	Aug. 29
Whatshan River	Nelson	Recreational	Aug. 1	Aug. 29
Lamb Creek	Nelson	Recreational	Aug. 4	Aug. 29
Sanca Creek	Nelson	Recreational	Aug. 4	Aug. 29
Spillimacheen River and Bobbie Burns Creek	Nelson	Recreational	Aug. 12	Aug. 29
Alexander Creek	Nelson	Recreational	Aug. 15	Aug. 29
Hartley Creek	Nelson	Recreational	Aug. 15	Aug. 29
Elk and Fording Rivers	Nelson	Recreational	Aug. 15	Aug. 29
Part of Vancouver District	Vancouver	Restricted industrial and travel	Aug. 15	Sept. 2
Part of Vancouver District	Vancouver	General	Aug. 20	Sept. 2
Kuskanax Creek	Nelson	Recreational	Aug. 21	Aug. 29
Nakusp, Fitzstubbs, and Bremner Creeks	Nelson	Recreational	Aug. 21	Aug. 29
Cariboo and Burton Creeks	Nelson	Recreational	Aug. 21	Aug. 29
Kettle and Westkettle Rivers	Nelson	Recreational	Aug. 22	Aug. 29
Lardeau and Duncan Rivers	Nelson	Recreational	Aug. 22	Aug. 29

FOREST BIOLOGY DIVISION*

ACCOMMODATION AND FACILITIES

Construction of a header-house and greenhouse at the site on Burnside Road in Victoria was completed in June. Two fully equipped trailers were purchased to provide portable field-station facilities for Douglas fir beetle research at Lac la Hache.



New header-house and greenhouse located on Burnside Road, Victoria, and completed in June, for the use of both pathology and zoology staffs.

FOREST-INSECT INVESTIGATIONS†

Although several outbreaks of defoliators persisted throughout the Province, only one, in Stanley Park, Vancouver, was considered serious enough to require remedial action. The Pest Control Committee of the British Columbia Loggers' Association did not undertake any control projects, but several meetings were held to explore ways and means of supporting research and surveys, particularly on ambrosia-beetles, being carried out by the Forest Biology Division.

Early in 1958 an interdepartmental committee, composed of representatives from four Federal agencies, was formed to study the possibility of reducing toxicity to fish and fish-food organisms caused by sprays used for control of forest insects. The agencies represented are Fisheries Research Board, Department of Northern Affairs and National Resources, Department of Fisheries, and Science Service, Department of Agriculture.

Grateful acknowledgment is made of the co-operation and support received from the British Columbia Forest Service and the forest industries.

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* Science Service, Canada Department of Agriculture.
† Prepared by R. R. Lejeune, Forest Zoology Unit, Victoria and Vernon, B.C.

Forest-insect Survey

The balsam woolly aphid *(Adelges piceæ (Ratz.))*, a serious introduced pest of true firs, was discovered in British Columbia during 1958. It is now known to occur in North and West Vancouver, the east side of Howe Sound, and New Westminster. The principal host is amabilis fir, but it has also been found on grand fir. Indications are that the insect has been present in these areas at least eight years and it has killed some amabilis fir. Thus far, relatively small acreages are affected.

The total area of the one-year-cycle spruce budworm outbreak in the Lillooet River and Lake region was 653 square miles, an increase of 155 square miles over 1957. The outlook for 1959 is for generally light defoliation with heavy feeding in localized areas.

The two-year-cycle budworm infestation in the Babine Lake area was calculated at 1,286 square miles. Defoliation of white spruce and alpine fir was heavy, with loss of current foliage averaging 95 per cent. On the basis of egg-counts, an increase in population is expected in 1959.

No outbreaks of the black-headed budworm were discovered in British Columbia during 1958, although increased egg populations were found on the Queen Charlotte Islands.

The occurrence of red-topped trees killed by the Douglas fir beetle increased in 1958 in many areas of the Cariboo and Okanagan regions. In the Nelson District, infestations were discovered at White Swan Lake and Wigwam River. There was a general increase of the beetle throughout the Slocan and Upper Arrow Lake valleys.

The mountain pine beetle outbreak in lodgepole pine along the east shore of Babine Lake in the Prince Rupert District decreased in intensity. On three main areas of heavy infestation covering 23 square miles, tree mortality was calculated to be about 28,000,000 cubic feet. There was a general increase in the number of infested white pine in the Nelson District.

Englemann spruce beetle attacks continued in the Nelson District, but at a declining rate. The population was relatively high in the upper valley of Bighorn Creek. Active beetle populations persisted at Watson, Russel, and Grove creeks and subsided in the Cabin, Storm, and Sage Creek valleys.

Although no serious defoliation was observed, populations of the western hemlock looper rose appreciably throughout the Province. In Stanley Park, Vancouver, the green-striped forest looper, in conjunction with the western hemlock looper and other insects, caused noticeable defoliation to overstory mature trees. The park was sprayed with DDT on July 26th to prevent further damage.

It was thought that widespread problems with wood-borers might develop in the extensive areas of forest land burned during 1958. The only serious situation that has arisen to date concerns the salvage of fire-killed spruce in the Prince George District. Examination of several areas indicated that substantial wood-borer damage occurred in spring and early summer fires, while damage was light to negligible in later fires.

Research Projects

Preliminary tests were made of several new insecticides to determine their potential effectiveness in protecting logs from attack by the ambrosia-beetle *(Trypodendron lineatum)*. It was concluded that lindane is still the most effective, although one other, heptachlor, showed enough promise to warrant further investigation. An experiment was completed to study the effect of tree-girdling, at various intervals before felling, on susceptibility to attack by ambrosia-beetles. Under conditions of the experiment, susceptibility did not differ significantly between girdled and ungirdled trees. Some evidence has been obtained that low starch content of sapwood may indicate changes in sapwood constituents leading to susceptibility to beetles. The amount of starch apparently de-

creases progressively after felling, and the amount present in living trees shows seasonal variations. Progress was made in developing a rapid method for sorting over-wintering ambrosia beetles from duff. This will permit more extensive sampling of beetle populations for both reconnaisance surveys and research purposes.

Studies were continued to determine how abundance of the Douglas fir beetle is governed by various physical and biological factors. The emphasis during the past year remained on measuring the effect of attack density on beetle productivity and survival. The initial phase of this work should be completed in 1959. It has been demonstrated fairly conclusively in the Cariboo region that where beetle populations are heavy, the presence of attractive material, such as freshly felled logs, in a stand can induce killing attacks on surrounding living trees. This phenomenon is being used in a pilot control project north of Quesnel, being organized as a co-operative undertaking between the British Columbia Forest Service, Western Plywoods Limited, and the Forest Biology Division. The object will be to draw Douglas fir beetle populations into pre-selected areas with attractive logs and subsequently remove both the logs and green-infested trees in an attempt to reduce the number of beetles.

The Douglas fir cone-crop on Vancouver Island was light and damage by insects generally severe. In order of importance, the insects responsible for most of the damage were the Douglas fir cone-midge *(Contarinia oregonensis)*, the Douglas fir cone-moth *(Barbara colfaxiana)*, and the Douglas fir seed-chalcid *(Megastigmus spermatrophus)*. Observations showed that adult activity and egg-laying took place during the following periods: Cone-midge, April and early May; cone-moth, late April to late May; seed-chalcid, middle of May to late June.

Recent investigations have disclosed that two and possibly three species of Douglas fir needle-miners are responsible for periodic serious damage to Christmas trees, particularly in the Interior. It was thought at one time that only one species was responsible. Damage symptoms caused by the different species have been described and information secured on life-histories, seasonal activity, parasites, and distribution.

Continuing studies on bioclimatology, insect behaviour, taxonomy, and methods of insect sampling and surveying have progressed, but there are no results to report at this time pertaining specifically to current forestry problems.

FOREST-DISEASE INVESTIGATIONS*

Publications distributed during the year included the following:—

Foster, R. E.; Browne, J. E., and Foster, A. T.: Studies in forest pathology. XIX. Decay of western hemlock and amabilis fir in the Kitimat region of British Columbia. Can. Dept. Agr. Pub. 1029. Ottawa, 1958.

Molnar, A. C., and Garman, E. H.: Introduction of exotic trees to British Columbia. B.C. Lumberman 42(3): 36–37. 1958.

Thomas, G. P.: Studies in forest pathology. XVIII, The occurrence of the Indian paint fungus, *Echinodontium tinctorium* E. & E., in British Columbia. Can. Dept. Agr. Pub. 1041. Ottawa, 1958.

In addition, four multigraphed reports were prepared for regional distribution. These reports referred to the collection of plants and forest fungi in the Victoria herbarium, to proposed standards of measurement and procedure in decay investigations, to the deterioration of killed Douglas fir in the South Central Interior region, and to the importance of decay in scar-damaged residual stands of spruce and balsam in the Prince George Forest District. Contributions to the Bi-monthly Progress Report dealt with decay in western larch and pole blight of western white pine in British Columbia.

A co-operative study to establish an ecological classification of white pine forests in the Interior region was initiated during the year. This study, sponsored by the Forest

* Prepared by R. E. Foster, Forest Pathology Unit, Victoria, B.C.

Biology Division, is being carried out under the direction of Dr. V. J. Krajina, Department of Biology and Botany, University of British Columbia. The project is designed to describe the forest associations in which western white pine occurs and to evaluate the successional status of pine and associated tree species. An ecological classification of this nature would establish a basis for uniform stand descriptions and population sampling within discrete forest units. To date, approximately 200 sample-plot areas have been located between Nelson and Mabel Lake.

Forest-disease Survey

Collections of forest disease submitted during 1958 by co-operators, Forest Biology Rangers, and other laboratory personnel totalled 2,443. Among this number were 133 fungi listed for the first time in the forest-disease herbarium and twenty-seven fungi determined to have a more extensive host range than previously recognized. These collections also showed that the geographical distribution of mistletoe and canker disease was greater than previously recorded.

Needle-blight, caused by *Elytroderma deformans* (Weir) Darker, was recorded throughout the range of yellow pine and was particularly severe in the Kamloops, Merritt, and Clinton areas. All severely infected areas contained a high percentage of foliage brooms, indicating that the disease had been active for several years prior to 1958. Lodgepole pine was affected by needle-blight over part of its range, but damage was not as severe as in the case of yellow pine.

A condition of decline with attendant mortality was reported in Douglas fir in several areas in the Nelson Forest District. Preliminary study demonstrated that the decline had been in progress for several years. Although a high incidence of root-rot caused by *Armillaria mellea* (Vahl ex Fr.) Quél. was present, it was considered that this fungus was more likely associated with the intensification than with the initiation of decline. The cause of the condition is as yet undetermined. A more extensive survey and examination of damaged areas is contemplated.

Rhabdocline needle-blight of Douglas fir reached outbreak proportions in the East Kootenay region during the year, maintaining its role as one of the more important problems confronting the Christmas tree industry in the Interior region. Damage was found to be particularly severe near Invermere. Within this region, local areas were also reported to be severely damaged by die-back. This disease was characterized by the dying-back of branches and the presence of extensive cankers which often girdled the main stem. Sample plots were established to follow the progress of the disease.

Fifty-three additional plantations of exotic forest trees were brought to the attention of the laboratory during the year, bringing the total number registered to 118. A tentative examination schedule was devised to ensure that all plantations would receive at least periodic appraisal in respect to the occurrence and extent of damage resulting from diseases, insects, and other factors. Annual examinations of certain plantations are contemplated; these will be selected on the basis of species composition, site, and geographical location. Examinations carried out in 1958 demonstrated that severe climatic injury and mortality had occurred in several areas. Animal browsing also appeared as a factor of some importance. Yellow leaf-blister, caused by the fungus *Taphrina populina* Fr., was noted on Lombardy poplar, but infection was not widespread or severe. No important pathological damage has been apparent to date.

Drought damage was recorded in forest plantations on Vancouver Island and the Lower Coast region. Mortality occurred over a range of conditions but was largely evident on marginal sites. Douglas fir and western hemlock were severely damaged in some areas.

Diseases of Immature Forests

Damping-off losses remained at endemic levels during the year but were somewhat higher than normal in the Coast nurseries. The major losses resulted from the prolonged summer drought with attendant high temperatures. Losses of 50 per cent were reported in some beds at the Duncan Nursery.

Studies of the occurrence and nature of the distribution of disease within Douglas fir plantations were continued on Vancouver Island with the total enumeration of a 17-year-old population of 6,300 trees on 7.2 acres near Campbell River. Frost lesions, sun-scald, die-back, terminal bud injury, and root-rot were among the more important disorders encountered. Analysis of data derived from examination of a 13-year-old fir plantation in the Robertson River area in 1957 was continued. Preliminary results have demonstrated that sample frequencies may follow both random and non-random distributions and have indicated that high sampling intensities may be required to attain moderate precisions in the estimation of population parameters. Sequential, unrestricted random, stratified random, systematic, and multi-stage sampling schemes have been appraised.

Investigations of a condition of severe die-back, attributed to the severe winter temperatures of 1955, were continued near Sooke (Vancouver Forest District). An examination of permanent plots demonstrated continuing mortality resulting from subsequent fungus invasion.

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 Silverton and Mackinson Flat areas (Nelson Forest District) were remeasured and further evidence gained of partial recovery from this disorder. The improvement noted appears to have followed a return to apparently normal moisture and temperature régimes and may be considered to add support to the hypothesis that pole blight was iniated during and as a result of the prolonged period of generally above-average temperature and below-average rainfall recorded from 1930 to 1946. Root sampling and ecological investigations were continued, and a survey of the incidence of pole blight in relation to stand composition and site was initiated.

Diseases of Mature Forests

Field studies of the pathological deterioration of wind-damaged spruce and balsam in the Crescent Spur area (Prince George Forest District) were carried out, bringing the total sample in this area to approximately 460 trees. By 1958, ten years after the blowdown, most of the dead trees had deteriorated beyond the limit of economical salvage. Important differences in the rate of deterioration of spruce and balsam were recorded. Studies of the deterioration of killed Douglas fir in the South Central Interior region (Kamloops Forest District) were completed during the year. Tree size, the degree of subsequent bark-beetle attack, and the length of time that trees had been dead were factors correlated with the rate of deterioration. Important losses were recorded after five years. Field studies of the decay associated with logging injury to spruce and balsam in the Prince George region, completed during 1957, were analysed. A high proportion of the logging scars examined were found to be infected, and substantial volumetric losses were recorded after thirty-one years. Scar size, depth, and position on the tree were determined to influence the degree of infection, and important differences were recorded in spruce and balsam.

FOREST RANGER SCHOOL

CURRICULUM

The tenth class commenced the course in January, 1958, and is due to graduate in April, 1959.

For fiscal reasons, the enrolment of the tenth class was reduced to twenty-one, which was the level of enrolment of classes prior to the ninth class.

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 in the Forest Service.

In particular, the experience of the heavy fire season provided a great deal of valuable material for the revision of the Fire Protection courses. Much of this material was incorporated in the second-term courses of the tenth class.

In addition to increased emphasis placed on safety practice in several courses, first-aid training, previously provided for students with no previous training, was this year made compulsory to all students as an evening class.

The typewriting course, which proved successful with the ninth class, was continued with the tenth class for those not proficient in this skill.

Subjects given during the year were as follows:—

First Term, Tenth Class, Spring Term, 1958

Subject	Days Allotted
Mathematics review and Survey	18
Fire Law and Protection Procedures	16
Preliminary Fire Organization	10
Scaling	14
Construction, Buildings	4
Forest Inventory Mapping	3
Examinations, visitors, and field-trips	6
Total days	71

Second Term, Tenth Class, Fall Term, 1958

Subject	Days Allotted
Survey, Mensuration, and Photogrammetry	20
Fire Suppression	16
Public Speaking	4
Business English	4
Botany and Dendrology	9
Stumpage Appraisal	6
Vancouver Island field-trip	4
Fire Marshal	2
Examinations, visitors, and field-trips	6
Total days	71

EXTRA COURSES

The course for lookoutmen for the Vancouver District was not required this year, but the instructional staff assisted in lookout courses in the Nelson District. The instructional staff also participated in the Forest Protection Committee course sponsored by the Canadian Forestry Association and in lectures to the University of British Columbia and other groups.

ACKNOWLEDGMENTS

Thanks are due to speakers and lecturers provided by the following agencies: Game Commission, Air Division of the Department of Lands and Forests, Office of the Fire Marshal, R.C.M.P. Cloverdale Detachment, Magistrate of Cloverdale, McMillan & Bloedel Limited, National Film Board, as well as lecturers from other Divisions and Districts of the Forest Service.

FOREST ACCOUNTS

During 1958 this Division continued to deal with a large volume of business in all phases of its activity. It is worthy of note that, in view of the extremely heavy demands of the worst fire season in the history of the Service and the continued frequency of turnover of clerical staff, the flow of accounting material and reports from the district offices to headquarters was maintained at a remarkably current level.

Detailed accounting tables prepared by headquarters accounts office appear in the Appendix (Tables 30 to 40, inclusive). It will be noted that, as a result of the weakened market conditions existing at the close of 1957 persisting through 1958, marked declines were recorded in the dollar value of the items affecting revenue. Although the total scale of forest products decreased by only approximately 5 per cent in spite of prolonged forest-fire closures, the total value of the amounts charged against logging operations declined by 20.2 per cent. The major part of this decline was attributable to downward adjustments of stumpage charges due to the sliding-scale formula and the large increase in the number of sales at minimum stumpage.

Total revenue collected, while still well above the average of the last ten years, also declined sharply by 16.8 per cent from the 1957 total. The most striking drop was in the stumpage category, which comprises the bulk of the revenue and which decreased by 18.8 per cent (*see* Table 33 in Appendix).

By contrast, increases occurred in collections of timber-sale rental and forest-protection tax amounting to 10.5 and 10 per cent respectively, and this was reflected in increased activity in billing, recording, and checking of accounts in the Timber Sale Records Section. This Section was similarly affected by the increase in the issuance of cutting permits under tree-farm licences and the extension, effective July 1st, of the sliding-scale formula to cover stumpage prices on all new timber sales issued. Under the market conditions existing during the year, sliding-scale stumpage adjustments became a very active phase of the work.

Another considerable, but entirely unforeseen, increase developed in the work of both the Timber Sale Records and Cashier's Sections as an indirect result of the Federal Government's bond refinancing programme. Licensees took advantage of this plan to substitute the new bonds for those previously furnished as timber-sale deposits. This necessitated submission of new receipt and agreement forms in every case, and entailed a great deal of extra recording and correspondence with banks and licensees.

Royalty revenue from timber cut on lands held under Crown grant or pre-emption entry and record declined by 6.4 per cent, while revenue collected in other categories remained fairly static, with the exception of the general miscellaneous category, which showed a decrease of approximately 16 per cent (*see* Table 33 in Appendix).

The volume of normal expenditure accounting remained large, although responsibility of accounting for the Parks and Recreation Division spending was transferred to the Department of Recreation and Conservation on April 1st. The effect of the record fire season caused a corresponding increase in the work of the Expenditure Section in accounting for fire-suppression costs, including pay records of fire-fighters. The latter phase developed into a major project which, it appeared, would not be completed until well into the new year.

Activities in the headquarters accounts office as a whole were handicapped to a considerable extent by staff shortages over long periods resulting from transfers, promotions, resignations, and replacement problems. The Chief Accountant transferred to the Department of Highways in April to become Departmental Comptroller and was eventually replaced by the Assistant Accountant, the resultant vacancy touching off a " chain reaction " which left the office short staffed in senior clerical positions until late in the year. Some turnover also took place in stenographic and typing staff, but all

vacancies were filled by the close of the year. Due to the staff shortages, little progress was made in completing the Accounting Manual, but it was hoped this could be proceeded with early in the new year.

In the Comptroller's office during 1958, an increased amount of senior officers' time was consumed in the administration of collection of troublesome accounts. These cases became more numerous as an outgrowth of the difficult conditions facing the industry in regard to depressed market prices and tighter financing policies. In order to achieve settlement in several of the larger and more complex cases, it was necessary to spend considerable time in co-operation with Forest Counsel in negotiations with trustees, solicitors, bankers, and representatives of firms involved.

In the light of changing conditions and the apparent need for closer surveillance of outstanding accounts, a review of collection methods generally was undertaken. Subsequently, investigators from the Comptroller's office co-operated with district officials in planning and instituting innovations in field collection routine. A review of year-end reports indicated that the changes had contributed to an improvement in the financial picture and better control of accounts receivable. Normal duties of the investigators were carried out in the checking of mill records and collection of lumber prices, and they also undertook several special projects on behalf of Management Division. The latter included such projects as gathering and analysing operators' costs and selling-prices data for use in relation to timber-sale appraisal work.

Activity in log salvage was affected by the less favourable conditions in the industry generally, and a decrease was noted in renewal of log salvage permits, there being 274 active permits as at December 31st.

Other normal activities of the Comptroller's office were carried on with an increased percentage of the Comptroller's time occupied in giving attention to matters affecting Departmental finances, such as compilation of annual estimates, preparation of periodical memoranda and reports, and liaison with the Department of Finance and the Comptroller-General's office.

PERSONNEL

ORGANIZATION

Upon the retirement, in September, of Dr. C. D. Orchard, Deputy Minister of Forests and Chief Forester for the past seventeen years, the Government announced its intention to divide the responsibilities of Deputy Minister and Chief Forester. Provision for this had been made in the 1958/59 Estimates but, for the current year, Mr. R. G. McKee, the newly appointed Deputy Minister, was named Acting Chief Forester.

One Ranger District was temporarily deleted with the combining of the two former Burns Lake districts into one district. In the Prince Rupert Forest District, a member of the research staff was established with permanent headquarters rather than on the former seasonal basis. The transfer of staff and responsibilities for parks, which were taken over last year by the new Department of Recreation and Conservation, was completed by the transfer of the five remaining parks field personnel and vouchering procedures from the Forest Service. The maintenance of the Forest Service district office buildings at Prince Rupert and Nelson was turned over to the Public Works Department with the transfer of three building service workers.

SERVICES

The typical functions of personnel administration carried out by the Personnel Office remained substantially the same as in the previous year. These involved recruitment, selection, placement, and promotional reviews; employee rating, establishment and work organization; classification and salary reviews; sick- and holiday-leave control; counselling; liaison with the Civil Service and Superannuation Commissions, British Columbia Government Employees' Association and Medical Society. Through reclassification, the Civil Service Commission approved a Personnel Assistant position for the Forest Service to handle administration of the records, recruitment, and the increasing detailed work needed for obtaining Government approval for hiring staff replacements.

During the year, seven matters of grievance were presented by the Government Employees' Association, of which five were dropped after initial inquiry, one was satisfactorily settled, and one settled in part.

The Personnel Officer served on a five-man interdepartmental Deputy Ministers' committee set up to review the merit rating system. The committee's report and recommendations for revision of the rating forms and separation of merit rating from the granting of increases were accepted by the Government.

COMMUNICATIONS AND TRAINING

Eighteen per cent of the Personnel Officer's time was spent away from headquarters, representing a slight increase over the previous year. An average time of one week was spent in each district, with additional time in Prince Rupert, which has been faced with particular problems of office staff recruitment and organization. Ranger meetings were held at Nelson and Kamloops in the spring. The Personnel Officer attended both meetings and took part in a discussion of training and promotional policies at the District Silviculturists' meeting held at the Cowichan Lake Experiment Station. A District Foresters' meeting was not held but, instead, the District Forester and his assistant were called from each district for individual consultations with Victoria divisions. The Civil Service Commission called the first of a proposed series of interdepartmental meetings of Personnel Officers. The meetings are intended primarily for instruction and discussion of new or amended policies.

For the first time in many years, there were no editions of the " Forest Service Newsletter." This popular publication had been restricted to an annual Christmas edition for the past two years but was dropped in view of shortage of funds in the Public Information

and Education Division. During 1958, the Civil Service Commission issued four more bulletins in their "Supervision" series. Subscriptions were continued for the publications "Daily Memos for Supervisors," which are distributed to Ranger and Scaling Supervisors, and "Just between Office Girls."

In the field of training, three members of the Forest Service, representing professional, technical, and administrative clerical staff, were selected for the third class of the Executive Development Training Plan, sponsored by the Government through the University of British Columbia. 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 Third Annual Provincial Conference. 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. Protection meetings were held in most districts in the fall to review and profit from the experience of British Columbia's worst fire year on record.

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, 1958, was 817, a decrease from the previous year of forty-three (5 per cent), including eight transferred to Public Works and Recreation and Conservation. Despite this cut in permanent Civil Servants, it was nevertheless necessary to increase the number of continuously employed staff (*see* Table I in Appendix) by sixty-seven over 1957, in view of the increasing work load in sustained-yield management and protection of the forests. During 1958, seventy-seven persons received Civil Service appointments and seventy-nine left the permanent service. Three 25-year service badges were earned. There were seven retirements during the year. Sixty-seven transfers of permanent staff took place, many resulting from the seven retirements. Permanent-staff turnover for the year averaged 10 per cent, down somewhat from the previous year. Vancouver had 50 per cent above the average turnover, followed by Kamloops and Nelson. There was a 3.3-per-cent turnover of permanent technical staff, which was less than last year, but professional-staff turnover was 13.2 per cent, triple the previous year. The reason for leaving most frequently given by both groups was for better salary, while amongst the office staff, personal reasons, including marriage and family responsibilities, accounted for over 60 per cent of separations. Clerical-, stenographic-, and draughting-staff turnover dropped one-third to 19.3 per cent, with Vancouver and Prince George hardest hit. Because of the substantial proportion of full-time casual staff not included in these Civil Service statistics, however, the actual turnover in office staff was much higher. For example, Prince George had a 183-per-cent turnover in its six non-Civil Service but continuous office positions, which brought its office turnover up from 25.9 per cent for Civil Servants to 54.5 per cent for total office staff. Thirteen graduate foresters and five engineers left the Service and twelve foresters and six engineers were hired, including eight forestry graduates from the University of British Columbia.

Some 569 applications for employment—up 41 per cent over 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 fifty-eight promotional positions, and oral examinations at panel interviews were employed in filling seven other positions. The Personnel Officer and Assistant also participated in making selections for 108 other Civil Service positions. Special efforts were made to recruit young male clerks for the Prince Rupert and Prince George Districts where 90 to 95 per cent of the clerical staff was female. During the year, one individual was released during

his probationary period and two statutory merit increases were withheld. Disciplinary suspensions were made in three cases.

At the annual spring examination for Assistant Rangers, 214 candidates sat, of whom sixty-four passed. As there were only twenty-eight vacancies for Assistant Rangers, these were all filled by qualified men without the necessity of "acting" appointments, as had been the case for the previous several years.

There were three fatal accidents, each involving emergency fire-fighting crewmen hired by the Forest Service. Other fatal accidents resulted from the extremely high fire occurrence, involving fire-fighters and labourers in industry.

Early in the year, the Forester in Charge of the Public Relations and Education Division since its inception in 1945 succumbed to a fatal illness.

CLASSIFICATIONS, SALARIES, AND WORKING CONDITIONS

Changes were made in the Civil Service classification system affecting eight groups of employees. Professional forester requirements were deleted from the position in charge of Public Relations and Education, and a Director of Public Information position was created to head the renamed Public Information and Education Division. The Forest Agrologist positions specifications were rewritten, naming a Director of Grazing in charge, with District Forest Agrologists and Forest Agrologists at Kamloops and Nelson. New specifications and titles were written for graduate foresters, setting up seven grades of registered forester and deleting the former Assistant Forester grades. Qualifications required for radio operators and technicians were brought up to date and the photographic grades were likewise revised. A Chief Accountant classification was created under the Departmental Comptroller, and Investigators, Forest Products Accounting, were regraded to the Audit Accountant grades. Specifications for the temporary field staff in research were adapted to (Forest) Survey Assistant grades and the grading policy of Forest Assistants in stand treatment and cruising work was revised.

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

Early in the year, the Legislative Assembly approved funds to effect the 7½-per-cent average wage increase retroactive to July 1st, 1957, as agreed upon last year. When the wage scales were released by the Civil Service Commission, a few internal anomalies became apparent affecting Grade 2 Foresters and Engineers, Forest Protection Officers—Grade 1, Forest Assistants—Grades 2 and 3, Rangers—Grade 1, Marine Station Superintendent, Personnel Officer, Forest Agrologist, and some individual Foresters-in-Training and Foresters—Grades 1 and 2. These were all successfully adjusted later, with the exception of the Forest Assistants—Grade 2 and Personnel Officer. By the year-end, most grades had again fallen noticeably behind the standard comparative positions outside the Civil Service, and reviews and recommendations were being carried out for inclusion in the next fiscal year's estimates. Following the near strike of 1957, the professional engineers within the Civil Service formed an association separate from the British Columbia Government Employees' Association, and this group presented its own salary brief to the Cabinet in the fall.

No major changes took place in the general conditions of employment in the Service. The system of rating employees and granting statutory merit increases was revised in order to simplify the procedure of granting or withholding increases and to encourage careful rating and development of staff. Good use was made by Forest Service employees of the facilities provided through the Employees' Health Service office in Victoria for receiving inoculations and vaccinations against the common diseases likely to be contracted in field work. The employment or re-employment of persons over 65 years of age was restricted to a few cases individually approved by Order in Council, where circumstances warranted.

PERSONNEL DIRECTORY, 1959

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.
Marling, S. E. - - - - - - - - Forester i/c Management Division.
Pendray, W. C. - - - - - - - - - Director, Grazing Division.
Robinson, E. W. - - - - - - - - Forester i/c Forest Ranger School.

Planning Branch Division Heads:

Hughes, W. G. - - - - - - - - - Forester i/c Working Plans Division.
Pogue, H. M. - - - - - - - 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); Winslow, J. R. (Lund); Gill, D. E. (Thurston Bay East); McArthur, E. J. (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); Norbirg, H. (Tofino); Carradice, J. H. (Pemberton).

Prince Rupert District

J. R. Johnston - - - - - - - - - - - - - District Forester.
Bennett, C. E. - - - - - - - - - - - - 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); Pement, A. R. (Southbank); Hawkins, R. M. (Atlin).

Prince George District

A. H. Dixon - - - - - - - - - - - - - District Forester.
Young, W. E. L. - - - - - - - - - - - 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); McKenna, L. J. (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); Williams, R. V. (Merritt); Monteith, M. E. (Blue River); Collins, B. G. (Enderby); DeWitt, D. O. (100 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); Connolly, J. L. (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); Old, F. G. (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

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(1) DISTRIBUTION OF PERSONNEL, 1958

Personnel	Vancouver	Prince Rupert	Prince George	Kamloops	Nelson	Victoria	Total
Continuously Employed							
Deputy Minister, Chief Forester, and Assistant Chief Foresters	------	------	------	------	------	3	3
Division Foresters	------	------	------	------	------	8	8
Directors of Grazing and Public Information	------	------	------	------	------	2	2
Forest Counsel and Personnel Officer	------	------	------	------	------	3	3
District Foresters and Assistant District Foresters	2	2	2	2	2	------	10
Foresters and Foresters-in-Training	11	10	12	12	9	65	119
Agrologists and Assistants	------	------	1	5	1	3	10
Engineers and Assistants	------	------	------	------	------	26	26
Forest Protection Officers	3	1	1	1	2	3	11
Supervisor of Rangers	3	2	3	3	3	------	14
Rangers	28	17	21	29	24	------	119
Supervisor of Scalers and Assistants	11	2	3	3	2	------	21
Scalers, Official	72	1	------	------	------	------	73
Scalers, Official, temporary	37	------	------	1	------	------	38
Comptroller, Accountant, and Audit Assistants	------	------	------	------	------	7	7
Engineering, Mechanical and Radio	4	3	4	4	4	109	128
Technical Forest and Public Information Assistants	6	7	5	12	7	9	46
Reforestation, Research, and Survey Assistants	------	------	1	------	------	99	100
Nursery Superintendents	------	------	------	------	------	4	4
Draughtsmen	6	4	5	5	3	28	51
Clerks, Stenographers, and Messengers	91	31	31	32	22	105	312
Superintendent and Foremen, Forest Service Marine Station	------	------	------	------	------	5	5
Mechanics, Carpenters, and Technicians	------	------	3	------	------	39	42
Launch Crewmen	15	6	------	------	------	4	25
Assistant and Acting Rangers	37	27	29	43	46	------	182
Dispatchers	17	6	7	16	8	------	54
Cruisers, Compassmen, and Marking Crewmen	22	36	62	51	22	------	193
Truck and Tractor Operators	------	1	4	------	3	10	18
Foremen	------	------	1	------	------	12	13
Miscellaneous	1	1	4	------	2	31	39
Totals, continuous personnel	366	157	199	219	160	575	1,676
Seasonally Employed							
Assistant and Acting Rangers	19	1	9	8	------	------	37
Patrolmen	3	5	5	3	14	------	30
Lookoutmen	36	21	21	33	40	------	151
Dispatchers and Radio Operators	8	1	3	6	12	------	30
Fire-suppression Crewmen	58	------	------	54	32	------	144
Reforestation—Snag-fallers, Planters, etc.	------	------	------	------	------	253	253
Cruisers and Compassmen	------	2	------	------	6	------	8
Truck and Tractor Operators	3	4	------	5	4	25	41
Student and Survey Assistants	------	------	------	------	2	128	130
Silvicultural Crewmen	------	------	------	------	------	------	------
Foremen	7	1	------	6	6	------	20
Miscellaneous	8	10	10	8	10	74	120
Totals, seasonal personnel	142	45	48	123	126	480	964
Totals, all personnel	508	202	247	342	286	1,055	2,640

(2)

SUMMARY OF PLANTING DURING THE YEARS 1949 TO 1958

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												
1958	24.6	20.0	855.8	1,051.0	7,062.8	13,410.0[1]	38.0	62.0	67.0	67.0	8,048.2	14,610.0
1957	11.7	14.0	294.0	435.0	2,992.5	7,524.0	8.0	10.0	21.4	30.0	3,327.6	8,013.0
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
1949	15.3	15.0	7,418.5	8,125.0	855.5	1,010.0	5.0	.....	23.2	15.0	8,317.5	9,165.0
Previously planted	713.4	621.7	49,345.0	62,145.0	8,707.8	10,906.3	304.0	322.0	134.9	122.0	59,205.1	74,117.0
Totals to date	881.7	802.7	85,322.1	104,448.0	35,738.1	57,274.3	780.1	868.0	555.1	522.0	123,277.1	163,915.0
Interior												
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	189.4	251.4	2,057.8	2,901.0	492.9	678.0	20.5	30.0	69.5	70.4	2,830.1	3,930.8
All planted to date	1,071.1	1,054.1	87,379.9	107,349.0	36,231.0	57,952.3	800.6	898.0	624.6	592.4	126,107.2	167,845.8
All planted this year	28.4	25.4	1,327.2	1,643.0	7,133.5	13,521.0	38.0	62.0	69.4	69.4	8,596.5	15,320.8

[1] The Forest Service planted 1,899,000 trees on 2,128 acres of private lands under reforestation agreements (" Forest Act," section 166).

(3) ESTIMATED VALUE OF PRODUCTION, INCLUDING LOADING AND FREIGHT WITHIN THE PROVINCE, 1949–58

Product	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	Ten-year Average, 1949–58
Lumber	$206,228,610	$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	$279,614,071
Pulp and paper	68,482,241	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	141,505,826
Shingles	16,881,240	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	25,744,304
Boxes	3,424,268	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	2,094,876
Plywood	21,500,000	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	52,690,700
Piles, poles, and mine-timber	4,470,379	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	7,278,436
Cordwood, fence-posts, and lagging	2,058,200	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	1,866,256
Ties, railway	467,127	281,308	633,089	963,200	669,007	445,777	306,625	615,491	1,068,280	296,919	574,682
Additional value contributed by the wood-using industry	2,000,000	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	2,463,250
Laths and other miscellaneous products	1,454,000	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	1,651,655
Logs exported	4,029,069	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	3,916,076
Pulpwood exported	139,200	741,128	99,375	236,900	37,296	85,716	480	----------	----------	----------	134,010
Wood-chips exported	----------	----------	----------	----------	----------	----------	----------	----------	6,875,000	4,854,232	1,172,923
Christmas trees	445,965	583,549	939,390	912,700	999,159	968,047	1,085,045	1,258,443	1,126,918	964,985	928,420
Cascara bark	9,250	18,925	20,572	18,130	20,160	12,393	5,249	6,511	14,880	9,202	13,527
Totals	$331,589,549	$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	$521,649,012

(4) PAPER PRODUCTION (IN TONS), 1949–58

Product	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	Ten-year Average, 1949–58
Newsprint	378,355	388,191	385,172	428,832	501,083	536,656	560,993	595,717	583,850	608,743	496,959
Other papers	83,927	89,437	99,409	92,777	96,853	110,461	127,880	112,299	157,872	200,406	117,132

In addition to 759,493 tons of pulp manufactured into paper in the Province, 663,727 tons were shipped out of the Province during the year.

(5) WATER-BORNE LUMBER TRADE (IN M B.M.), 1949–58

Destination	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	Ten-year Average, 1949–58
Eastern Canada	.....	.....	.....	.....	6,708	5,670	3,037	4,917	2,102	5,482	2,792
Australia	83,523	90,936	93,566	36,060	89,658	115,464	137,308	99,829	87,213	98,808	93,236
New Zealand	10,702	8,823	13,311	7,839	6,036	13,465	12,588	14,097	11,030	8,397	10,629
South America	7,234	2,227	2,067	2,164	3,924	648	5,756	16,541	25,503	8,816	7,488
China, Hong Kong, and Formosa	4,318	7,087	21,382	7,915	9,206	3,599	1,909	1,275	1,256	597	5,854
Japan and Korea	.....	86	101	82	23,742	8,216	10,725	5,852	3,713	999	5,352
United Kingdom and Continent	345,812	243,632	763,267	772,527	502,814	697,298	611,451	320,293	385,237	337,959	498,029
Africa	101,957	89,152	94,412	52,344	123,064	145,308	188,567	145,132	181,560	139,523	126,102
India	12,261	2,621	7,396	1,029	16,695	4,397	1,745	416	468	3,372	5,040
United States	310,411	736,831	71,316	229,809	542,472	509,661	345,694	283,834	275,452	602,427	390,791
Philippine and Hawaiian Islands	11,086	13,112	11,353	9,558	7,577	4,998	12,715	13,183	7,668	3,166	9,442
West Indies	9,754	8,654	9,669	3,404	12,235	12,062	10,516	11,599	12,085	13,492	10,347
South Sea Islands	7,668	7,751	9,917	8,538	8,563	8,402	16,140	15,339	8,147	11,841	10,231
Mexico and Central America	4,619	89	762	463	269	29,192	33,788	41,937	49,885	51,842	21,285
Egypt, Arabia, and Israel	11,744	7,634	22,426	498	2,191	2,368	1,320	1,394	5,766	213	5,555
Belgium	3,202	8,958	(1)	2,390	8,951	4,977	3,121	2,628	5,095	10,790	5,011
France	1,841	.....	1,672	1,172	1,382	2,950	2,845	3,191	4,110	3,265	2,243
Germany	51	.....	291	73	105	15	732	177	169	22	163
Holland	1,945	1,917	(1)	1,217	4,524	4,123	4,042	3,802	3,552	6,091	3,121
Italy	294	549	1,221	637	1,084	2,284	4,349	3,007	6,530	4,560	2,451
Foreign, unclassified	6,939	20,423	13,335	10,107	20,217	4,674	3,603	1,221	2,363	2,681	8,556
Belgium and Holland	.....	.....	7,720	.....	.....	.....	.....	.....	.....	.....	772
Denmark, Norway, and Sweden	309	714	1,107	227	247	175	109	.....	14	18	292
Totals	935,670	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	1,224,782

[1] Belgium and Holland combined in 1951.

TOTAL AMOUNT OF TIMBER SCALED IN BRITISH COLUMBIA DURING YEARS 1957 AND 1958 IN F.B.M.

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

Forest District	*1957*	*1958*	*Loss*	*Gain*	*Net Loss*
Vancouver	3,216,651,623	2,745,804,238	470,847,385	----------	----------
Prince Rupert (C.)	331,497,495	271,497,350	60,000,145	----------	----------
Totals, Coast	3,548,149,118	3,017,301,588	530,847,530	----------	----------
Prince Rupert (I.)	197,499,334	206,677,534	----------	9,178,200	----------
Prince George	645,733,022	661,169,290	----------	15,436,268	----------
Kamloops	839,983,005	972,550,354	----------	132,567,349	----------
Nelson	430,416,274	491,808,784	----------	61,392,510	----------
Totals, Interior	2,113,631,635	2,332,205,962	----------	218,574,327	----------
Grand totals	5,661,780,753	5,349,507,550	----------	----------	312,273,203

TOTAL AMOUNT OF TIMBER SCALED IN BRITISH COLUMBIA DURING YEARS 1957 AND 1958 IN CUBIC FEET

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

(6B) (All products converted to cubic feet.)

Forest District	1957	1958	Loss	Gain	Net Loss
Vancouver	536,108,604	457,634,040	78,474,564	----------	----------
Prince Rupert (C.)	55,249,582	45,249,558	10,000,024	----------	----------
Totals, Coast	591,358,186	502,883,598	88,474,588	----------	----------
Prince Rupert (I.)	34,347,711	35,943,919	----------	1,596,208	----------
Prince George	112,301,395	114,985,963	----------	2,684,568	----------
Kamloops	146,084,000	169,139,192	----------	23,055,192	----------
Nelson	74,855,004	85,531,962	----------	10,676,958	----------
Totals, Interior	367,588,110	405,601,036	----------	38,012,926	----------
Grand totals	958,946,296	908,484,634	----------	----------	50,461,662

(7A)

SPECIES CUT, ALL PRODUCTS, 1958, IN F.B.M.

Forest District	Fir	Cedar	Spruce	Lodge-pole Pine	Hemlock	Balsam	White Pine	Yellow Pine	Cypress	Larch	Hard-woods	Cotton-wood	Total
Vancouver	1,035,756,903	567,757,952	40,974,981	171,491	814,855,987	248,942,631	16,960,931	378,653	14,648,643		3,903,012	1,453,054	2,745,804,238
Prince Rupert (C.)	28,746,877	48,936,224	67,050,409	213,166	108,344,539	11,122,596	2,814		750,528		3,521	6,326,676	271,497,350
Totals, Coast	1,064,503,780	616,694,176	108,025,390	384,657	923,200,526	260,065,227	16,963,745	378,653	15,399,171		3,906,533	7,779,730	3,017,301,588
Prince Rupert (I.)	22,531	10,965,060	76,991,439	40,127,899	44,679,084	32,497,851					37,400	1,356,270	206,677,534
Prince George	125,635,317	1,517,935	406,213,525	117,740,748	1,215	9,142,421					167,791	750,338	661,169,290
Kamloops	738,279,960	18,666,684	111,304,379	21,952,494	14,283,004	9,455,952	14,400,304	22,479,306		21,425,873	198,290	104,108	972,550,354
Nelson	128,380,948	48,597,437	131,012,731	16,796,392	38,017,028	9,357,588	20,484,188	5,251,403		93,868,946	19,332	22,791	491,808,784
Totals, Interior	992,318,756	79,747,116	725,522,074	196,617,533	96,980,331	60,453,812	34,884,492	27,730,709		115,294,819	422,813	2,233,507	2,332,205,962
Grand totals	2,056,822,536	696,441,292	833,547,464	197,002,190	1,020,180,857	320,519,039	51,848,237	28,109,362	15,399,171	115,294,819	4,329,346	10,013,237	5,349,507,550

(7B)

SPECIES CUT, ALL PRODUCTS, 1958, 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	Lodge-pole Pine	Hemlock	Balsam	White Pine	Yellow Pine	Cypress	Larch	Hard-woods	Cotton-wood	Total
Vancouver	172,626,150	94,626,325	6,829,163	28,582	135,809,331	41,490,439	2,826,822	63,109	2,441,441		650,502	242,176	457,634,040
Prince Rupert (C.)	4,791,147	8,156,037	11,175,068	35,527	18,057,423	1,853,766	469		125,088		587	1,054,446	45,249,558
Totals, Coast	177,417,297	102,782,362	18,004,231	64,109	153,866,754	43,344,205	2,827,291	63,109	2,566,529		651,089	1,296,622	502,883,598
Prince Rupert (I.)	3,919	1,906,967	13,389,816	6,978,765	7,770,275	5,651,800					6,504	235,873	35,943,919
Prince George	21,849,620	263,989	70,645,830	20,476,652	211	1,589,986					29,181	130,494	114,985,963
Kamloops	128,396,515	3,246,380	19,357,283	3,817,825	2,484,001	1,644,513	2,504,401	3,909,445		3,726,239	34,485	18,105	169,139,192
Nelson	22,327,121	8,451,728	22,784,823	2,921,112	6,611,657	1,627,407	3,562,467	913,287		16,325,034	3,362	3,964	85,531,962
Totals, Interior	172,577,175	13,869,064	126,177,752	34,194,354	16,866,144	10,513,706	6,066,868	4,822,732		20,051,273	73,532	388,436	405,601,036
Grand totals	349,994,472	116,651,426	144,181,983	34,258,463	170,732,898	53,857,911	8,894,159	4,885,841	2,566,529	20,051,273	724,621	1,685,058	908,484,634

TOTAL SCALE OF ALL PRODUCTS, 1958, 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	557,672,549			4,655,363	3,165,584	28,865,297	594,358,793
Timber berths	82,303,529				8,294,311	11,830,950	102,428,790
Timber leases	107,989,895						107,989,895
Pulp leases	7,940,819	24,748,316					32,689,135
Pulp licences	7,449,330	47,874,428					55,323,758
Hand-loggers' licences	18,923	37,548					56,471
Farm wood-lots	211,722			265,398	161,977	58,602	697,699
Timber sales	836,457,720	119,965,031	136,192,594	597,602,240	776,280,029	311,709,011	2,778,206,625
Pulp-timber sales		12,910,701					12,910,701
No mark visible	69,261,002						69,261,002
Tree-farm licences	172,962,810	28,829,622	56,664,455	10,578,908	27,636,518	69,258,830	365,931,143
Miscellaneous	13,037,983	1,643,903	602,905	8,962,375	9,397,384	3,595,297	37,239,847
Sub-totals, Crown lands	1,855,306,282	236,009,549	193,459,954	622,064,284	824,935,803	425,317,987	4,157,093,859
Federal lands	12,943,975	1,530,631	1,787,822		17,695,110	1,063,933	35,021,471
Crown grants—							
To 1887	718,801,237			157,127	33,231,586	2,763,981	754,953,931
1887–1906	82,521,001	3,879,786	144,404	519,152	15,645,358	37,877,716	140,587,417
1906–1914	10,488,668	4,971,071	2,207,849	4,983,360	23,217,408	7,197,345	53,065,701
1914 to date	65,743,075	25,106,313	9,077,505	33,445,367	57,825,089	17,587,822	208,785,171
Totals	2,745,804,238	271,497,350	206,677,534	661,169,290	972,550,354	491,808,784	5,349,507,550

TOTAL SCALE OF ALL PRODUCTS, 1958, 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	92,945,425			809,628	550,536	5,020,052	99,325,641
Timber berths	13,717,255				1,442,489	2,057,555	17,217,299
Timber leases	17,998,316						17,998,316
Pulp leases	1,323,470	4,124,719					5,448,189
Pulp licences	1,241,555	7,979,071					9,220,626
Hand-loggers' licences	3,154	6,258					9,412
Farm wood-lots	35,287			46,156	28,170	10,192	119,805
Timber sales	139,409,620	19,994,172	23,685,669	103,930,825	135,005,222	54,210,263	476,235,771
Pulp-timber sales		2,151,784					2,151,784
No mark visible	11,543,500						11,543,500
Tree-farm licences (Crown lands only)	28,827,135	4,804,937	9,854,687	1,839,810	4,806,351	12,045,014	62,177,934
Miscellaneous	2,172,997	273,984	104,853	1,558,674	1,634,328	625,269	6,370,105
Sub-totals, Crown lands	309,217,714	39,334,925	33,645,209	108,185,093	143,467,096	73,968,345	707,818,382
Federal lands	2,157,329	255,105	310,926		3,077,411	185,032	5,985,803
Crown grants—							
To 1887	119,800,206			27,326	5,779,406	480,692	126,087,630
1887–1906	13,753,500	646,631	25,114	90,287	2,720,932	6,587,429	23,823,893
1906–1914	1,748,112	828,512	383,973	866,671	4,037,810	1,251,712	9,116,790
1914 to date	10,957,179	4,184,385	1,578,697	5,816,586	10,056,537	3,058,752	35,652,136
Totals	457,634,040	45,249,558	35,943,919	114,985,963	169,139,192	85,531,962	908,484,634

(9) TIMBER SCALED IN BRITISH COLUMBIA IN 1958 (BY MONTHS AND FOREST DISTRICTS)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Vancouver—													
F.b.m.	81,492,313	60,344,078	87,373,443	143,030,424	149,631,959	119,962,310	89,512,555	37,049,871	63,204,102	158,578,834	148,395,819	137,401,618	1,275,977,326
Cubic feet	7,479,896	9,238,017	13,564,423	20,758,262	29,416,062	29,520,895	22,687,232	9,524,381	16,532,878	28,590,618	26,719,733	23,528,095	237,560,492
Lineal feet	884,769	611,744	314,792	175,572	442,434	492,119	385,601	459,857	435,144	610,092	459,488	351,866	5,623,478
Cords	4,697	4,707	4,821	4,019	3,916	5,803	4,700	2,862	3,244	5,125	6,275	4,680	54,849
Hewn ties													
Prince Rupert (C.)—													
F.b.m.	814,800	3,277,245	3,612,023	5,383,971	13,623,222	14,504,066	14,339,088	8,855,678	13,035,994	13,385,364	10,177,951	21,305,078	122,314,480
Cubic feet	239,796	523,202	1,272,303	2,033,471	2,097,284	2,490,197	2,737,270	1,761,035	3,088,252	3,622,656	2,361,203	2,539,919	24,766,588
Lineal feet			29,260	10,175		29,934	670	6,220	7,810	65,510	23,505	1,305	174,389
Cords						60						27	87
Hewn ties			812										812
Prince Rupert (I.)—													
F.b.m.	1,513,975	1,645,304	1,321,983	1,041,650	1,126,422	331,698	660,945	265,775	652,496	715,158	716,675	453,615	10,445,696
Cubic feet	1,275,464	2,997,035	4,435,700	5,100,459	2,391,515	1,947,778	2,122,660	2,119,214	2,859,467	2,930,500	2,096,274	2,010,899	32,286,965
Lineal feet		143,380	174,551	208,035	188,651	304,970	459,790	194,390	279,765	112,420	193,969	131,823	2,391,744
Cords		14	51	85	68	176	204	4	232	98	299	89	1,320
Hewn ties		14,159	49,866	8,715	611	692	6,132	3,786	7,564		446		91,971
Prince George—													
F.b.m.	3,170,094	7,247,033	10,384,572	3,049,324	3,663,525	6,325,382	3,616,128	4,296,047	6,413,136	6,112,653	4,649,212	4,821,666	63,748,772
Cubic feet	4,540,521	11,652,549	14,885,852	9,666,068	12,183,854	7,367,012	3,678,424	6,337,642	8,558,281	11,784,342	6,263,707	5,482,209	102,400,461
Lineal feet	46,764	223,215	219,455	14,895	257,435	63,640	186,830	140,510	107,580	145,345	180,170	128,490	1,714,329
Cords	89	65	54	56	117	425	79	156	155	136	277	53	1,662
Hewn ties	556	4,662	12,679	1,884	3,721	15,541	10,108	15,283	204	7,465	11,686		83,789
Kamloops—													
F.b.m.	12,648,476	13,593,970	11,356,908	7,944,072	12,856,511	16,535,308	14,243,573	18,519,200	14,806,455	12,706,328	13,280,197	9,868,059	158,359,057
Cubic feet	8,412,357	12,920,510	9,340,339	7,272,979	5,653,154	9,232,915	11,261,266	15,001,254	14,410,276	14,284,690	17,647,459	13,105,525	138,542,724
Lineal feet		640,410	185,366	378,336	81,878	429,610	777,827	332,429	455,285	110,034	614,830	395,349	4,401,354
Cords		607	267	2,955	554	1,111	968	832	261	176	1,961	275	9,967
Hewn ties		1,999	636										2,635
Nelson—													
F.b.m.	13,984,932	8,641,761	9,039,732	4,988,998	4,416,646	7,127,442	6,330,223	6,718,839	13,492,646	11,278,065	11,240,545	11,891,394	109,151,223
Cubic feet	4,430,672	5,113,651	4,018,821	2,508,808	2,109,922	3,706,536	3,958,332	4,948,981	9,914,968	8,181,488	8,317,42[illegible]	6,527,264	63,736,864
Lineal feet		170,471	136,785	104,760	158,878	78,575	675,810	356,350	471,55[illegible]	301,038	228,09[illegible]	322,645	3,004,963
Cords		827	1,024	1,067	1,057	1,003	2,587	1,478	789	1,012	1,799	1,459	14,102
Hewn ties		503	900			109	1,904	369			413		4,198
Totals—													
F.b.m.	113,624,590	94,749,391	123,088,661	165,438,439	185,318,285	164,786,206	128,702,512	75,705,410	111,604,829	202,776,402	188,460,399	185,741,430	1,739,996,554
Cubic feet	26,378,706	42,444,964	47,517,438	47,340,047	53,851,791	54,265,333	46,445,184	39,692,507	55,364,122	69,394,294	63,405,797	53,193,911	599,294,094
Lineal feet	931,533	1,789,220	1,060,209	891,773	1,129,276	1,398,848	2,486,528	1,489,756	1,757,142	1,344,439	1,700,055	1,331,478	17,310,257
Cords	4,786	6,220	6,217	8,182	5,712	8,578	8,538	5,332	4,681	6,547	10,611	6,583	81,987
Hewn ties	556	21,323	64,893	10,599	4,332	16,342	18,144	19,438	7,768	7,465	12,545		183,405

(10) VOLUME OF WOOD REMOVED UNDER RELOGGING AT REDUCED ROYALTY AND STUMPAGE, 1949–58, IN M CUBIC FEET

Year	Salvage Wood (M C.F.)	Year	Salvage Wood (M C.F.)
1949	549	1954	1,888
1950	324	1955	1,209
1951	420	1956	1,795
1952	732	1957	3,663
1953	1,053	1958	1,427

Ten-year average, 1949–58, 1,306.

(11) NUMBER OF ACRES MANAGED AND OPERATED UNDER APPROVED WORKING PLANS, 1949–58

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	
1949	2	1,081,711	118	43,778	-----	-----	-----	-----	1,125,489
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
Ten-year average, 1949–58	16	3,131,061	185	63,310	22	4,967	25	10,487,545	13,686,883

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

(12) TOTAL SCALE OF ALL PRODUCTS FROM MANAGED LANDS, 1949–58

(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
1949	2	-----	118	165,035	-----	-----	-----	-----	165,035	-----
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]
Ten-year average, 1949–58	16	61,051,569	185	294,342	22	41,079	25	95,614,646	295,202	156,714,813

[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.

(13)

LOGGING INSPECTIONS, 1958

Forest District	Type of Tenure Operated				Number of Inspections
	Timber Sales	Hand-loggers' Licences	Leases, Licences, Crown Grants, and Pre-emptions	Total	
Vancouver	1,142	1	1,202	2,345	8,630
Prince Rupert	976	1	221	1,178	3,004
Prince George	1,850	....	1,120	2,970	5,161
Kamloops	1,349	....	1,155	2,504	3,231
Nelson	619	....	641	1,260	3,776
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
Totals, 1949	6,405	7	4,440	10,852	15,483
Ten-year average, 1949–58	6,232	4	4,925	11,159	20,484

(14)

TRESPASSES, 1958

Forest District	Number of Cases	Areas Cut Over (Acres)	Quantity Cut								Number of Resulting Seizures	Amount Charged
			Cubic Feet	Feet B.M.	Lineal Feet	Cords	Ties	Christmas Trees	Cedar Shakes, Car-stakes	Posts		
Vancouver	82	284	807,566	.....	5,465	10	650	.....	21,620	250	9	$55,326.00
Prince Rupert	66	498	1,671,635	.....	32,845	68	506	.....	.....	.....	....	63,103.44
Prince George	159	1,112	577,518	.....	43,148	497	1,083	.....	.....	264	4	40,991.26
Kamloops	146	3,984	700,696	.....	34,935	33	422	4,554	.....	.....	....	48,651.90
Nelson	60	557	343,556	.....	9,734	.....	.....	10,343	304	251	....	13,858.51
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
Totals, 1949	418	4,132	.....	20,419,563	244,655	1,298	3,514	9,022	34,070	8,785	28	$81,923.27
Ten-year average, 1949–58	479	6,338	3,968,765[1]	16,486,494[2]	288,947	1,897	5,001	13,706	150,340	13,182	15	$244,233.34

[1] Cubic feet—seven-year average. [2] Feet b.m.—five-year average.

(15) PRE-EMPTION INSPECTIONS, 1958

Vancouver	2
Prince Rupert	1
Kamloops	1
Total	4

(16) AREAS EXAMINED BY THE FOREST SERVICE FOR MISCELLANEOUS PURPOSES OF THE "LAND ACT," 1958

Forest District	Applications for Hay and Grazing Leases		Applications for Pre-emption Records		Applications to Purchase		Miscellaneous		Total	
	Number	Acres	Number	Acres	Number	Acres	Number	Acres	Number	Acres
Vancouver	.....	.....	.....	.....	8	110	18	479	26	589
Prince Rupert	.....	.....	.....	.....	16	1,280	13	1,094	29	2,374
Prince George	.....	.....	.....	.....	2	84	.....	.....	2	84
Kamloops	20	4,374	.....	.....	1	80	3	701	24	5,155
Totals	20	4,374	.....	.....	27	1,554	34	2,274	81	8,202

(17) CLASSIFICATION OF AREAS EXAMINED BY THE FOREST SERVICE, 1958

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	589	17	572	53	359
Prince Rupert	2,374	1,270	1,104	125	1,588
Prince George	84	27	57	.....	.....
Kamloops	5,155	206	4,949	10	12
Totals	8,202	1,520	6,682	188	1,959

(18) AREAS CRUISED FOR TIMBER SALES, 1958

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	587	131,298	.....	33,400	7,766	.....	331,500	286,978
Prince Rupert	255	93,051	.....	3,262,108	5,320	800	2,500	227,023
Prince George	354	106,250	.....	472,000	6,870	33,630	23,550	157,757
Kamloops	504	195,371	.....	2,796,072	1,695	.....	74,789	158,826
Nelson	222	83,593	.....	2,209,308	2,665	.....	714,380	59,701
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	.....
Totals, 1949	1,638	269,576	1,355,342	9,599,176	57,002	170,475	738,510	.....
Ten-year average, 1949–58	2,549	763,203	3,060,889	14,982,739	33,442	222,088	857,731	987,777

M B.M.—four-year average; M c.f.—seven-year average.

(19) TIMBER-SALE RECORD, 1958

Forest District	Sales Made	Sales Closed	Total Sales Existing	Total Area (Acres)	Area Paying Forest-protection Tax (Acres)	Total 10-per-cent Deposits
Vancouver	594	667	1,928	529,064	481,731	$5,959,526.17
Prince Rupert	269	429	1,257	384,438	371,381	1,346,779.71
Prince George	325	551	1,446	642,008	591,452	2,088,488.72
Kamloops	468	733	2,107	1,194,259	1,184,201	3,565,220.95
Nelson	244	332	846	576,968	565,572	1,750,502.49
Totals	1,900	2,712	7,584	3,326,737	3,194,337	$14,710,518.04
Cash sales	245	.....	.....	.....	.....	.....
Total sales	2,145	.....	.....	.....	.....	.....

(20)

TIMBER SALES AWARDED BY FOREST DISTRICTS, 1958

Forest District	No. of Sales	Acreage	Cubic Feet	Saw-timber (F.B.M.)	Poles and Piling (Lin. Ft.)	No. of Posts	No. of Cords	No. of Ties	No. of Christmas Trees	No. of Carstakes	No. of Blastingsticks	No. of Beanpoles	No. of Cedar Shakes	No. of Fencerails	Estimated Revenue
Vancouver	594	134,736	283,629,600		250,530		4,261						20,900		$9,759,086.55
Prince Rupert	298	73,691	105,076,600		2,540,772		1,577	20,584	100	5,500					2,552,440.52
Prince George	399	95,865	102,668,040		394,100	30,575	2,154	14,750						900	2,278,780.10
Kamloops	556	205,892	132,253,656		3,329,420	139,135	2,792			7,800					3,956,589.62
Nelson	298	107,283	58,593,573		2,181,400	788,980	1,038								1,970,401.88
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
Totals, 1949	2,525	375,717		1,238,155,000	10,298,466	1,601,707	57,557	200,300		2,650			542,000		$5,669.035.70
Ten-year average, 1949–58	2,749	625,266			12,781,834	946,104	87,721	163,088		4,961			153,116		$24,093,814.83

AVERAGE STUMPAGE PRICES AS BID, BY SPECIES AND FOREST DISTRICTS, ON SAW-TIMBER SOLD ON TIMBER SALES IN 1958, PER C C.F. LOG-SCALE

(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	46,720	$5.67	$0.60–22.30	67,007	$3.19	$0.60–32.00	7,773	$2.58	$1.70– 7.10	103,594	$2.77	$0.60– 8.40	53,342	$3.24	$1.00–22.10
Prince Rupert (C.)	2,997	4.05	2.30– 8.00	4,145	2.10	1.60– 6.10	12,659	2.15	1.80– 3.20	25,990	2.28	1.90– 5.10	14,809	2.12	1.80– 3.50
Prince Rupert (I.)	.....	.....	.....	2,120	3.49	2.00– 7.40	19,412	2.33	2.00– 7.90	1,862	2.94	1.20– 8.50	10,110	1.40	1.20– 7.70
Prince George	8,895	2.49	0.75– 7.80	.....	.....	.....	70,883	2.29	0.75– 5.20	.....	.....	.....	7,066	1.27	0.65– 3.60
Kamloops	81,483	3.28	0.80–11.00	1,754	2.63	0.25– 6.20	28,216	2.51	0.60–11.50	2,622	1.57	0.25– 5.40	4,323	1.45	0.25– 9.20
Nelson	14,237	3.13	0.90– 8.60	4,915	2.34	0.25– 5.40	13,989	3.00	1.20– 7.00	5,916	1.60	0.25– 5.00	5,183	1.80	0.25– 6.80
Totals for Province	154,332	$3.96	$0.60–22.30	79,941	$3.08	$0.25–32.00	152,932	$2.40	$0.75–11.50	139,984	$2.61	$0.25– 8.50	94,833	$2.56	$0.25–22.10

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	558	$4.92	$2.90–19.00	5	$3.20	$3.00– 4.10	.....	.....	.....	4,630	$2.53	$0.50–10.00	283,629	$3.43	$0.50–32.00
Prince Rupert (C.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	372	2.75	1.80– 5.10	60,972	2.29	1.60– 8.00
Prince Rupert (I.)	.....	.....	.....	.....	.....	.....	.....	.....	.....	10,576	1.98	1.70– 7.70	44,080	2.12	1.20– 8.50
Prince George	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,824	2.10	0.60– 7.00	102,668	2.20	0.60– 7.80
Kamloops	1,707	14.63	7.00–20.00	3,133	4.86	2.10–12.00	4,404	$2.62	$1.80–13.00	4,612	2.03	0.50–11.00	132,254	3.13	0.25–20.00
Nelson	1,964	14.80	2.10–21.50	433	4.25	2.30– 7.30	9,510	3.14	0.90–10.00	2,380	2.70	0.90– 6.80	58,527	3.14	0.25–21.50
Totals for Province	4,229	$13.43	$2.10–21.50	3,571	$4.78	$2.10–12.00	13,914	$2.97	$0.90–13.00	38,394	$2.15	$0.50–11.00	682,130	$2.98	$0.25–32.00

AVERAGE APPRAISED STUMPAGE PRICES, BY SPECIES AND FOREST DISTRICTS, ON SAW-TIMBER ON TREE-FARM LICENCE CUTTING PERMITS ISSUED IN 1958

(22)

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	4,759.0	$7.38	$2.80–10.60	5,295.0	$2.33	$1.80– 2.60	933.0	$2.35	$2.10– 3.40	11,889.0	$2.45	$1.90– 4.50	5,113.0	$2.23	$2.00– 2.40
Prince Rupert	.....	.....	.....	571.9	2.36	1.40– 2.70	1,252.6	2.15	1.80– 2.70	5,570.3	1.85	2.00– 3.20	3,245.9	1.66	1.80– 2.30
Prince George	1,272.0	1.30	0.60– 2.20	.....	.....	.....	409.0	1.43	0.90– 1.80	.....	.....	.....	32.0	0.90	0.60– 1.70
Kamloops	1,317.8	1.55	1.00– 3.50	0.2	1.10	– 1.10	3,294.1	1.75	1.10– 4.60	.....	.....	.....	246.0	1.14	0.90– 1.60
Nelson	2,810.0	2.20	1.70– 2.40	791.1	2.59	1.90– 2.70	4,085.0	2.57	1.80– 3.00	922.2	1.29	1.10– 1.60	208.0	1.53	1.10– 3.00
Totals for Province	10,158.8	$4.43	$0.60–10.60	6,658.2	$2.35	$1.10– 2.70	9,973.7	$2.17	$0.90– 4.60	18,381.5	$2.21	$1.10– 4.50	8.844.9	$1.97	$0.60– 3.00

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	54.6	$7.47	$3.10– 8.00	.....	.....	.....	.....	.....	.....	608.5	$2.57	$2.00– 6.00	28,652.1	$3.22	$1.80–10.60
Prince Rupert	.....	.....	.....	.....	.....	.....	.....	.....	.....	135.4	2.84	2.60– 3.00	10,776.1	1.86	1.40– 3.20
Prince George	.....	.....	.....	.....	.....	.....	.....	.....	.....	127.0	1.41	0.60– 1.60	1,840.0	1.33	0.60– 2.20
Kamloops	.....	.....	.....	104.0	$2.47	$1.60– 9.10	238.7	$1.70	$1.70– 1.90	70.9	1.06	0.90– 2.60	5,271.7	1.67	0.90– 9.10
Nelson	928.0	13.33	8.30–18.20	40.3	2.84	2.10– 3.00	1.537.0	2.21	1.70– 2.40	634.3	1.88	1.40– 2.40	11,955.9	3.11	1.10–18.20
Totals for Province	982.6	$13.00	$3.10–18.20	144.3	$2.57	$1.60– 9.10	1,775.7	$2.14	$1.70– 2.40	1,576.1	$2.15	$0.60– 6.00	58,495.8	$2.75	$0.60–18.20

(23)

TIMBER CUT FROM TIMBER SALES, 1958

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	76,565,427	625,537	1,477	.....	8,047	.....	.....	.....	.....	.....	.....	3,546,527	922,900	125,267,570
Prince Rupert	6,739,424	1,786,161	1,157	47,174	.....	29	.....	.....	1,968	.....	.....	.....	.....	41,275,203
Prince George	20,042,085	94,700	.....	.....	5,275	.....	.....	.....	.....	.....	.....	.....	.....	99,212,699
Kamloops	33,899,424	3,539,689	4,993	.....	184,882	.....	.....	.....	.....	.....	.....	.....	.....	126,761,408
Nelson	22,764,928	1,888,928	1,014	1,245	469,703	479,628	.....	.....	330	.....	18	.....	.....	48,675,209
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
Totals, 1949	1,310,203,222	13,412,816	33,148	327,215	1,357,854	197,699	8,126	756,725	8,650	77,000	.....	2,061,390	470,162	17,121
Ten-year average, 1949–1958	1,076,609,670	12,846,919	20,462	257,707	946,187	261,753	35,522	544,572	3,907	17,350	200	4,891,549	1,234,508	190,075,246

(24) SAW AND SHINGLE MILLS OF THE PROVINCE, 1958

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	227	8,806	50	1,090	75	632	5	21
Prince Rupert	273	1,746	.....	.....	119	702	.....	.....
Prince George	669	7,368	.....	.....	167	1,178	.....	.....
Kamloops	554	6,272	2	5	111	692	.....	.....
Nelson	287	3,502	4	46	114	803	4	16
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
Totals, 1949	1,671	19,082	61	1,101	314	2,373	17	73
Ten-year average, 1949–58	2,177	24,385	61	1,262	372	2,330	12	55

(25) EXPORT OF LOGS (IN F.B.M.), 1958

Species	Grade No. 1	Grade No. 2	Grade No. 3	Ungraded	Fuel-logs	Total
Fir	288,446	1,319,693	1,580,865	.....	3,750,295	6,939,299
Cedar	106,130	877,166	2,929,889	.....	.....	3,913,185
Spruce	.....	19,982	253,994	.....	.....	273,976
Hemlock	183,010	1,025,720	10,318,360	.....	12,116	11,539,206
Balsam	.....	.....	.....	3,713,224	.....	3,713,224
White pine	86	.....	2,421	.....	.....	2,507
Cypress	154,094	353,362	1,078,582	.....	.....	1,586,038
Hardwoods	.....	.....	.....	1,900	.....	1,900
Cottonwood	3,225	131,529	578	.....	.....	135,332
Totals, 1958	734,991	3,727,452	16,164,689	3,715,124	3,762,411	28,104,667[1]
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
Totals, 1949	6,392,228	21,382,979	103,550,707	14,228,041	.....	145,553,955
Ten-year average, 1949–58	3,732,490	12,474,732	61,739,524	13,772,650	3,391,929	95,111,325

[1] Of this total, 18,425,803 f.b.m. were exported from Crown-granted lands carrying the export privilege; 9,678,864 f.b.m. were exported under permit from other areas.

(26) SHIPMENTS OF POLES, PILING, MINE-PROPS, FENCE-POSTS, RAILWAY-TIES, ETC., 1958

Forest District and Product		Quantity Exported	Approximate Value, F.O.B.	Where Exported		
				United States	Canada	Other Countries
Vancouver—						
Poles	lin. ft.	2,949,931	$940,260.48	2,310,810	443,879	195,242
Piling	,,	1,305,856	325,239.30	44,875	224,311	1,036,670
Stakes and sticks	,,	347,560	31,230.00	347,560	.....	.....
Fence-posts	pieces	22,367	5,591.75	2,650	19,717	.....
Shakes	,,	12,454,379	754,780.00	12,438,353	.....	16,026
Christmas trees	,,	73,642	73,642.00	73,642	.....	.....
Prince Rupert—						
Poles and piling	lin. ft.	2,465,593	1,074,396.08	1,479,356	986,237	.....
Ties	pieces	92,783	143,813.65	.....	92,783	.....
Prince George—						
Poles	lin. ft.	1,535,078	216,016.80	139,620	1,395,458	.....
Piling	,,	39,093	10,946.04	.....	39,093	.....
Ties	pieces	67,484	113,373.12	.....	67,484	.....
Fence-posts	,,	82,036	20.509.00	.....	82,036	.....
Cordwood	cords	394	5,705.75	50	344	.....
Kamloops—						
Poles	lin. ft.	3,505,865	657,930.50	1,821,310	1,684,555	.....
Fence-posts	pieces	2.683	93,905.00	.....	2,683	.....
Christmas trees	,,	533,651	160,095.30	528,150	5,501	.....
Nelson—						
Poles and piling	lin. ft.	2,092,055	828,947.00	1,111,340	980,715	.....
Corral-rails	,,	125,778	1,509.00	.....	125,778	.....
Mine-timbers	,,	104,742	7,332.00	.....	104,742	.....
Orchard-props	,,	164,000	2.132.00	164,000	.....	.....
Mine-props	cords	586	9,201.00	.....	586	.....
Cordwood	,,	51	560.00	34	17	.....
Fence-posts	,,	7,178	276 379.00	860	6,318	.....
Ties	pieces	3,379	6,625.00	.....	3,379	.....
Christmas trees	,,	1,139,457	546,939.48	979.655	159.802	.....
Total value, 1958		.....	$6,307,059.25	.....	.....	.....
Total value, 1957		.....	$11,274,727.22	.....	.....	.....

(27) SUMMARY OF EXPORTS OF MINOR PRODUCTS FOR PROVINCE, 1958

Product		Volume	Value	Per Cent of Total Value
Poles	lin. ft.	7,990,874	$1,814,207.78	28.7647
Piling	,,	1,344,949	336,185.34	5.3303
Other poles and piling	,,	4,557,648	1,903,343.08	30.1780
Corral-rails	,,	125,778	1,509.00	0.0239
Mine-timbers	,,	104,742	7,332.00	0.1163
Orchard-props	,,	164,000	2,132.00	0.0338
Stakes and sticks	,,	347,560	31,230.00	0.4952
Fence-posts	pieces	107,086	120,005.75	1.9027
Ties	,,	163,646	263,811.77	4.1828
Shakes	,,	12,454,379	754,780.00	11.9762
Christmas trees	,,	1,746,750	780,676.78	12.3778
Cordwood	cords	445	6,265.75	0.0993
Fence-posts	,,	7,178	276,379.00	4.3821
Mine-props	,,	586	9,201.00	0.1459
Total value		.....	$6,307,059.25	100.0000

(28) TIMBER MARKS ISSUED

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	Ten-year Average, 1949–58
Old Crown grants	548	549	1,062	696	381	528	609	480	320	215	539
Crown grants, 1887–1906	128	169	269	201	134	175	218	207	108	93	170
Crown grants, 1906–1914	97	165	218	204	136	160	171	172	97	93	151
Section 55, "Forest Act"	352	505	714	538	409	485	653	655	460	362	513
Stumpage reservations	60	69	108	62	95	69	95	82	59	89	79
Pre-emptions under sections 28 and 29, "Land Act"	.....	5	3	8	10	1	2	6	1	.....	4
Timber berths	7	8	6	7	3	1	10	10	7	7	7
Indian reserves	18	32	41	13	24	30	31	46	23	9	27
Timber sales	2,525	2,591	2,962	2,594	2,881	2,786	3,130	2,859	2,239	1,900	2,647
Hand-loggers	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Special marks and rights-of-way	26	33	73	98	63	44	43	71	74	80	60
Pulp leases	1	4	.....	6	3	1	6	1	1	7	3
Pulp licences	1	4	2	1	.....	.....	.....	.....	.....	.....	.....
Totals	3,763	4,134	5,458	4,428	4,139	4,280	4,968	4,589	3,389	2,855	4,200
Transfers and changes of marks	550	752	1,086	983	744	780	867	873	615	598	785

(29) FOREST MANAGEMENT DRAUGHTING OFFICE, 1958

Month	Number of Drawings Prepared or Tracings Made						Number of Blue-prints or Ditto-prints Made from Draughting Office Drawings		
	Timber Marks	Timber Sales	F.M.L. C.P.[1]	Survey Plans[1]	Miscellaneous	Total	Blue-prints	Ditto-prints	Total
January	121	36	9	4	46	216	518	1,800	2,318
February	104	28	17	16	44	209	932	1,375	2,307
March	138	46	8	10	36	238	703	2,180	2,883
April	108	26	2	10	45	191	453	1,275	1,728
May	167	36	2	16	33	254	721	1,725	2,446
June	147	23	6	14	43	233	763	1,150	1,913
July	120	16	3	9	88	236	502	810	1,312
August	58	28	1	5	47	139	411	1,390	1,801
September	106	32	7	5	55	205	953	1,600	2,553
October	140	19	3	5	50	217	598	950	1,548
November	117	26	5	7	55	210	378	1,300	1,678
December	102	25	9	8	51	195	552	1,250	1,802
Totals, 1958	1,428	341	72[1]	109[1]	593	2,543	7,484	16,805	24,289
Totals, 1957	1,471	373	91[1]	147[1]	594	2,686	8,440	18,150	26,590
Totals, 1956	1,963	444	.....	.....	819	3,226	9,041	20,893	29,934
Totals, 1955	2,309	381	.....	.....	1,244	3,934	8,694	15,538	24,232
Totals, 1954	1,983	274	.....	.....	574	2,831	6,275	9,920	16,195
Totals, 1953	1,823	270	382[2]		350	2,825	6,976	6,989	13,965
Totals, 1952	2,827	491	1,387[2]		1,068	5,773	18,924	10,320	29,244
Totals, 1951	3,196	1,008	1,336[2]		1,891	7,431	17,540	19,360	36,900
Totals, 1950	2,050	828	1,108[2]		805	4,791	13,759	16,599	30,358
Totals, 1949	1,547	514	988[2]		353	3,402	10,184	10,344	20,528
Ten-year average, 1949–58	2,060	492	.....		829	3,944	10,732	14,492	25,224

[1] Included under "Miscellaneous" prior to 1957.
[2] This column previously under heading "Examination Sketches."

(30) CROWN-GRANTED TIMBER LANDS PAYING FOREST-PROTECTION TAX AS COMPILED FROM TAXATION RECORDS

Year	Acreage Assessed as Timber Land	Coast		Interior	
		Logged	Timber	Logged	Timber
		Acres	Acres	Acres	Acres
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
1949	597,790	172,024	340,200	30,625	54,941
1948	571,439	158,120	326,738	25,485	61,096
1947	596,900	153,072	354,207	26,591	63,030
1946	601,148	146,331	364,556	23,125	67,136
1945	591,082	142,504	357,037	21,536	70,005
1944	571,308	134,194	345,378	20,816	70,920
1943	543,044	125,313	325,996	20,205	71,529
1942	527,995	112,834	322,306	20,072	72,781
1941	543,633	105,541	335,468	26,016	76,608
1940	549,250	103,486	338,419	24,852	82,493
1939	719,111	89,209	338,794	153,032	138,075
1938	756,328	106,833	344,858	157,508	147,129
1937	766,413	96,598	363,693	153,566	152,556

(31) ACREAGE OF TIMBER LAND BY ASSESSMENT DISTRICTS

District	Acres	District	Acres
Alberni	14,759	Nelson-Slocan	241,616
Comox	126,941	Prince George	800
Cowichan	86,524	Prince Rupert	12,120
Cranbrook	3,232	Princeton	1,527
Gulf Islands	1,120	Quesnel Forks	40
Kamloops	285	Revelstoke	33,189
Kettle River	8,129	Vancouver	3,956
Lillooet	4,196	Vernon	639
Nanaimo	116,248	Victoria	43,149

(32) ACREAGE OF CROWN-GRANTED TIMBER LANDS PAYING FOREST-PROTECTION TAX AS COMPILED FROM TAXATION RECORDS

Year	Area (Acres)	Year	Area (Acres)
1958	698,470	1939	719,112
1957	614,095	1938	754,348
1956	723,103	1937	743,109
1955	783,517	1936	515,924
1954	801,983	1935	535,918
1953	757,516	1934	557,481
1952	718,284	1933	567,731
1951	682,746	1932	552,007
1950	631,967	1931	602,086
1949	597,790	1930	629,156
1948	571,439	1929	644,011
1947	596,900	1928	671,131
1946	601,148	1927	690,438
1945	591,082	1926	688,372
1944	571,308	1925	654,016
1943	543,044	1924	654,668
1942	527,995	1923	883,344
1941	543,632	1922	887,980
1940	549,250	1921	845,111

(33)

FOREST REVENUE

	Twelve Months to Dec. 31, 1954	Twelve Months to Dec. 31, 1955	Twelve Months to Dec. 31, 1956	Twelve Months to Dec. 31, 1957	Twelve Months to Dec. 31, 1958	Ten-year Average, 1949–58
Timber-licence rentals	$372,401.39	$361,975.14	$365,257.80	$363,632.93	$360,682.80	$370,482.31
Timber-licence transfer fees	1,970.00	2,120.16	3,121.00	430.00	140.00	2,418.62
Timber-licence penalty fees	4,112.38	1,204.89	1,442.27	1,130.33	1,369.91	2,553.74
Hand-loggers' licence fees						
Timber-lease rentals	72,117.02	72,165.65	72,021.27	70,395.42	70,757.38	60,978.52
Timber-lease penalty fees	48.56	73.18	15.48	60.05	23.00	44.55
Timber-sale rentals	235,597.98	313,865.18	379,821.98	380,963.43	425,867.87	237,468.04
Timber-sale stumpage	14,702,704.22	19,538,202.71	26,335,715.53	26,327,150.06	21,355,873.18	15,446,778.19
Timber-sale cruising	151,679.94	221,334.48	213,058.29	208,516.78	193,671.32	133,162.36
Timber-sale advertising	28,224.58	39,249.17	42,858.60	37,025.62	32,119.10	26,447.40
Timber royalty and tax	2,260,406.43	2,368,344.78	2,069,424.19	1,838,162.25	1,719,957.61	2,151,481.02
Scaling expenses (not Scaling Fund)	9,190.37	10,532.29	10,381.64	11,745.99	10,683.83	8,546.12
Exchange	51.77	51.99	34.68	25.79	33.04	68.41
Seizure expenses	1,501.64	740.22	768.72	3,020.62	4,396.66	1,575.54
General miscellaneous	79,248.71	102,231.43	130,293.84	141,267.64	117,804.19	77,002.27
Timber-berth rentals and bonus	19,851.56	19,592.47	20,139.94	19,380.72	19,248.04	20,013.88
Interest on timber-berth rentals and bonus	10.92	13.05	20.19	21.52	39.94	19.55
Transfer fees on timber berths	102.74	89.99	85.00	84.50	47.50	100.34
Grazing fees and interest	81,589.75	75,250.32	79,247.61	69,041.15	73,093.16	80,347.73
Forest-protection tax			364,388.20	459,312.26	500,914.85	
Totals	$18,020,809.96	$23,127,037.10	$30,088,096.23	$29,931,367.06	$24,886,723.38	$18,619,488 59

(34) AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, 1958

District	Royalty	Tax	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	$1,234,523.50	$7,329.62	$320.04	$1,499.14	$161,086.65	$745,761.40	$8,351,841.79	$313,007.59				$10,815,369.73
Prince Rupert	159,465.83	309.38	2,312.56	433.71	8,430.63	43,168.13	1,425,365.51	112,781.38			$1,524.32	1,753,791.45
Prince George	56,270.49		96.00	2,792.00			3,197,260.97	150,966.60			116,309.09	3,523,695.15
Kamloops	103,468.90		1,024.07	3,661.20			5,064,033.85	254,558.80			21,258.32	5,448,005.74
Nelson	95,155.14		125.00	1,455.80			2,347,177.62	138,794.40				2,582,707.96
Totals, 1958	$1,648,883.86	$7,639.00	$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	$1,884,274.94	$3,738.20	$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	$2,151,279.15	$2,584.50	$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	$2,340,176.87	$12,457.59	$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	$2,207,163.57	$27,145.42	$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	$2,230,773.33	$30,410.06	$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	$2,059,831.35	$37,180.07	$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	$2,255,986.89	$13,361.79	$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	$2,442,763.64	$23,764.59	$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
Totals, 1949	$2,577,770.96	$47,469.51	$1,128.73	$4,943.46	$94,588.60	$295,075.36	$4,946,698.82	$210,112.24		$478,602.29		$8,655,568.74
Ten-year average, 1949–58	$2,180,090.45	$20,575.07	$1,635.49	$8,613.13	$143,333.11	$571,605.35	$16,109,633.93	$592,674.67				$20,190,053.56

(35) AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, FISCAL YEAR 1957/58

District	Royalty	Tax	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	$1,364,964.83	$2,602.77	$561.14	$2,519.05	$190,104.48	$825,589.86	$10,897,160.94	$265,492.45				$13,548,995.52
Prince Rupert	205,117.40	1,675.54	3,677.56	1,038.34	10,243.56	64,957.96	2,189,696.08	99,432.79			$2,692.11	2,578,531.34
Prince George	57,837.22		186.00	3,408.40			3,666,116.11	161,719.39			113,841.30	4,003,108.42
Kamloops	118,540.34		1,148.75	4,154.40			5,594,085.12	271,153.26			21,109.68	6,010,191.55
Nelson	125,886.67		78.60	1,645.80			2,513,275.16	132,982.44			36.57	2,773,905.24
Totals, 1957/58	$1,872,346.46	$4,278.31	$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	$2,098,404.80	$2,190.80	$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	$2,277,432.53	$5,889.19	$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	$2,287,175.16	$29,560.95	$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	$2,129,798.35	$22,187.23	$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	$2,051,347.46	$43,148.91	$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	$2,299,053.99	$17,168.38	$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	$2,548,879.89	$20,313.87	$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	$2,495,843.74	$47,791.08	$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
Totals, 1948/49	$3,031,177.07	$37,722.35	$724.75	$3,485.69	$76,559.44	$286,340.73	$4,564,284.78	$262,403.83	$381,505.04			$8,642,471.12
Ten-year average, 1948/49 to 1957/58	$2,309,145.95	$23,025.11	$1,508.58	$8,235.31	$138,119.44	$527,920.79	$14,744,512.92	$505,926.98				$18,921,600.76

[1] Credit.

(36A)

FOREST REVENUE, FISCAL YEAR 1957/58

		Ten-year Average
Timber-licence rental fees	$360,860.48	$376,134.65
Timber-licence transfer fees	250.00	2,489.47
Timber-licence penalty fees	1,197.95	3,358.52
Timber-lease rentals	73,514.97	58,421.51
Timber-lease penalty fees and interest	74.80	47.55
Timber-sale rentals	406,112.97	203,577.72
Timber-sale stumpage	25,413,765.92	13,094,905.62
Timber-sale cruising	193,549.56	114,516.86
Timber-sale advertising	32,779.44	22,898.21
Timber royalty	1,842,438.51	2,306,400.16
Timber tax	3,942.03	20,726.30
Scaling expenses (not Scaling Fund)	12,003.08	5,677.16
Exchange	33.02	74.75
Seizure expenses	3,966.94	1,155.69
General miscellaneous	144,836.92	67,844.94
Timber-berth rentals, bonus, and fees	19,460.82	18,187.61
Interest on timber-berth rentals	23.82	17.08
Transfer fees on timber berths	71.50	34.24
Grazing fees and interest	69,777.87	67,208.18
Forest-protection tax	475,996.96	(1)
	$29,054,657.56	$16,363,676.22
Taxation from Crown-granted timber lands	597,118.52	539,324.48
Taxation collected under authority of "Esquimalt and Nanaimo Railway Belt Land Tax Act"	1,060,884.36[2]	
Taxation collected on forest land (section 32A, "Taxation Act")	722,380.92[3]	
Taxation collected on tree-farm land (section 33A, "Taxation Act")	161,293.83[4]	
	$31,596,335.19	

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

(36B) FOREST REVENUE BY FISCAL YEARS

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
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
1948/49	7,977,676.22	453,980.08	.....	.....	8,431,656.30
1947/48	7,010,038.77	253,345.02	.....	.....	7,263,383.79
1946/47	4,880,232.89	237,506.83	.....	.....	5,117,739.72
1945/46	4,352,179.14	244,980.89	.....	.....	4,597,160.03
1944/45	4,017,653.53	213,912.46	.....	.....	4,231,565.99
1943/44	3,703,703.13	203,457.36	.....	.....	3,907,160.49
1942/43	3,519,892.44	206,146.21	.....	.....	3,726,038.65
1941/42	4,057,437.86	211,410.13	.....	.....	4,268,847.99
1940/41	3,549,931.53	224,652.87	.....	.....	3,774,584.40
1939/40	3,236,731.36	267,290.48	.....	.....	3,504,021.84
1938/39	2,982,702.42	241,109.96	.....	.....	3,223,812.38
1937/38	3,257,525.05	269,285.54	.....	.....	3,526,810.59
1936/37	3,001,054.84	299,992.41	.....	.....	3,301,047.25

(37) FOREST SERVICE EXPENDITURES, FISCAL YEAR 1957/58[1]

Forest District	Salaries	Expenses	Total
Vancouver	$409,194.78	$178,183.90	$587,378.68
Prince Rupert	254,853.42	103,212.71	358,066.13
Prince George	276,907.31	103,594.52	380,501.83
Kamloops	359,968.35	132,237.52	492,205.87
Nelson	328,436.64	105,327.18	433,763.82
Victoria	438,810.34	291,900.75	730,711.09
Totals	$2,068,170.84	$914,456.58	$2,982,627.42
Reforestation and forest nursery			372,189.57
Forest management			419,832.55
Forest research			173,937.49
Public relations			103,872.02
Forest Ranger School			112,099.37
Grant to Canadian Forestry Association			6,000.00
Office furniture and equipment			44,769.76
Silviculture			1,283,744.63
Youth-training programme			64,985.80
Engineering services			410,526.82
Forest protection			2,685,302.35
Forest surveys			1,122,773.30
Grazing Range Improvement Fund[2]			50,168.34
Forest Development Fund (roads)[2]			1,689,591.38
Fire suppression			172,901.42
Forestry administration buildings and property			123,445.51
Temporary assistance			342,439.98
Grand total			$12,161,207.71

[1] All figures in this table are true gross expenditures.
[2] Separate statements on these items are shown in this Report.

(38)

SCALING FUND

Balance for April 1st, 1957 (debit)		$264,084.07
Collections, fiscal year 1957/58		1,081,249.93
		$817,165.86
Expenditures, fiscal year 1957/58	$1,063,615.46	
Less transfer to Vote 142H	36,956.81	
		1,026,658.65
Deficit March 31st, 1958 (debit)		$209,492.79
Collections, nine months, April to December, 1958		783,787.67
		$574,294.88
Expenditures, nine months, April to December, 1958		781,781.48
Balance, December 31st, 1958 (debit)		$207,486.60

(39)

GRAZING RANGE IMPROVEMENT FUND

Balance April 1st, 1957 (credit)		$40,381.83
Government contribution (section 14, " Grazing Act ")		38,452.61
		$78,834.44
Expenditures, fiscal year 1957/58	$52,508.59	
Less refunds	2,353.75	
		50,154.84
Balance, March 31st, 1958 (credit)		$28,679.60
Government contribution (section 14, " Grazing Act ")		34,888.93
		$63,568.53
Expenditures, April 1st, 1958, to December 31st, 1958		45,520.64
Balance, December 31st, 1958 (credit)		$18,047.89

(40)

FOREST DEVELOPMENT FUND

Credit balance at March 31st, 1957	$34,258.87
Less transferred to Vote 341 (Forest-development Roads), and Fund abolished March 31st, 1958	34,258.87
Balance at March 31st, 1958	*Nil*

(41) FOREST-PROTECTION EXPENDITURE FOR TWELVE MONTHS ENDED MARCH 31ST, 1958, 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	$2,300.41	$254,943.04	$584.94	$27,433.90	$7,906.67	$28,485.80	$37,123.22	.....	.....	.....	$3,614.34	$362,392.32
Prince Rupert	1,514.92	129,842.57	1,750.34	37,829.39	3,076.46	39,261.55	29,065.95	.....	.....	.....	2,982.60	245,323.78
Prince George	2,546.72	151,158.59	1,825.22	53,087.95	60,514.60	71,005.16	28,951.23	.....	.....	.....	3,984.58	373,074.05
Kamloops	5,893.03	261,863.34	1,301.55	52,142.35	18,468.60	77,972.88	49,242.66	.....	.....	.....	3,584.11	470,468.52
Nelson	5,450.05	269,652.70	2,099.22	52,548.60	65,499.19	106,655.41	40,141.25	.....	.....	.....	3,773.94	545,820.36
Victoria	2,361.40	10,305.75	323,716.83	17,905.68	17,435.90	180,224.36	15,798.47	$46,213.40	$57,414.20	$1,719.77	188,028.98	861,124.74
Totals	$20,066.53	$1,077,765.99	$331,278.10	$240,947.87	$172,901.42	$503,605.16	$200,322.78	$46,213.40	$57,414.20	$1,719.77	$205,968.55	$2,858,203.77

(42) REPORTED APPROXIMATE EXPENDITURE IN FOREST PROTECTION BY OTHER AGENCIES, 1958

Forest District	Expenditures				
	Patrols and Fire Prevention	Tools and Equipment	Fires	Improvements	Total
Vancouver	$168,474.00	$217,100.00	$371,984.00	$39,850.00	$797,408.00
Prince Rupert	46,570.00	28,350.00	290,070.00	9,710.00	374,700.00
Fort George	40,000.00	16,000.00	85,467.00	77,000.00	218,467.00
Kamloops	107,420.00	60,920.00	50,133.00	3,000.00	221,473.00
Nelson	18,755.00	37,165.00	157,203.00	21,800.00	234,923.00
Totals	$381,219.00	$359,535.00	$954,857.00	$151,360.00	$1,846,971.00
Ten-year average, 1949–58	$275,426.00	$348,924.00	$347,291.00	$112,313.00	$1,083,954.00

(43) SUMMARY OF SNAG-FALLING, 1958, VANCOUVER FOREST DISTRICT

		Acres
Total area logged, 1958		58,808
Logged in small exempted operations[1]	319	
Assessed for non-compliance, *less* 419 acres subsequently felled	913	
		1,232
Balance logged acres snagged, 1958		57,576

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

(44) SUMMARY OF LOGGING SLASH CREATED, 1958, VANCOUVER FOREST DISTRICT

		Acres
Total area logged, 1958		57,576
Area covered by full hazard reports	22,383	
Covered by snag reports but exempted from slash-disposal	22,310	
Covered by acreage reports only (exempted from slash and snag disposal)[1]	319	
		45,012
Slash created and not reported in 1958		12,564

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

(45) ACREAGE ANALYSIS OF SLASH-DISPOSAL REQUIRED, 1958, VANCOUVER FOREST DISTRICT

	Acres of Slash		
	Prior to 1958	1958[1]	Total Acres
Broadcast burning	2,628	4,158	6,786
Spot burning	6,322	9,275	15,597
Totals	8,950	13,433	22,383
1958 reports not recommending slash-disposal			22,310
1958 slash on very small operations exempted without special examination			319
Total area of slash dealt with, 1958			45,012

[1] Above table does not include the estimated 11,640 acres (*see* Table 44) created too late to be dealt with in 1958.

(46)

ANALYSIS OF PROGRESS IN SLASH-DISPOSAL, 1958, VANCOUVER FOREST DISTRICT

				Acres
Total disposal required (*see* Table 45)				22,383
	Acres of Slash			
Type of Disposal	Prior to 1958	1958	Total Acres	
Spring broadcast burning	*Nil*	187	187	
Spring spot burning	625	*Nil*	625	
Fall broadcast burning	3,511	3,149	6,660	
Fall spot burning	7,214	6,186	13,400	
Total burning completed	11,350	9,522	20,872	
Burned by accidental fires			3,812	
Lopping, scattering, land-clearing, etc.			*Nil*	
Total[1]				24,684
Balance reported slash not yet abated			*Nil*	
Slash created, 1958—acres assessed			*Nil*	
Plus slash created too late to be dealt with, 1958			12,564	
Total area of slash carried over to 1959 for disposition[2]				*Nil*

[1] Difference accounted for by clean-up of older slash previously extended or assessed.
[2] Does not show the acreage instructed in 1958 to be extended or assessed in 1959.
Actual area burned in spring spot burning, 33 acres.
Actual area burned in fall spot burning, 2,322 acres.
The above figures do not include 1957 slash-burn reports received too late for inclusion in 1957 Annual Report, 1,810 acres.

(47)

SUMMARY OF SLASH-BURN DAMAGE AND COSTS, 1958, VANCOUVER FOREST DISTRICT

Total acres of forest-cover burned in slash fires, 1958	acres	370
Net damage to forest-cover		$4,548.00
Net damage to cut products		7,320.00
Net damage to equipment and property		30,250.00
Total damage		$42,118.00

Cost of Slash-burning as Reported by Operators

	Total Cost	Acres	Cost per M B.F.	Cost per Acre
(*a*) Spring broadcast burning	$500.00	187	$0.07	$2.67
(*b*) Spring spot burning	2,615.00	625	.14	4.18
(*c*) Fall broadcast burning	55,147.26	6,660	.21	8.28
(*d*) Fall spot burning	43,595.10	13,400	.11	3.25

(*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.

(48) RECAPITULATION OF SLASH-DISPOSAL, 1935–58

	Acres of Slash Burned	
	Accidentally	Intentionally
1958	3,812	24,684
1957	1,139	51,045
1956	2,872	19,551
1955	199	34,486
1954	225	41,596
1953	17	22,220
1952	3,856	39,064
1951	11,614	10,436
1950	1,700	25,389
1949	1,468	53,543
1948	2,215	30,652
1947	2,663	34,414
1946	2,174	25,498
1945	3,897	46,467
1944	5,121	27,278
1943	2,046	40,013
1942	4,504	80,226
1941	3,385	5,524
1940	2,265	33,034
1939	1,930	51,603
1938	35,071	50,033
1937	3,015	27,516
1936	1,340	7,691
1935	11,783	13,239

(49) RECAPITULATION OF SNAG-FALLING, 1940–58, BY LOGGING OPERATIONS AND FOREST SERVICE

(Acres totally logged.)

Year	Logging Operations, Vancouver District (Sec. 113)	Forest Service by Protection Division	Forest Service by Reforestation Division[1]	Total
1958	57,576	4,152	2,035	63,763
1957	68,510	4,464	5,084	78,058
1956	82,688	4,069	4,731	91,488
1955	78,450	3,717	7,711	89,878
1954	74,332	1,947	10,387	86,666
1953	73,556	884	7,820	82,260
1952	67,214	541	9,517	77,272
1951	66,120	980	6,583	73,683
1950	72,205	1,500	11,440	85,145
1949	47,770	.....	12,500	60,270
1948	56,778	120	16,843	73,741
1947	74,567	1,500	13,000	89,067
1946	57,424	.....	16,775	74,199
1945	55,508	.....	4,181	59,689
1944	51,440	.....	2,620	54,060
1943	49,130	.....	21,409	70,539
1942	58,097	5,896	20,960	84,953
1941	58,247	341	15,000	73,588
1940	40,000	.....	5,500	45,500

[1] Includes all areas snagged for planting (Coast and Interior), areas snagged in parks, and A.S.W. work during war years.

(50) FIRE OCCURRENCES BY MONTHS, 1958

Forest District	March	April	May	June	July	August	September	October	Total	Per Cent
Vancouver	.....	11	388	235	742	249	53	12	1,690	41.0
Prince Rupert	.....	17	22	37	162	23	8	.....	269	6.5
Fort George	18	22	147	95	151	70	12	8	523	12.7
Kamloops	31	15	269	138	260	234	61	16	1,024	24.9
Nelson	4	11	79	46	147	295	28	4	614	14.9
Totals	53	76	905	551	1,462	871	162	40	4,120	100.0
Per cent	1.3	1.8	22.0	13.4	35.5	21.1	3.9	1.0	100.00	.....
Ten-year average, 1949–58	18	65	373	234	532	451	207	37	1,917	.....
Per cent	0.9	3.4	19.5	12.2	27.8	23.5	10.8	1.9	100.0	.....

(51) NUMBER AND CAUSES OF FOREST FIRES, 1958

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)	Unknown Causes	Total	Per Cent of Total Fires in Province
Vancouver	184	34	1,087	132	37	2	39	.....	110	65	1,690	41.0
Prince Rupert	120	34	3	52	13	1	18	4	16	8	269	6.5
Fort George	174	75	47	58	40	4	54	8	51	12	523	12.7
Kamloops	307	127	57	172	21	....	97	13	224	6	1,024	24.9
Nelson	365	26	30	64	9	11	38	28	40	3	614	14.9
Totals	1,150	296	1,224	478	120	18	246	53	441	94	4,120	100.0
Per cent	27.9	7.2	29.7	11.6	2.9	0.4	6.0	1.3	10.7	2.3	100.0	.....
Ten-year average, 1949–58	492	220	427	271	86	26	120	22	206	47	1,917	.....
Per cent	25.7	11.5	22.3	14.1	4.5	1.4	6.3	1.1	10.7	2.4	100.0	.....

(52) NUMBER AND CAUSES OF FOREST FIRES FOR THE LAST TEN YEARS

Causes	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	Total
Lightning	487	342	574	431	597	116	418	497	307	1,150	4,919
Campers	215	251	228	298	174	157	195	214	170	296	2,198
Railways operating	325	197	211	255	184	118	206	1,090	455	1,224	4,265
Smokers	281	291	354	349	171	120	206	281	182	478	2,713
Brush-burning (not railway-clearing)	60	77	128	140	47	63	47	112	65	120	859
Road and power- and telephone-line construction	20	25	20	17	10	11	24	73	46	18	264
Industrial operations	87	94	133	114	83	64	89	183	107	246	1,200
Incendiarism	13	7	28	37	10	12	15	27	22	53	224
Miscellaneous (known causes)	169	196	205	237	116	82	134	260	220	441	2,060
Unknown causes	44	35	42	36	28	21	50	73	45	94	468
Totals	1,701	1,515	1,923	1,914	1,420	764	1,384	2,810	1,619	4,120	19,170

(53)

FIRES CLASSIFIED BY SIZE AND DAMAGE, 1958

Forest District	Total Fires		Under ¼ Acre			¼ to 10 Acres			Over 10 to 500 Acres			Over 500 Acres in Extent			Damage		
	Number	Per Cent of Total Fires in Province	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Under $100	Between $100 and $1,000	Over $1,000
Vancouver	1,690	41.0	1,448	85.7	53.9	163	9.6	18.5	52	3.1	13.9	27	1.6	15.4	1,621	20	49
Prince Rupert	269	6.5	119	44.2	4.4	66	24.5	7.5	37	13.8	9.9	47	17.5	26.9	194	26	49
Fort George	523	12.7	223	42.6	8.3	150	28.7	17.0	87	16.6	23.3	63	12.1	36.0	398	48	77
Kamloops	1,024	24.9	501	48.9	18.6	341	33.3	38.7	155	15.1	41.4	27	1.6	15.4	863	94	67
Nelson	614	14.9	398	64.8	14.8	162	26.4	18.3	43	7.0	11.5	11	1.8	6.3	561	26	27
Totals	4,120	100.0	2,689	.....	100.0	882	.....	100.0	374	.....	100.0	175	.....	100.0	3,637	214	269
Per cent	100.0	.....	65.3	.....	.....	21.4	.....	.....	9.1	.....	.....	4.2	.....	.....	88.3	5.2	6.5
Ten-year average, 1949–58	1,917	.....	1,210	.....	.....	485	.....	.....	174	.....	.....	48	.....	.....	1,754	89	74
Per cent	100.0	.....	63.1	.....	.....	25.3	.....	.....	9.1	.....	.....	2.5	.....	.....	91.5	4.6	3.9

(54)

DAMAGE TO PROPERTY OTHER THAN FORESTS, 1958[1]

Forest District	Forest Products in Process of Manufacture	Buildings	Railway and Logging Equipment	Miscellaneous	Total	Per Cent of Total
Vancouver	$94,950.00	$2,740.00	$45,903.00	$11,865.00	$155,458.00	38.1
Prince Rupert	30,115.00	400.00	43,500.00	20,993.00	95,008.00	23.3
Fort George	14,970.00	20,011.00	31,580.00	31,441.00	98,002.00	24.0
Kamloops	4,862.00	8,075.00	20,500.00	9,262.00	42,699.00	10.4
Nelson	4,066.00	5,600.00	3,000.00	4,350.00	17,016.00	4.2
Totals	$148,963.00	$36,826.00	$144,483.00	$77,911.00	$408,183.00	100.0
Per cent	36.5	9.0	35.40	19.10	100.0	.....
Ten-year average, 1949–58	$155,363.00	$24,627.00	$188,257.00	$30,663.00	$398,910.00	.....
Per cent	39.0	6.1	47.2	7.7	100.0	.....

[1] Does not include intentional slash-burns. (For this item *see* page 113.)

(55)

DAMAGE TO FOREST-COVER CAUSED BY FOREST FIRES, 1958—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	13,843	233,140	141,940	516,856	2,606	19,410	647	11,891	990,202
Prince Rupert	62,446	821,898	273,259	1,257,377	135,161	601,622	33,780	42,924	734,396
Fort George	26,430	318,564	147,634	775,681	9,262	51,075	5,225	44,701	910,192
Kamloops	12,213	74,429	19,520	941,442	1,980	2,031	640	33,446	604,725
Nelson	3,977	25,073	8,750	93,911	346	1,654	115	12,795	279,049
Totals	118,909	1,473,104	591,103	3,585,267	149,355	675,792	40,407	145,757	3,518,564
Per cent	5.8	68.5	40.1	45.3	7.2	31.5	0.5	7.1	44.5
Ten-year average, 1949–58	18,546	213,010	95,400	486,535	18,435	70,415	13,502	39,737	523,184
Per cent	4.4	75.3	44.8	41.6	4.3	24.8	1.1	9.3	44.8

[1] Does not include intentional slash-burns. (For this item *see* page 113.)

DAMAGE TO FOREST-COVER CAUSED BY FOREST FIRES, 1958—PART II[1]

(55)

Forest District	Not Satisfactorily Restocked				Non-commercial Cover		Grazing or Pasture Land		Non-productive Sites		Grand Totals		
	Logged Unburned	Logged and Burned	Burned, Not Logged	Damage	Area Burned	Damage	Area Burned	Damage	Area Burned	Damage	Area	Quantity	Damage
	Acres	Acres	Acres	$	Acres	$	Acres	$	Acres	$	Acres	M B.F.	$
Vancouver	3,805	2,304	1,983	67,672	17,710	4,425	148	17	19,266	4,509	73,556	252,550	1,584,328
Prince Rupert	1,877	6	1,816	3,231	153,163	38,293	584	30	169,638	42,313	567,615	1,423,520	2,109,420
Fort George	4,092	998	74,161	267,127	987,834	246,577	4,342	250	156,033	37,878	1,307,853	369,639	2,242,930
Kamloops	2,101	132	2,993	40,385	14,169	4,181	6,424	564	17,459	5,022	90,917	76,460	1,596,959
Nelson	196	77	662	9,483	4,892	662	1,002	4	1,535	374	25,482	26,727	383,598
Totals	12,071	3,517	81,615	387,898	1,177,768	294,138	12,500	865	363,931	90,096	2,065,423	2,148,896	7,917,235
Per cent	0.6	0.2	3.9	4.9	57.0	3.7	0.6	0.0	17.6	1.1	100.0	100.0	100.0
Ten-year average, 1949–58	6,670	2,835	27,366	77,275	190,374	48,639	45,380	2,456	77,117	17,170	426,460	283,425	1,168,761
Per cent	1.6	0.7	6.4	6.6	44.6	4.2	10.6	0.2	18.1	1.5	100.0	100.0	100.0

[1] Does not include intentional slash-burns. (For this item *see* page 113.)

FIRE CAUSES, AREA BURNED, FOREST SERVICE COST, AND TOTAL DAMAGE, 1958

(56)

Causes	Fire Causes		Area Burned		Forest Service Cost		Total Damage	
	Number	Per Cent	Acres	Per Cent	Cost	Per Cent	Damage	Per Cent
Lightning	1,150	27.9	888,673	43.0	$3,416,135	75.4	$6,424,084	77.2
Campers	296	7.2	931,226	45.1	110,098	2.4	481,135	5.8
Railways operating	1,224	29.7	5,235	0.3	78,959	1.8	56,166	0.7
Smokers	478	11.6	19,896	1.0	323,426	7.1	197,881	2.4
Brush-burning (not railway-clearing)	120	2.9	17,992	0.9	8,996	0.2	43,803	0.5
Road and power- and telephone-line construction	18	0.4	43,847	2.1	21,943	0.5	39,013	0.5
Industrial operations	246	6.0	25,706	1.2	155,808	3.4	498,513	6.0
Incendiarism	53	1.3	15,180	0.7	216,585	4.8	178,009	2.1
Miscellaneous (known causes)	441	10.7	105,545	5.1	185,336	4.1	386,967	4.6
Unknown causes	94	2.3	12,123	0.6	10,851	0.3	19,847	0.2
Totals	4,120	100.0	2,065,423	100.0	$4,528,137	100.0	$8,325,418	100.0

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

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	Total, Ten Years
Total number of fires	1,701	1,515	1,923	1,914	1,420	764	1,384	2,810	1,619	4,120	19,170
Area burned (acres)	145,549	848,246	420,954	152,406	38,645	10,309	46,694	469,648	66,724	2,065,423	4,264,598
Standing timber destroyed or damaged (M f.b.m.)	7,617	17,882	295,462	278,759	8,308	3,186	5,316	61,150	7,671	2,148,896	2,834,247
Amount salvable (M f.b.m.)	1,518	7,805	187,235	129,146	4,680	1,177	1,615	27,386	2,343	591,103	954,008
Damage to forests	$32,449	$359,417	$1,417,975	$498,775	$145,957	$43,329	$90,971	$1,058,469	$123,032	$7,917,235	$11,687,609
Damage to other forms of property	326,848	413,194	1,535,125	492,344	114,693	131,554	64,153	372,803	130,204	408,183	3,989,101
Total damage	$359,297	$772,611	$2,953,100	$991,119	$260,650	$174,883	$155,124	$1,431,272	$253,236	$8,325,418	$15,676,710

(58) FIRES CLASSIFIED BY FOREST DISTRICT, PLACE OF ORIGIN, AND COST PER FIRE OF FIRE-FIGHTING, 1958

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	1,690	191	1,499	635,498.00	14.0	1,726.90	1,322	78.2	32.1	368	21.8	9.1	131	151	53	5	28
Prince Rupert	269	231	38	585,555.00	12.9	3,485.44	101	37.6	2.5	168	62.4	4.0	59	55	27	7	20
Fort George	523	460	63	1,864,545.00	41.2	5,483.95	183	35.0	4.4	340	65.0	8.2	135	117	50	8	30
Kamloops	1,024	899	125	614,713.00	13.6	968.05	389	38.0	9.4	635	62.0	15.4	393	163	55	11	13
Nelson	614	582	32	827,826.00	18.3	1,872.91	172	28.0	4.2	442	72.0	10.7	273	116	34	2	17
Totals	4,120	2,363	1,757	4,528,137.00[1]	100.0	2,318.55	2,167	.....	52.6	1,953	.....	47.4	991	602	219	33	108
Per cent	100.0	57.4	42.6	.....	.....	.....	52.6	.....	.....	47.4	.....	.....	24.1	14.6	5.3	0.8	2.6
Ten-year average, 1949–58	1,917	1,189	728	773,073.00	.....	.....	991	.....	.....	926	.....	.....	590	245	59	11	20
Per cent	100.0	62.0	38.0	.....	.....	.....	51.7	.....	.....	48.3	.....	.....	30.8	12.8	3.1	0.6	1.0

[1] Cost correct to date. Subject to later revision.
Cost to other parties (709 cost-fires), $954,857. Cost to Forest Service (1,953 cost-fires), $4,528,137.
Detailed final costs are published one year in arrears in the table "Expenditure by Districts" in each Annual Report.

(59) PROSECUTIONS, 1958

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	Theft.	Fines		Served Sentence in Gaol	Suspended Sentence	Cases Dismissed	Cases Withdrawn
									Number	Amount				
Vancouver	43	6	6	26	3	1	1	----	42	$1,320.00	----	----	1	----
Prince Rupert	8	5	3	----	----	----	----	----	8	250.00	----	----	----	----
Fort George	29	6	18	----	----	4	----	1	27	735.00	----	----	2	----
Kamloops	30	16	9	----	1	4	----	----	25	685.00	1	----	4	----
Nelson	14	4	7	2	----	1	----	----	12	375.00	----	----	2	----
Totals	124	37	43	28	4	10	1	1	114	$3,365.00	1	----	9	----
Ten-year average, 1949–58	60	19	15	13	8	3	1	----	52	$1,559.00	1	3	3	1

(60) BURNING PERMITS, 1958

Forest District	Clearing Agricultural Land				Clearing Logging-slash				Clearing Railway Right-of-way				Clearing Public Roads				Grand Totals			
	Permits Issued	Area Burned Over	Fires Escaped Control	Fires Set without Permit	Permits Issued	Area Burned Over	Fires Escaped Control	Fires Set without Permit	Permits Issued	Area Burned Over	Fires Escaped Control	Fires Set without Permit	Permits Issued	Area Burned Over	Fires Escaped Control	Fires Set without Permit	Permits Issued	Area Burned Over	Fires Escaped Control	Fires Set without Permit
	No.	Acres	No.	No.	No.	Acres	No.	No.	No.	Acres	No.	No.	No.	Acres	No.	No.	No.	Acres	No.	No.
Vancouver	3,844	1,171	14	6	124	11,368	----	----	----	----	----	----	35	103	----	----	4,003	12,642	14	6
Prince Rupert	751	1,964	----	3	131	75	----	----	20	101	----	1	27	123	----	1	929	2,263	----	5
Fort George	1,601	12,648	16	27	385	1,711	11	1	21	647	3	----	50	2,378	----	----	2,057	17,384	30	28
Kamloops	1,913	3,368	1	16	477	374	----	----	28	503	----	----	58	388	----	----	2,476	4,633	1	16
Nelson	1,176	135	1	4	185	300	2	----	29	65	----	----	70	80	7	----	1,460	580	10	4
Totals	9,285	19,286	32	56	1,302	13,828	13	1	98	1,316	3	1	240	3,072	7	1	10,925	37,502	55	59
Per cent	85.0	51.4	58.2	94.9	11.9	36.9	23.6	1.7	0.9	3.5	5.5	1.7	2.2	8.2	12.7	1.7	100.0	100.0	100.0	100.0
Ten-year average, 1949–58	9,396	17,908	17	15	1,271	23,520	15	1	192	1,992	7	----	226	3,553	7	1	11,085	46,973	46	17
Per cent	84.8	38.1	37.0	88.2	11.5	50.1	32.6	5.9	1.7	4.2	15.2	----	2.0	7.6	15.2	5.9	100.0	100.0	100.0	100.0

(61) ENROLMENT AT RANGER SCHOOL, 1958

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

(62) MOTION-PICTURE LIBRARY, 1949–58

STOCK RECORDS

	Year									
	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Films in library at January 1st	77	75	75	74	77	80	64	71	78	80
Films withdrawn during year	3	9	8	3	.....	24	2	3	.....	1
New films added during year	1	9	7	6	3	8	9	10	2	4
Films in library at December 31	75	75	74	77	80	64	71	78	80	83
Films used during year	74	76	71	72	79	64	70	80	79	84

CIRCULATION RECORDS

Number of loans made during year	397	416	461	492	490	422	429	413	455	604
Number of film loans during year (one film loaned one time)	1,075	1,046	1,057	1,218	1,158	1,474	1,280	1,743	1,758	1,253
Number of showings during year	1,505	1,880	2,943	2,764	2,288	2,664	1,998	1,909	1,956	1,775
Number of audiences—										
Adults	14,568	26,988	13,542	13,655	12,640	12,333	14,353	14,537	18,983	10,330
Children	24,031	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]
Mixed	87,506	43,282	26,706	59,182	43,099	54,069	41,340	42,587	38,143	42,938
Totals	126,105	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]

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

LEASED FILMS, 1958

Title	Number of Showings	Number in Audience			
		Adult	Children	Mixed	Total
"Olympic Elk"	70	110	7,033	.....	7,143
"Bear Country"	22	.....	11,720	.....	11,720
"I'm No Fool with Fire"	18	.....	13,894	.....	13,894
Totals	110	110	31,647	.....	31,757

(63) SUMMARY OF PROGRAMMES BY SCHOOL LECTURERS, 1958

Forest District	Period	Schools			Non-school		Grand Total	
		Number of Schools	Number of Programmes	Total Attendance	Number	Attendance	Number of Programmes	Total Attendance
Vancouver (Fraser Valley)	February to March	50	71	8,659	5	305	76	8,964
Vancouver (Vancouver Island)	January to December	124	179	19,947	9	352	188	20,299
Totals	.....	174	250	28,606	14	657	264	29,263

(64)

FOREST SERVICE LIBRARY, 1949–58

Classification	Items Catalogued and Indexed										Ten-year Average, 1949–58
	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	
Bound volumes	36	27	23	9	41	62	55	37	45	48	38
Government reports and bulletins	100	62	109	122	484	246	190	179	266	177	194
Other bulletins and reports	153	140	152	337	90	92	94	170	109	159	150
Periodicals	80	102	110	115	111	124	136	151	155	133	122
Serials[1]	.....	.....	.....	.....	66	127	141	177	214	230	.....
References indexed	2,074	1,960	2,650	2,203	1,800	932	1,090	1,321	1,417	1,139	1,659

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

(65)

GRAZING PERMITS ISSUED

District	Number of Permits Issued	Number of Stock under Permit		
		Cattle	Horses	Sheep
Kamloops	1,086	104,097	2,792	19,494
Nelson	400	14,730	1,097	1,421
Prince George	85	3,662	280	12
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
Totals, 1949	1,496	101,349	5,029	25,842

N.B.—Some of the figures in this table for the years 1949 to 1951, inclusive, 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.

(66)

GRAZING FEES BILLED AND COLLECTED

Year	Fees Billed	Fees Collected[1]	Outstanding
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
1949	27,819.65	28,299.94	5,113.39

[1] Includes statutory penalties.

(67)

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
Agricultural 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
Agricultural 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
Agricultural 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

(68)

(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

Species and D.B.H. Limits		Crown	Crown Granted	Licences and Leases	Canada Control	Total
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*

(68)

(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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