PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES

HON. R. G. WILLISTON, *Minister* E. W. BASSETT, *Deputy Minister of Lands*

REPORT

of the

LANDS SERVICE

YEAR ENDED DECEMBER 31

1963

Printed by A. SUTTON, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia.
1964

VICTORIA, B.C., January 31, 1964.

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

MAY IT PLEASE YOUR HONOUR:

Herewith I beg respectfully to submit the Annual Report of the British Columbia Lands Service of the Department of Lands, Forests, and Water Resources for the year ended December 31, 1963.

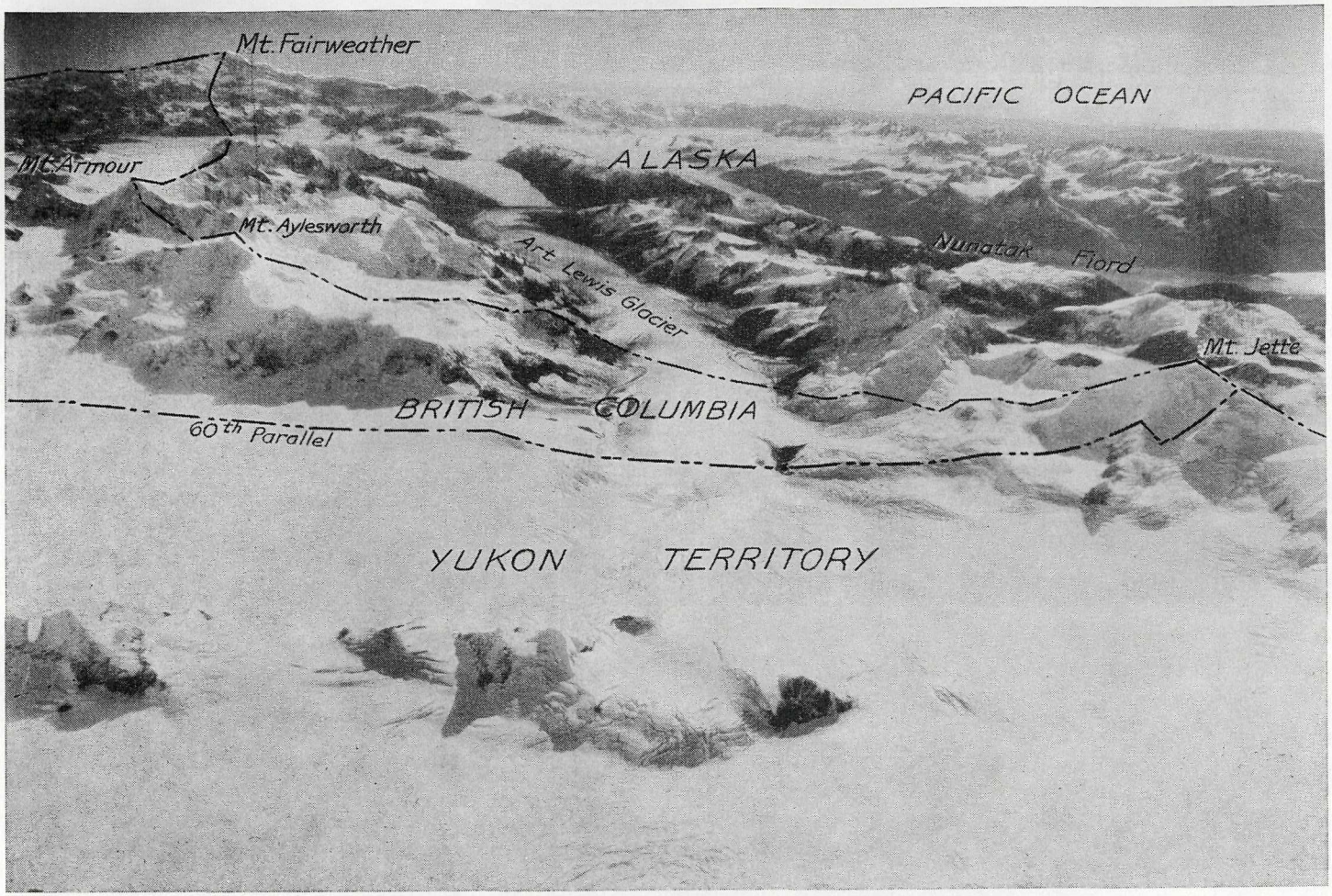
R. G. WILLISTON,
Minister of Lands, Forests, and Water Resources.

VICTORIA, B.C., January 31, 1964.

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

SIR,—I have the honour to submit the Annual Report of the British Columbia Lands Service of the Department of Lands, Forests, and Water Resources for the twelve months ended December 31, 1963.

E. W. BASSETT,
Deputy Minister of Lands.



Oblique air photograph looking south across most western tip of British Columbia and showing the point of juncture of the boundaries of British Columbia, Yukon Territory, and Alaska.

CONTENTS

	Page
Introduction by the Deputy Minister of Lands	9
Accounting Division	15
Lands Branch—	
Superintendent of Lands	23
Land Inspection Division	32
Surveys and Mapping Branch—	
Surveyor-General	42
Legal Surveys Division	46
Topographic Division	52
Geographic Division	61
Air Division	65
University Endowment Lands	75
Land Settlement Board	81
Personnel Office	85
Mail and File Room	89

COVER PHOTO: Jordan River, Vancouver Island—sorting and assembling log boom.

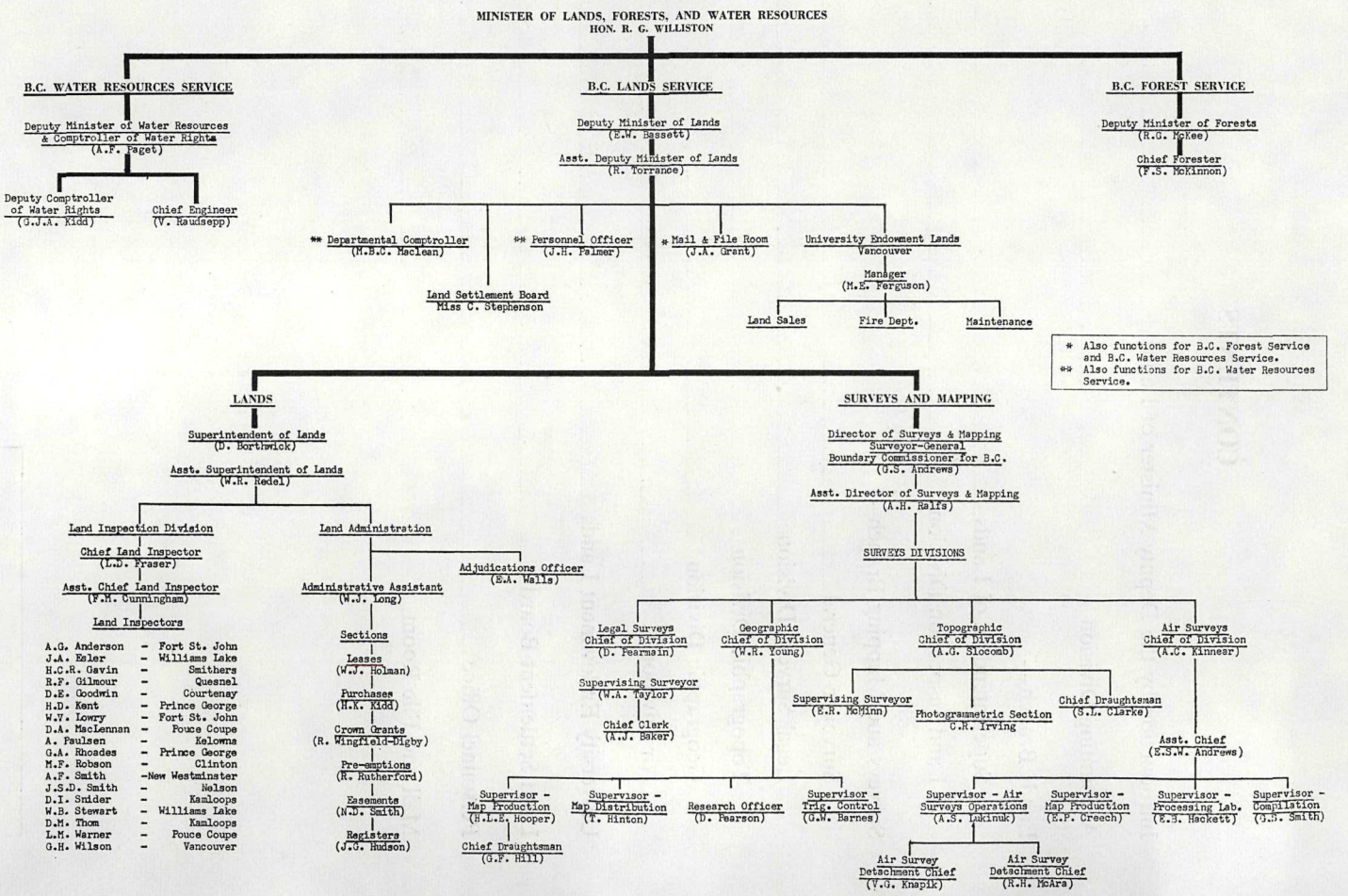
ORGANIZATION

BRITISH COLUMBIA LANDS SERVICE

DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES

Victoria, B.C.

Year ending December 31, 1963



Report of the British Columbia Lands Service

E. W. Bassett, Deputy Minister of Lands

The buoyancy of the Provincial economy continues to have a beneficial effect on the level of activity in the British Columbia Lands Service. The tables and figures contained in this Annual Report give clear evidence of the increase in effort which was necessary to keep pace with Provincial development in 1963.

Revenues collected by the Accounting Division in 1963 totalled over $2,000,000. Annual receipts from land leases, rentals, and fees have more than tripled in the 10 years since 1953, while returns from land sales increased 32.5 per cent during the same period. Revenues from maps and aerial photographs have expanded 2½ times in the past decade.

The Lands Branch processed 7,011 applications for land in 1963, the highest for any year to date. Leasehold applications have risen substantially in recent years, primarily as the result of the policy of granting only leasehold alienation of Crown land fronting on bodies of water and permitting, on the basis of two applications, agricultural leases of up to 1,280 acres extent in the Peace River region. The 2,719 applications to lease received in 1963 represented a 21-per-cent increase over 1962. Though there were 5 per cent more applications to purchase than in 1962, the number of land sales has tended to stabilize in the last decade. Illustrative of this levelling off of sales, it is noted that in 1954, 1,043 parcels of Crown land were sold, while in 1962 and 1963 the figures were 1,106 and 934 respectively.

Two measures were taken to encourage more effective use of Crown land suitable for agriculture. Approximately 400,000 acres formerly held under reserve north and east of the Beatton River were opened for settlement. Also, the flat-rate system of rental for grazing land was examined, and, as a result, lease rental rates were amended to make the rate commensurate with the grazing capacity of the land.

Industrial and transportation developments are notably increasing the number and complexity of Crown-land alienations in Northern British Columbia. Outstanding among these are construction of the Peace River (Portage Mountain) hydro-electric complex, a rail-line to Fort St. James, a new pulp-mill at Prince George and others proposed at Kitimat, Houston, and the Parsnip River, a mining boom in the Endako-Francois Lake belt, major reconstruction of the Northern Trans-Provincial Highway, and inauguration of an automobile-ferry service from Prince Rupert to ports in the Panhandle of Alaska.

The policy of offering desirable parcels of Crown land for sale or lease by auction or tender was continued in 1963. A total of 529 lots was so offered.

The Land Inspection Division recorded 4,235 inspections through headquarters in 14 centres. Twenty-eight per cent was related to Crown-land purchases, 46 per cent to land and foreshore leases, and 26 per cent to such purposes as land-use permits, reserves, pre-emptions, subdivision planning, and inspections required under various sections of the *Land Act*.

Many of the duties of a Land Inspector demand a high degree of competence in evaluation and planning, and to this end seven Inspectors (including the Chief and Assistant Chief) have achieved accreditation by the Appraisal Institute of Canada. Ten others are in the process of completing the requirements for accreditation.

Under the direction of the Surveyor-General and Director of Surveys and Mapping, the Legal Surveys, Topographic, Geographic, and Air Divisions continue to supply the basic topographic, cultural, and cadastral framework so necessary for orderly Provincial growth and development.

During 1963 the Legal Surveys Division issued 921 sets of instructions to surveyors and received 582 sets of field-notes covering the survey of 893 lots. The 210 Departmental reference maps showing the day-to-day condition of land status in the Province were maintained, and 16 of them were renewed to replace those which had deteriorated through constant use and handling. Land Registry Offices at Victoria, Kamloops, Nelson, and Prince Rupert submitted 1,558 plans for checking by the Division with the electronic-computer procedure.

Field work accomplished by the Legal Surveys Division included restoration of 350 old lot corners, erection of 205 new monuments, and integration to established survey control along a new electrical transmission-line from Seton Lake to Prince George. A total of 66 rural home-sites was laid out in subdivisions at Lantzville, Sproat Lake, Brackendale, Gambier Island, Spences Bridge, Apex Mountain, and Fort St. John, while 139 lake-front lots were surveyed at Gun Lake, Charlotte Lake, Norman Lake, Kimberley, Moyie Lake, Riondel, and Lac le Jeune. Parksites, public reserves, Forest Service access roads, survey of the Parliament Buildings precinct, and 55.9 miles of highway right-of-way were also included in a busy survey programme.

Field crews from the Topographic Division completed ground control for 26 National Topographic map-sheets in the Chilcotin and Takla Lake-Bear Lake areas. Working from the motor-vessel " B.C. Surveyor," another crew photo-identified 282 triangulation stations between Price Island and Gardner Canal. Further refinement to the 1962 triangulation net was done in the Lower Fraser Valley, chiefly in Surrey and Langley Municipalities. The purpose of this last-mentioned survey programme is to enable cadastral surveys to be integrated with the North American Datum (1927). This is facilitated by increasing the density of control monumentation. Steel scaffolding frames were used very effectively to raise the line of sight through level treed areas and a giraffe-type lift was employed to locate suitable tower-sites. Other field work included commencement of a map revision on Southern Vancouver Island.

The Topographic Division also worked on 18 National Topographic sheets and on 15 plans ranging in scale from 40 to 1,000 feet to 1 inch. Cadastral detail was draughted on 37 Federal sheets at 1:50,000 scale, while 23 Provincial topographic manuscripts at 2-inches-to-1-mile scale were also completed.

The Geographic Division prepared and reproduced seven entirely new maps and completely revised another five sheets. By the end of 1963, status-map coverage at 1:250,000 scale was nearly complete for coastal British Columbia. Status maps at 1-inch-to-2-miles scale were also progressing satisfactorily across the Southern Interior.

In co-operation with the Canadian Permanent Committee on Geographical Names, work began on revision of the Gazetteer of British Columbia. Since 1953 approximately 4,600 new place-names have been added to Geographic Division's files, and these will be included in the revised edition of the Gazetteer.

Early in 1963 map prices were raised commensurate with the new rates being charged by Federal mapping agencies.

The Air Division of the Surveys and Mapping Branch prepared 16,000 square miles of 1-inch-to-20-chains interim maps, of which 2,800 squares miles were draughted for general distribution. As required by the Forest Service inventory programme, revision began on 3,000 square miles of 1-inch-to-40-chains maps.

The last Anson aircraft was retired from aerial photographic service in June and was replaced by a converted Beechcraft D18 (Expeditor). The Department now operates two D18 photographic aircraft. In spite of very unsettled weather

during the flying season, 23,450 prints were obtained, covering 23,000 square miles and 6,395 lineal miles.

The continuing value of maintaining an instrument service centre was demonstrated by the ability of its personnel to design and construct new shutter blades for the O.S.C. aerial cameras. These were unobtainable on the commercial market.

One major administrative change occurred in the Service during the year. Responsibility for the Land Settlement Board was returned from the Department of Agriculture to the Lands Service in June. The Board had been administered by the first-mentioned Department since April, 1956. In 1963 the Land Settlement Board issued title deeds to 59 properties and recorded full repayment of eight mortgages. Collections totalled approximately $44,000.

The University Endowment Lands issued building permits valued at $171,150 and recorded revenues of $144,516. In co-operation with the Greater Vancouver Water District, new arrangements were made for water supply and storage in the Endowment Lands.

In respect to personnel it is notable that Mr. S. C. Hawkins, of the Lands Branch, retired after an enviable record of more than 50 years in the public employ. In recognition of his meritorious service, the Honourable the Minister of Lands, Forests, and Water Resources presented Mr. Hawkins with a gold watch and scroll.

I regret to report the death in service of three valued employees—Mr. G. T. Foran, University Endowment Lands Fire Chief, after 17 years of service; Mr. C. C. Green, of the Legal Surveys Division, after 19 years; and Mr. D. H. Stuart, of the Lands Branch, who had been with the Department for 24 years.

The following pages of this Annual Report contain detailed descriptions of the work of each administrative unit in the Lands Service during 1963 and further information in tabular form.

ACCOUNTING DIVISION

ACCOUNTING DIVISION

M. B. MACLEAN, B.COM., DEPARTMENTAL COMPTROLLER

Again in 1963 as in 1962 there was increased activity in the leasing of Crown lands. The number of lease accounts has increased from 5,452 at January 1, 1963, to 6,202 at December 31, 1963, a 14-per-cent increase. The greater interest in leasing has been partially offset by a reduction in outright purchases. Purchase accounts decreased from 1,874 at January 1, 1963, to 1,604 at December 31, 1963.

Effective January 1, 1962, a rental charge for air photos was introduced, as well as a nominal counter charge for examination of air photos at the library. Neither of these charges has materially affected interest in air photos by the public.

Because the Federal Government announced that effective January 1, 1963, the price of all National Topographic Series maps would be substantially increased, and because a large number of the maps sold by this Department are purchased from the Federal Government, it was necessary to revise Provincial Government prices. The new prices were implemented February 8, 1963, and have reflected a substantial increase in revenue.

Table 1.—Summary of Lands Service Revenue Collections for the Year Ended December 31, 1963

Land leases, rentals, fees, etc.	$1,149,650.45
Land sales	787,184.11
Sale of maps and air photos	98,007.24
Total	$2,034,841.80

Table 2.—Comparison of Revenue Collections for 10-year Period 1954–63, Inclusive

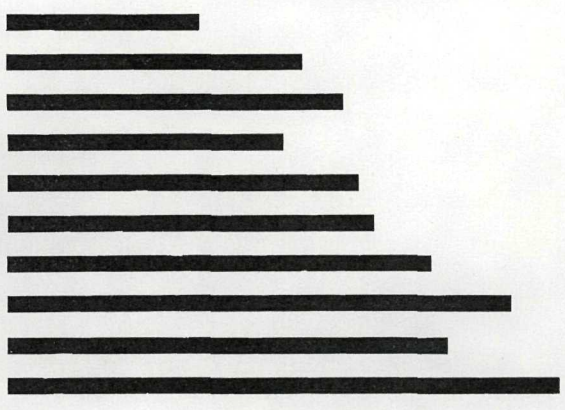
1954	$1,251,767.91
1955	1,398,313.16
1956	1,437,130.44
1957	1,302,065.35
1958	1,340,045.76
1959	1,323,877.29
1960	1,714,220.41
1961	1,765,207.54
1962	1,847,457.83
1963	2,043,841.80
Total	$15,423,927.49

Ten-year average, $1,542,392.75.

Table 3.—Classification of Revenue Collections for the Year Ended December 31, 1963

Land sales—			
Country lands		$652,943.59	
Town lots		134,031.67	
Surface rights, mineral claims		96.35	
Indian reserve cut-off lands		112.50	
			$787,184.11
Land leases, rentals, fees, etc.—			
Foreshore leases—			
Booming and log storage	$316,911.29		
Commercial (marinas, etc.)	264,516.59		
Oyster	9,839.12		
Miscellaneous (foreshore protection, etc.)	1,731.26		
		$592,998.26	
Land leases—			
Grazing and (or) agriculture	$76,228.87		
Quarrying (limestone, sand and gravel)	37,555.73		
Camp-site (lodge, fishing)	6,749.71		
Home-site	1,518.24		
Miscellaneous (residential, etc.)	106,215.92		
		228,268.47	
Land-use permits		3,153.90	
Licences of occupation		4,369.00	
Royalty collections		100,534.35	
Easement collections—			
Annual rentals	$3,854.91		
Outright considerations	106,112.33		
		109,967.24	
Fees—			
Crown grant	$10,250.00		
Assignment	2,220.00		
Miscellaneous (lease, search, etc.)	6,602.00		
		19,072.00	
Sundry collections (occupational rental, survey charges, etc.)		91,287.14	
			1,149,650.45
Sale of maps and air photos—			
Legal Division		$30,283.67	
Geographic Division		34,598.72	
Air Division		33,124.85	
			98,007.24
Gross revenue for year			$2,034,841.80

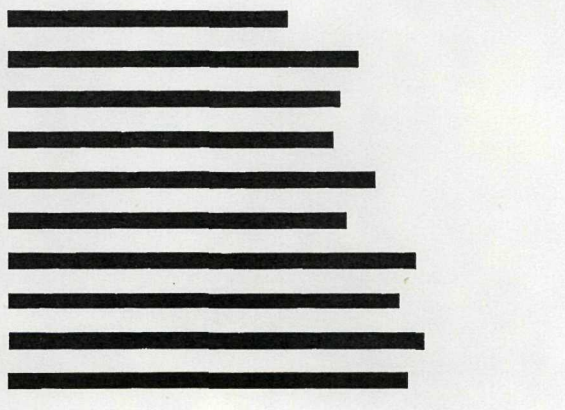
Table 4.—Comparison of Land Leases, Rentals, Fees, etc., Revenue for 10-year Period 1954–63, Inclusive



1954	$330,397.09
1955	425,595.79
1956	576,331.17
1957	472,415.55
1958	605,229.73
1959	668,367.70
1960	842,413.17
1961	1,001,071.13
1962	933,607.66
1963	1,149,650.45
Total	$7,005,079.44

Ten-year average, $700,507.94.

Table 5.—Comparison of Land Sales for 10-year Period 1954–63, Inclusive



1954	$488,303.49
1955	605,469.42
1956	573,976.49
1957	522,825.65
1958	677,036.15
1959	589,975.24
1960	806,723.54
1961	703,705.71
1962	836,270.32
1963	787,184.11
Total	$6,591,470.12

Ten-year average, $659,147.01.

LANDS BRANCH

THE LANDS BRANCH

At the time of the Fraser River gold-rush in 1858 the demand for land in British Columbia was greatly intensified and pre-emptions predated surveys. Within four years 254 pre-emptors had taken up more than 50,000 acres of land. To facilitate the transfer of real estate and provide for the registration of titles, the *Land Registry Act* was passed in 1860. The Government of the Province of British Columbia was now in the real-estate business in a big way; the more than 366,000 square miles of land and water that constitutes British Columbia was the real estate in question.

With the entrance of British Columbia into Confederation in 1871, the demand for land quickened to a rush, and over the next thirty years the land-settler (and the promoter) succeeded the gold-miner in importance. Railroads were built and land grants passed, cities came into being, and companies became established. Land was at the core of all developments.

The task of land administration became very heavy and necessitated the formation of a Department of Lands in 1908. In 1912 a Forest Branch was included in the Department of Lands. Today the Department of Lands, Forests, and Water Resources exercises control of more than 90 per cent of the surface of British Columbia.

How does the Lands Branch fit into the total organization of the British Columbia Lands Service of today? The relation may be expressed briefly. **The Lands Branch has jurisdiction in matters pertaining to the disposition of Crown land, and is charged with so administering and disposing of the land that the general welfare, present and future, of the Province must be protected at all times.**

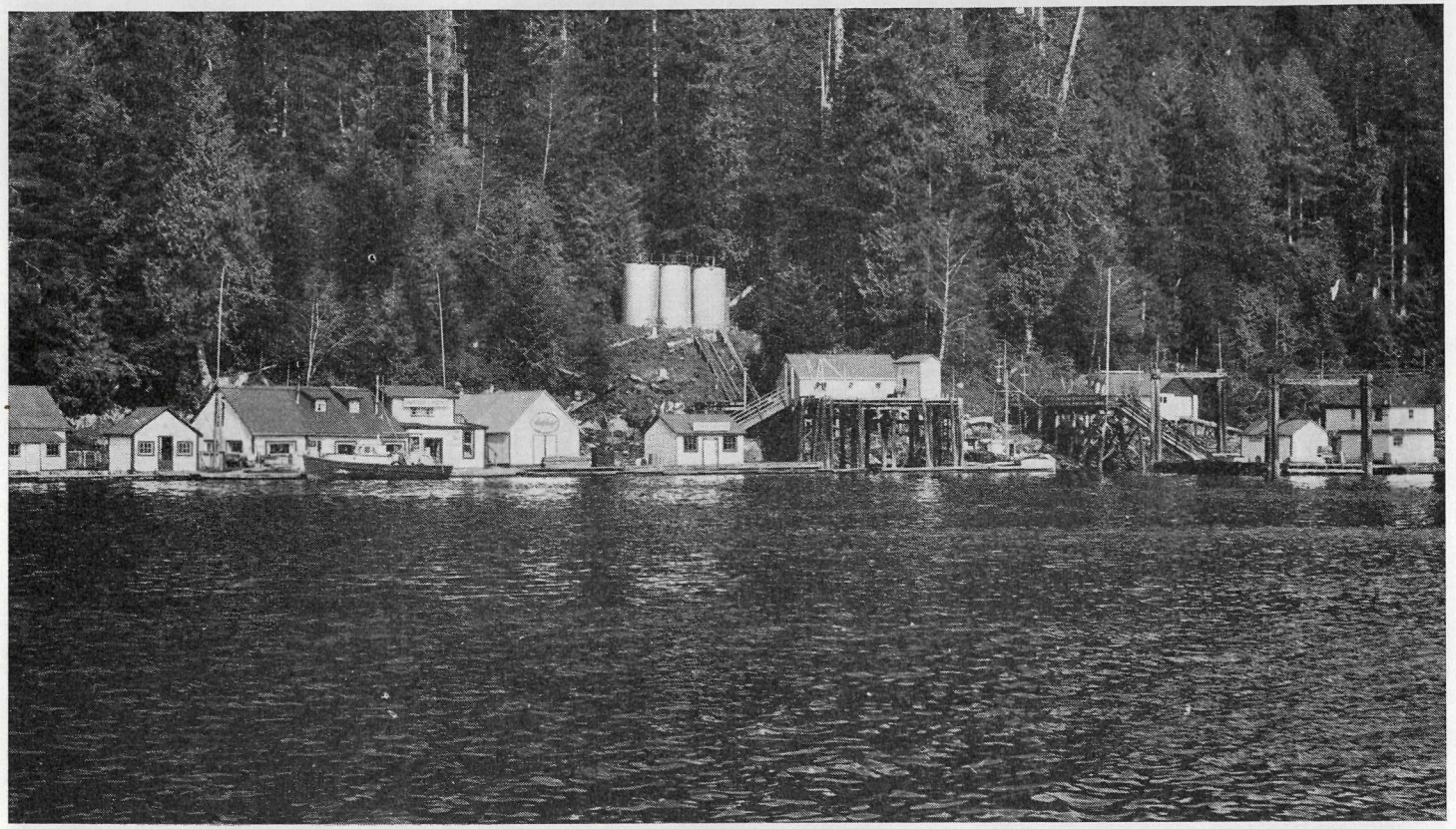
When an individual, or group, desires to purchase or lease Crown land, the application is directed to the Superintendent of Lands, head of the Lands Branch. His authority governs the following matters:—

- Sale, lease, and pre-emption of Crown lands for such purposes as agricultural, industrial, commercial, and home-sites.
- Preparation and issuance of Crown grants under the *Land Act* and the *Mineral Act*.
- Preparation and issuance of right-of-way easements for power, telephone, pipe lines, etc.
- Reservation of suitable Crown lands and foreshore for national defence, use and enjoyment of the public, forestry experimentation, fisheries research work, highways, etc.
- Granting railway rights-of-way under various Statutes.
- Protection of historic sites from alienation.
- Reservation and conveying of Crown lands for such purposes as school-sites, cemeteries, and fair grounds.
- Leasing of land and foreshore for such varied purposes as wharf-sites, booming-grounds, canneries, oyster and other mollusc fisheries, and for boat-houses, quarry-sites, cattle-ranching, trappers' cabins, ship-building, and aircraft bases.

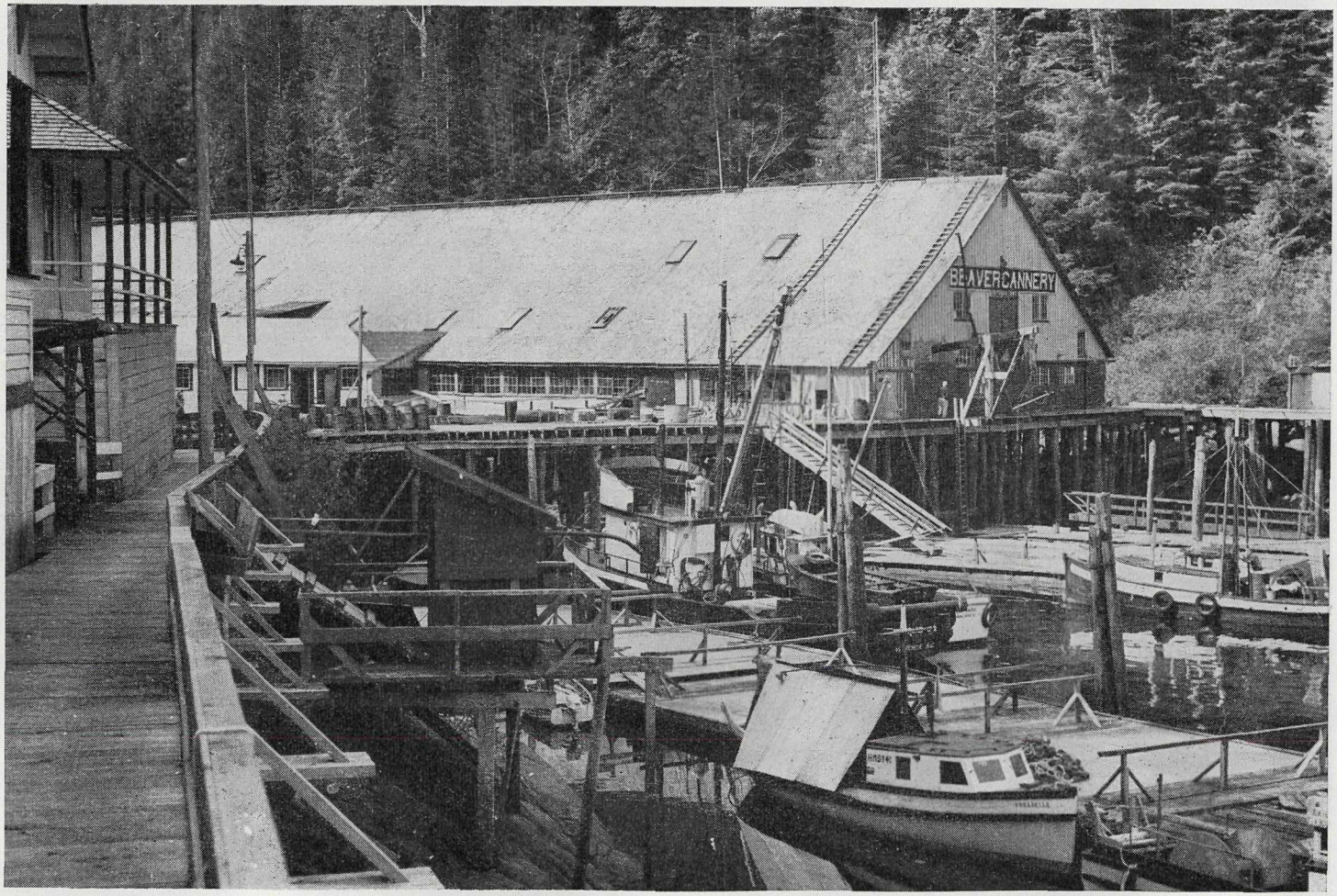
To perform these and other functions efficiently, the Lands Branch works in close co-operation with a great number of other agencies, such as municipal and city administrations, town-planning authorities, the British Columbia Forest Service, the Water Resources Service, the Surveys and Mapping Branch within the British Columbia Lands Service, and all the departments in the Government of the Province, notably Highways, Education, Attorney-General, and Agriculture.

Outside the Provincial departments there is much business transacted with Federal departments, such as the Department of National Defence, the Veterans' Land Settlement Act administration, the Public Works Department, and the Indian Affairs Branch of the Department of Citizenship and Immigration.

Direct service to the people of British Columbia is the first duty of the Lands Branch and this takes the bulk of the time of the Lands Branch personnel. Associated with this prime duty is the important function of the maintenance of the records, which in many cases are the only ones in British Columbia showing the correct legal status of the surface of the Province.



Small float camp settlement, Rivers Inlet.



Typical west coast fishing-fleet headquarters.

LANDS BRANCH

D. BORTHWICK, B.S.A., B.ED., A.A.C.I., SUPERINTENDENT OF LANDS

The expanding industrial development of the Province has attracted new interest from prospective settlers in the rest of Canada and in the United States, and, as a result, activities in the Lands Branch reached an all-time high in 1963. Applications received increased from 6,345 in 1962 to 7,011 in 1963, or an increase of 10.4 per cent. *Land Act* collections increased from $1,769,877 to $1,936,834 or 9.4 per cent. Incoming Lands Branch mail increased from 30,351 pieces in 1962 to 32,133 pieces in 1963. The acreage of land leased from the Crown increased from 186,806 acres in 1962 to 341,770 acres in 1963.

The Peace River District has again proven to be the most active agricultural settlement area in the Province. A large tract of land lying north and east of the Beatton River and comprising approximately 400,000 acres which had formerly been held under reserve was opened for settlement. The policy instituted last year whereby prospective settlers could lease a maximum of 1,280 acres of predominantly arable land for agricultural and (or) ranch headquarters purposes has met with the general approval of most settlers. These leases will be reviewed in three years time to ensure that the lessee is developing the land. It is hoped this policy will stimulate bona fide land settlement and eliminate the practice of leasing large tracts of land without following through with a concrete plan of development.

During the past year the Lands Branch has continued its policy of laying out Crown subdivisions in the unorganized areas of the Province where public interest in such lands for summer-home site purposes has become apparent. As in the past, the subdivisions have been laid out by legal survey and the necessary access roads constructed prior to offering the lots for lease by public competition. Subdivisions of this nature were established at Norman Lake, Riondel, Gun Lake, and Lake Windermere. Other subdivisions are now in the planning stage.

In the early part of 1963 Departmental officials undertook a review of the unit rentals levied on grazing lands throughout the Province. It was noted that most of the grazing land held under lease tenure fell in the third-class land category, on which a flat per acre rental charge was levied, even though the grazing potential of the land ranged from poor to excellent. In order to fix an annual charge commensurate with the grazing potential of the land, the rentals were put on a sliding scale and related to carrying capacity.

The establishment of a pulp-mill at Prince George dictated the need for an accurate cruise of the standing pulpwood on Crown lands from Prince George south to Soda Creek. In order that the Forest Service could have an opportunity to undertake this survey without having to deal with a constantly changing land inventory, it became necessary to restrict the disposition of Crown lands in this region. It is anticipated that the cruise will be completed and the results analysed by the summer of 1964, at which time the policy with respect to land alienations in this area will be reviewed.

During the past year the Department has continued its policy of revising and rewriting the Land Series bulletins that have been published to acquaint prospective settlers with pertinent features of various districts in British Columbia. The Fort Fraser-Fort George bulletin was rewritten in order to keep abreast of this rapidly developing area. In addition, the Peace River and Vancouver Island bulletins were revised and brought up to date.

A brief summary of the activities of the various sections of the Administration Division of the Lands Branch is set out hereunder:—

Lease Section.—The work load of this Section has increased sharply over the past year. Lease applications rose from 2,246 in 1962 to 2,719 in 1963, or an increase of 21 per cent. It is anticipated that this trend will continue in view of the Department's agricultural policy of encouraging alienation by lease rather than purchase until the bona fides of the applicant have been demonstrated through actual development of the land.

Purchase Section.—There was also an increase in the number of purchase applications, although the increase was only 5 per cent. This increase would appear to be commensurate with the normal expansion of the Province.

Crown Grants Section.—A decrease of about 3.6 per cent in the number of Crown grants issued in the past year appears to be a direct reflection on the policy of encouraging lease tenure in the initial stages of development of Crown lands. The number of Crown grants issued last year was 1,042, as compared to 1,081 in 1962.

Pre-emption and Reserve Section.—The number of applications for pre-emptions and reserves dropped from 709 in 1962 to 594 in 1963. However, the number of inquiries dealt with by this Section rose from 2,411 in 1962 to 2,571 in 1963.

Status Section.—The number of statuses completed by this Section decreased from 18,671 in 1962 to 17,710 in 1963. However, upon reviewing the status work undertaken it was noted that many of the statuses prepared involved extensive areas.

Easement Section.—The number of easements granted in 1963 increased by approximately 12.5 per cent. It is anticipated that during the coming year the activity of this Section will show a marked increase as there is a backlog of one particular type of easement awaiting approval when the actual form on which they are to issue has been resolved with the companies and agencies concerned.

General Activity.—During 1963 a total of 31 acreage parcels was offered for sale by tender, of which 18 were sold, realizing the sum of $21,031. Sixteen parcels of land suitable for agricultural purposes were offered for lease by tender.

Nineteen public auction sales of Crown land were held during the year. A total of 230 parcels was offered, of which 88 were sold at the time of auction, realizing $84,965. Eleven public auctions of leases were held, involving 233 waterfront properties and 19 agricultural parcels. At time of auction 132 parcels were leased.

The following tables indicate in detail the work carried out by the various sections of the Lands Branch.

Table 1.—Country Land Sales, 1963

	Acres
Surveyed	85,994
Unsurveyed	29,442
Total	115,436

Table 2.—Certificates of Purchase Issued, 1963

Land Recording District	Total
Alberni	10
Atlin	---
Cranbrook	18
Fernie	7
Fort Fraser	81
Fort George	89
Fort St. John	113
Golden	7
Kamloops	25
Kaslo	6
Lillooet	21
Nanaimo	17
Nelson	29
New Westminster	12
Osoyoos	1
Pouce Coupe	84
Prince Rupert	32
Quesnel	43
Revelstoke	8
Similkameen	23
Smithers	50
Telegraph Creek	---
Vancouver	26
Victoria	5
Williams Lake	66
Total	773

Table 3.—Town Lots Sold, 1963

Town	Lots	Value
Alberni	2	$400.00
Barkerville	9	1,355.00
Barriere	2	490.00
Brighton	4	500.00
Chilliwack	2	71.00
Coalmont	20	1,390.00
Cumberland	1	50.00
Elko	4	120.00
Endako	125	5,440.00
Evelyn Station	21	1,050.00
Extension	2	200.00
Fernie	37	659.00
Fort Fraser	30	2,340.00
Fort Nelson	1	440.00
Fort St. James	1	10.00
Fraser Lake	13	425.00
Golden	3	800.00
Graham Island	22	765.00
Hazelton	1	40.00

Table 3.—Town Lots Sold, 1963—Continued

Town	Lots	Value
Hope	5	$750.00
Hosmer Station	3	100.00
Houston	6	1,100.00
Ladysmith	1	50.00
Midway	26	2,750.00
Moyie	4	310.00
New Hazelton	59	3,500.00
Port Clements	1	50.00
Port Edward	3	725.00
Port Simpson	2	180.00
Prince George	47	40,740.00
Prince Rupert	13	4,135.00
Princeton	1	270.00
Queen Charlotte	159	6,215.00
Revelstoke	24	5,700.00
Rosebery	23	635.00
Smithers	6	975.00
Sidney	6	10.00
Slocan	2	60.00
South Fort George	7	3,650.00
South Wellington	2	250.00
Stewart	21	3,995.00
Summit Lake	1	515.00
Telegraph Creek	1	50.00
Union Bay	9	1,480.00
Vancouver	1	6,000.00
Vanderhoof	2	140.00
Wells	10	1,400.00
Wilmer	21	630.00
Windermere Lake	1	710.00
Winter Harbour	22	2,275.00
Miscellaneous	92	15,934.00
Totals	881	$121,829.00

Table 4.—New Leases Issued, 1963

	Number	Acreage
Land—		
Agriculture	104	46,819.97
Hay and grazing (pasture and hay-cutting)	365	284,205.84
Quarrying (sand, gravel, limestone, etc.)	13	1,229.41
Homesite (section 78, *Land Act*)	5	120.74
Residential	328	570.21
Miscellaneous (resorts, service-stations, camp-sites, mill-sites, etc.)	73	6,187.50
Foreshore—		
Booming, log storage, log-dumping, etc.	84	1,517.56
Oyster and shellfish	8	104.75
Industrial (canneries, mill-sites, wharves, etc.)	10	108.58
Quarrying (sand, gravel from river-beds)	12	201.28
Commercial (boat rentals, marinas, marine service-stations, etc.)	23	131.46
Miscellaneous (private wharves, boat-houses, etc.)	26	573.50
Totals	1,051	341,770.80

Table 5.—Temporary Tenure Leases Renewed, 1963

Number	125
Acreage	18,146.64

Table 6.—Land-use Permits Issued, 1963

Number	15
Acreage	55.95

Table 7.—Licences to Occupy Issued, 1963

Number	13
Acreage	272.67

Table 8.—Assignments Approved, 1963

Leases, land-use permits, licences of occupation	408

Table 9.—Easements Granted, 1963

	Number	Miles	Acres
Foreshore			
Submarine cables	1	0.580	3.530
Sewer pipe-line	1	2.000	4.810
Totals	2	2.580	8.340
Land			
Radio and television sites	11	.....	53.564
Pipe-lines (oil and gas)	24	234.973	1,680.274
Pipe-lines and well-sites	17	63.250	656.280
Compressor-station	1	.....	5.000
Water pipe-line	2	2.160	84.360
Power-lines	3	3.880	102.850
Ground-bed sites	3	0.420	0.720
Railway spur	1	0.458	3.700
Gas pipe-line and flare-pit	1	19.400	152.560
Radio-site and power-line	2	4.750	50.360
Flare-pit sites	3	.....	8.620
Well-sites	1	.....	29.240
Radio-site and road	1	3.630	45.453
Totals	70	332.921	2,872.981
Licences of Occupation			
Radio-sites (unsurveyed)	5	.....	1.110[1]
Grand totals	77	335.501	2,882.431

[1] Approximate.

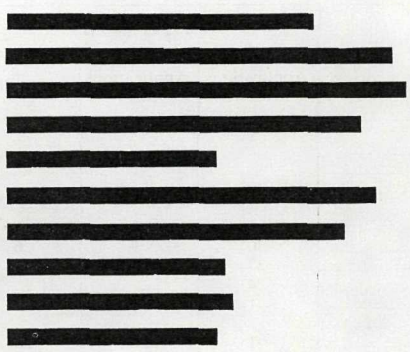
In line with current Departmental policy, 66 letters of consent for the construction of access roads were issued during the year.

Table 10.—Crown Grants Issued, 1963

Purchases (country lands)	685
Purchases (town lots)	255
Pre-emptions	36
Surface rights (*Mineral Act*)	3
Public Schools Act	10
Veterans' Land Settlement Act	6
Home-site leases	9
Pacific Great Eastern Railway	11
Supplementary timber grants	2
Miscellaneous	25
Total	1,042

Certified copies of Crown grants issued, 4.

Table 11.—Crown Grants Issued for Past Ten Years



1954	1,276
1955	1,498
1956	1,518
1957	1,426
1958	1,043
1959	1,471
1960	1,399
1961	1,074
1962	1,081
1963	1,042
Total	12,828

Ten-year average, 1,282.

Table 12.—Total Area Deeded by Crown Grant, 1963

	Acres
Purchases (country lands)	68,833.80
Pre-emptions	5,499.67
Surface rights (*Mineral Act*)	66.36
Public Schools Act	15.52
Veterans' Land Settlement Act	960.00
Home-site leases	126.94
Pacific Great Eastern Railway Company	910.91
Supplementary timber grants	166.04
Miscellaneous	775.22
Total	77,354.46

Table 13.—Pre-emption Records, 1963

Land Recording District	Pre-emptions			C. of I. Issued
	Applications Received	Applications Allowed	Cancelled	
Alberni	---	---	---	---
Atlin	---	---	---	---
Cranbrook	---	---	---	---
Fernie	---	---	---	---
Fort Fraser (Burns Lake)	5	1	1	1
Fort George (Prince George)	30	9	6	2
Fort St. John	37	18	21	17
Golden	4	---	---	---
Kamloops	1	---	---	---
Kaslo	---	---	---	---
Lillooet (Clinton)	1	---	---	1
Nanaimo	---	---	---	---
Nelson	---	---	---	---
New Westminster	---	---	---	---
Osoyoos (Vernon)	---	---	---	---
Pouce Coupe	57	49	40	8
Prince Rupert	1	---	---	---
Quesnel	10	2	4	2
Revelstoke	---	---	---	---
Similkameen (Penticton)	---	---	---	---
Smithers	1	---	1	---
Telegraph Creek (Prince Rupert)	---	---	---	---
Vancouver	---	---	1	---
Victoria	---	---	---	---
Williams Lake	---	---	---	1
Totals	147	79	74	32

Table 14.—Reserves, 1963

	Applications Received	Reserves Completed
Use, recreation, and enjoyment of the public	146	208
British Columbia Department of Highways (rights-of-way, gravel pits, bridge-sites, etc.)	156	145
Federal Government (defence purposes, wharf-sites, etc.)	27	47
British Columbia Forest Service (Ranger stations, grazing, radio-sites, reforestation, etc.)	59	57
Miscellaneous (Game Branch, water-power projects, garbage dumps, school-sites, cemeteries, etc.)	59	71
Totals	447	528

General Summary

	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Ten-year Average
Pre-emption records issued	97	48	35	66	99	53	77	147	127	79	83
Certificates of improvements issued	71	41	52	43	67	39	27	18	22	32	41
Certificates of purchase issued	1,043	1,084	935	1,012	1,151	1,114	1,248	944	1,106	934	1,057
Crown grants issued	1,276	1,498	1,518	1,426	1,043	1,471	1,399	1,074	1,081	1,042	1,282
Total acreage deeded by Crown grants	73,461	65,941	80,308	89,907	58,798	91,294	79,766	75,486	67,989	77,354	76,030
New land sales—											
Number	1,043	1,084	935	1,012	1,151	1,114	1,248	944	1,106	934	1,057
Value	$391,989.96	$578,487.16	$546,702.70	$511,895.02	$676,627.48	$669,899.78	$857,060.67	$673,655.53	$779,746.36	$658,950.00	$583,312.00
Leases under *Land Act*	366	311	264	276	479	513	802	1,013	1,094	1,051	617
Acreage leases, *Land Act*	50,064	67,195	51,301	56,808	77,912	51,777	107,474	104,029	186,806	341,770	109,514
Temporary tenure leases renewed	52	62	65	72	66	88	103	100	93	125	83
Land-use permits	27	25	21	22	9	8	21	13	21	15	18
Licences of occupation, easements, etc.	35	40	87	55	46	27	35	7	18	13	36
Clearances of reverted mineral claims	400	663	783	361	245	291	303	282	458	418	420
Reservations for use and enjoyment of public and other purposes	440	392	422	430	454	640	550	581	547	528	498
Land Act collections	$818,700.58	$1,031,056.01	$1,140,178.27	$980,411.88	$1,282,265.85	$1,258,342.94	$1,649,136.71	$1,704,776.84	$1,769,877.98	$1,936,834.00	$1,357,158.00

LAND INSPECTION DIVISION

L. D. FRASER, B.Sc.A., P.Ag., A.A.C.I., CHIEF LAND INSPECTOR

The year 1963 was one of great activity in the Inspection Division, and the trend for increasing examination work continued. At the end of the year, 1,117 inspections were outstanding and are carried through to the new year. This carry-over is a result of a record 4,781 examination requests received by this Division. With this were 571 requests carried over from 1962. This Division's field staff examined 4,235 requests, which was slightly more than last year, but represents a probable maximum work load for the existing staff. Coupled with the increase in applications is an increase in the size and complexity of the land to be examined. For example, it has been ascertained in the Pouce Coupe district that the average lease application encompassed 200 acres in 1958 and increased to 400 acres in 1962. In the Prince George district the size of the average application increased from 90 acres in 1959 to 300 acres in 1962.

This Division again examined properties and submitted appraisal reports for many other Government departments and agencies. The total number was somewhat less than last year, involving only 36 inspections. However, the hours of work required for each examination were far above the average devoted to most inspections. This is due to the complexity of the appraisals concerned and the fact that up to one or two weeks might be required to complete one report. Detailed appraisals were made for the Pacific Great Eastern Railway Company, Capital City Planning Board, Department of Recreation and Conservation, Attorney-General's Department, Department of Health and Welfare, Southern Okanagan Lands Project, Land Settlement Board, and Veterans' Land Act.

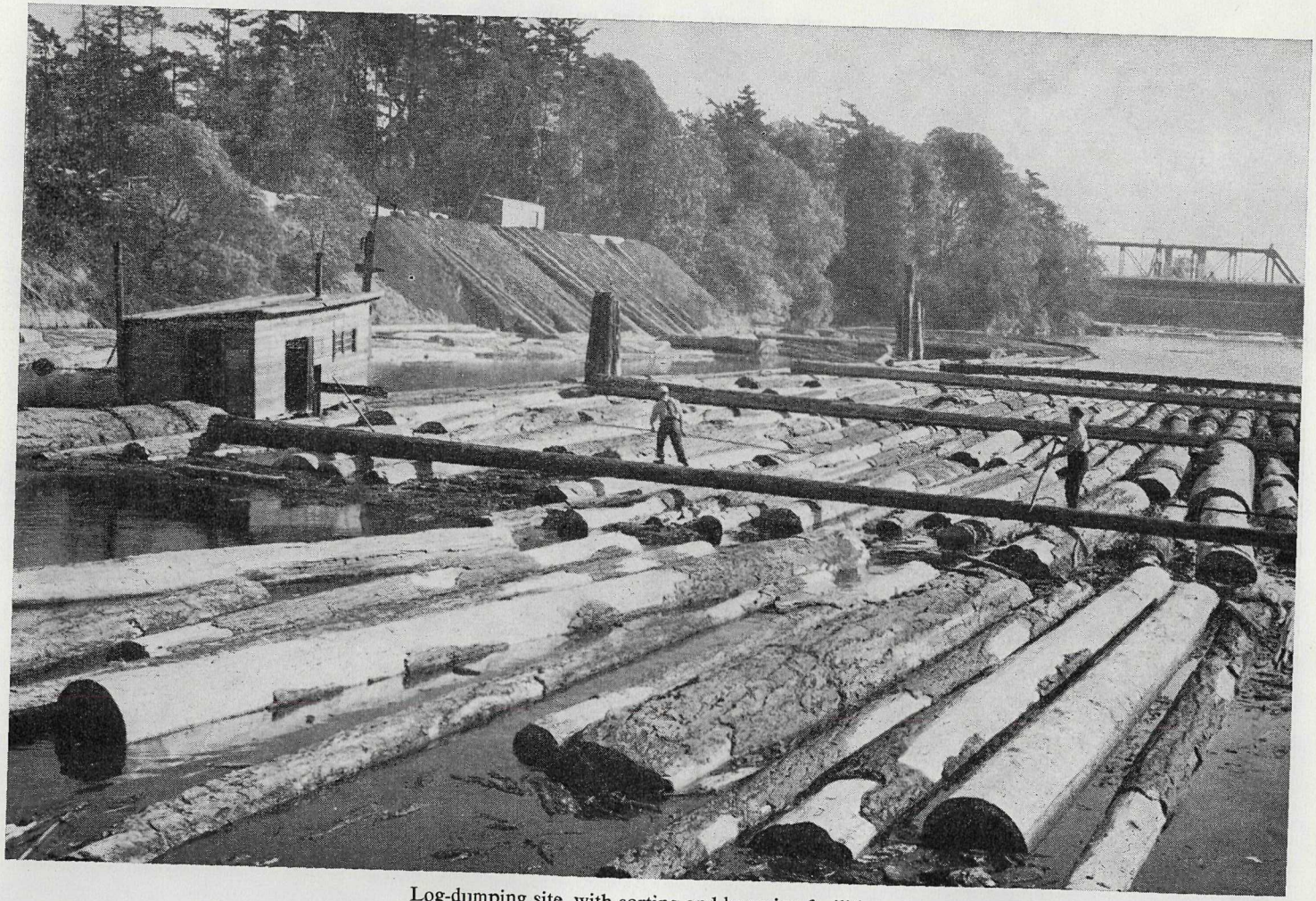
A noticeable increase in activity in the Smithers district is due in part to a large influx of American citizens, occasioned by the opening of the Prince Rupert–Alaska ferry run. In addition, many applications have been submitted for grazing leases by established ranchers in a desire to consolidate their holdings in the face of outside competition. It is also apparent that many speculative applications for land are being received in anticipation of the possible establishment of a pulp-mill at Houston.

A similar increase in activity in the Prince George district is due, in general, to the continually expanding economy of this part of the Province. Specifically, however, the promise of a railway to connect to Fort St. James has undoubtedly been responsible for increasing the interest in land in that vicinity. The Francois Lake and Endako areas are experiencing a mining boom, with the resultant effect of demands for land.

An increase in the work load in the Kamloops district, amounting to 32 per cent over last year, is largely attributable to an increase in grazing and home-site purchases. In addition, policy changes affecting grazing lease rentals have resulted in the necessity for examining a large volume of leases as they come up for review. Both Land Inspectors in this district assisted in other areas in an effort to combat the increasing backlog, but by so doing a backlog of inspections was allowed to accumulate in the Kamloops district.

The anticipated increase in demand for land in the Nelson district materialized to the extent of increasing the work load by 8 per cent over last year. There has been a great improvement in the main highways in this region during the past two years. The opening of the Golden–Revelstoke section of the Trans-Canada Highway, the completion of the Christina Lake–Kinnaird Provincial Highway, the com-

Cattle on the range, Williams Lake.



Log-dumping site, with sorting and booming facilities.

pletion of the Trail–Salmo Highway, and the improvement to the Nelson–Nakusp Highway have all been of great importance to the economy of this district.

The opening of the Golden–Revelstoke Highway has also been responsible for an increased activity in the Kelowna area. This activity has been evenly distributed throughout the district, but foreshore and lake-front examinations continue to be the most time-consuming type of inspection.

A new co-operative cattle market at Cranbrook is assisting this industry in the East Kootenay. Creston is becoming increasingly important as a supply source for grain and winter feed for the cattle industry. At present nearly all Crown range in the Kootenays is stocked to capacity, requiring careful scrutiny of all applications for land.

As mentioned last year, there is still a very definite trend toward the acquisition of both large and small ranches in the Williams Lake and Clinton areas, and the lumber industry in the district is moving toward a higher utilization of wood products by the installation of chipping-mills. At present one company is shipping chips via the Pacific Great Eastern Railway to the Coast, and other similar installations are in the planning stage.

In the Peace River area most inspections require the examination of lands for agricultural development. A large proportion of these applications are received from local residents who desire to expand their existing holdings. However, many new settlers, principally from Alberta, Saskatchewan, and the United States, are becoming established here.

There is a noticeable increase in interest to lease or purchase summer-home sites in the Peace River area. To meet some of this anticipated demand, consideration is being given to a Crown subdivision of home-site lots along the south shore of Moberly Lake.

In the Courtenay district the trend is toward increased development of the north end of Vancouver Island. The promise of improved and new roads has provided the impetus for this activity. The number of applications for oyster leases has increased in this district due to the large volume of mature "wild" oysters to be found along our coast and the necessity of placing these oysters on a registered lease before selling them.

The work load in the Vancouver area has remained relatively unchanged from last year. The proposed Squamish–Pemberton Highway is still not completed, but will undoubtedly have the effect of increasing interest in this area when the road is completed. Little change is anticipated throughout the remainder of the Vancouver district, and the concentration of work centred on home-site and foreshore applications.

Fifty per cent of applications in the Quesnel area were received from local ranchers and farmers desiring to increase their holdings. Approximately 25 per cent of all applications were from settlers coming into this area from other parts of British Columbia, Washington, Oregon, and California. Only 15 per cent of the applications were from local residents acquiring farm land, and the remaining 10 per cent were made up of applications for summer-cabin sites, land-use permits, rental reviews, and reserves. It is anticipated that this trend will continue.

STAFF

During the past year several changes were made in the location and employment of field staff. Mr. D. Havard, of Smithers, resigned, effective May 15, 1963, and was replaced by Mr. H. Gavin as Land Inspector 2, effective May 13, 1963. Mr. Gavin transferred to this Division from the British Columbia Forest Service,

where he had been employed as Forester 1. Mr. D. I. Snider, Land Inspector 2, transferred from Prince George to Kamloops, effective March 1, 1963, to replace Mr. G. Wilson, who had transferred to Vancouver the preceding November, 1962. Mr. Snider was replaced in Prince George by Mr. G. A. Rhoades, Land Inspector 2, who transferred from Clinton, effective March 7, 1963. The vacancy left in the Clinton office was subsequently filled by the employment of Mr. M. F. Robson, effective May 6, 1963.

This Division now has 18 Land Inspectors stationed in various districts. The Assistant Chief Land Inspector is responsible for the field work in the Victoria district.

Two staff changes occurred in the Victoria office. Mr. R. Goodchild was promoted to Clerk 3 and transferred to the Lands General Office, effective August 15, 1963. He was replaced by Mr. J. Dick, effective October 16, 1963. Mrs. E. Leask left this Division in August of this year, to be replaced by Miss J. Knudson, effective August 12, 1963.

TRAINING

Four Land Inspectors, together with the Chief Land Inspector and Assistant Chief Land Inspector, are now accredited appraisers with the Appraisal Institute of Canada.

One Land Inspector has completed all requirements but has not yet received his accreditation. Ten Land Inspectors are in various stages of working toward the completion of requirements. Three Land Inspectors have had no training in appraisal matters as yet, but it is hoped that these three can be started on the Appraisal I Course next year.

One Land Inspector has successfully completed the Executive Administration Course sponsored by the Civil Service Commission. Two are now in their second year, and the Assistant Chief Land Inspector is now completing the third and last year.

STATISTICS

Table 1 represents a comparison, on a year-to-year basis, of the volume of field work completed by the Land Inspection Division for the years 1959 to 1963, inclusive. Table 2 presents a summary of the number and types of inspections completed in the Province by this Division during 1963.

Table 1.—Land Inspection, 1959–63

Land Inspection District	Examinations Made during—					Outstanding at End of—				
	1959	1960	1961	1962	1963	1959	1960	1961	1962	1963
Clinton	259	249	234	186	139	31	28	41	16	48
Courtenay	187	219	199	187	212	29	40	18	33	30
Fort St. John	428	435	580	584	593	52	63	60	100	156
Kamloops	154	163	229	277	329	12	10	8	22	78
Kelowna	216	226	198	160	166	39	24	25	13	28
Nelson	201	221	290	211	252	54	38	19	42	43
New Westminster	175	164	133	177	110	8	2	1	12	7
Pouce Coupe	304	330	436	512	513	42	4	44	30	87
Prince George	382	395	503	474	480	66	51	67	73	183
Quesnel	141	205	195	218	213	23	28	24	43	58
Smithers	225	215	217	290	279	33	33	66	116	279
Vancouver	184	258	287	219	240	12	16	11	19	9
Victoria	112	119	129	100	216	11	3	2	3	17
Williams Lake	276	280	389	457	421	50	121	68	49	61
B.C.F.S. and others	59	85	56	98	72	----	----	----	----	33
Totals	3,307	3,564	4,075	4,150	4,235	462	461	454	571	1,117

Table 2.—Types of Inspections, 1963

Purchases—	
Agriculture (other than grazing)	480
Access (roads, etc.)	13
Commercial (resorts, service-stations, hotels, airfields, etc.)	72
Community (cemeteries, church-sites, parking areas, etc.)	10
Grazing (pasture, range)	206
Home-sites (permanent)	307
Industrial (mill-sites, power-sites, manufacturing plants, etc.)	31
Summer-home or camp sites	70
Wood-lots or tree-farms	1
Purchase Crown F.S.	3
Leases—	
Land—	
Agriculture (other than grazing)	467
Commercial (resorts, service-stations, hotels, airfields, etc.)	38
Community (parks, cemeteries, dump-sites, etc.)	24
Fur-farming	----
Grazing (pasture, range, hay-cutting, etc.)	398
Home-sites (section 78 of the *Land Act*)	17
Home-sites (permanent, other than section 78 of the *Land Act*)	71
Industrial (mill-sites, power-sites, manufacturing plants, etc.)	11
Summer-home or camp sites	209
Quarrying (sand, gravel, limestone, diatomaceous earth, etc.)	35
Reviews (rental and (or) diligent use)	245
Foreshore—	
Booming and log storage or log-dumping	109
Commercial (boat rentals, marine service-stations, wharves, etc.)	57
Industrial (mill-sites, canneries, factory-sites, wharves, etc.)	26
Quarrying (sand and gravel from river-beds)	5
Oyster and shellfish	22
Private (floats, boat-houses)	13
Reviews (rentals and (or) diligent use)	191
Land-use permits	42
Licences of occupation	15
Easements and (or) rights-of-way	7
Pre-emptions—	
Applications	47
Annual inspections (including applications for Crown grant)	167
Subdivisions—	
Valuations	26
Survey inspections	5
Plans cancellation	2
Proposals (lake-shore, residential, etc.)	18

Table 2.—Types of Inspections, 1963—Continued

Reserves—	
Grazing	14
Gravel pits	1
Recreational	61
Others	5
Veterans' Land Act	2
Land Settlement Board—	
Classifications	3
Valuations	4
Doukhobor lands	5
Southern Okanagan Lands Project	2
Pacific Great Eastern Railway	13
Department of Social Welfare	-----
Other agencies—Capital City Planning Board, Department of Recreation and Conservation, and Attorney-General's Department	4
Miscellaneous inspections—	
Assignments	2
Delinquent accounts	19
Escheats Act	2
Lake reconnaissance	17
Land-use surveys	30
Land values (current market values)	37
Protests	15
Section 53 (2) of *Land Act* (verifying improvements)	410
Section 65 of *Land Act* (free grants)	-----
Section 78 of *Land Act* (*re* compliance with provisions of)	25
Section 130 of *Land Act* (lands vested in Crown under *Taxation Act*)	2
Section 131B of *Land Act* (cases of doubt regarding inclusion of body of water in Crown grant)	8
Trespass (land)	15
Trespass (water)	48
Quieting Titles Act	23
Others—Land exchange, site improvement, bridge inspection	8
Total	4,235

Included in this table are 72 inspections completed by the British Columbia Forest Service and Department of Finance in the more remote areas of the Province.

SURVEYS AND MAPPING BRANCH

THE SURVEYS AND MAPPING BRANCH

The framework of maps and surveys so necessary for the orderly development and settlement of British Columbia is provided through the Surveys and Mapping Branch. That such scientific foundations were necessary even in the earliest days is shown by the fact that in 1851 the position of Colonial Surveyor for the young Crown Colony of Vancouver Island was created. In more than 100 years which have passed since Joseph Despard Pemberton was appointed first Surveyor-General, British Columbia has expanded immensely in all spheres of human endeavour. Much of the foundation for the way of life we have in British Columbia today rests on the reliability of our basic surveys. As British Columbia has progressed through time, so the surveys and maps of the Province have increased in magnitude and complexity.

It is the responsibility of the Surveys and Mapping Branch, through the Boundary Commissioner, to establish and maintain co-operatively the boundaries between this Province and the other adjacent Provinces and Territories of Canada. Within the Province, the Branch has established and is ever extending a basic network of triangulation surveys which are fundamental to determining geographical locations and co-ordinating property boundaries. The surveying procedures vary according to the intended purposes. Topographic surveys are constantly improving the portrayal of various physical features. Cadastral (legal) surveys, on the other hand, delineate the parcels of Crown lands subject to alienation under the *Land Act*. Finally, it is necessary to show on published maps the combined survey effort in order to give a visual account of the position of land alienation and geographic features of British Columbia. Maps must satisfy a wide range of uses, whether it be by the sportsman searching for an untapped valley or virgin lake, the homesteader seeking unsettled lands, or the industrialist planning new ways and new places to develop the resources of this Province.

So much for the uses of maps and surveys and their necessity. Also interesting is the great variety of techniques and equipment which must support our complex surveying and mapping organization. This includes photography from aircraft using precise cameras calibrated to less than a thousandth of an inch, modern optical surveyors' theodolites which read directly to seconds of arc, other instruments such as the tellurometer (a distance-measuring device which operates on a principal similar to radar), and plotting devices which are capable of precise mapping directly from aerial photographs. Helicopters and other aircraft speed surveyors to the remotest locations. Surveying is also expanding into the realm of electronic computers which can process the contents of field-notes in seconds compared with hours by manual methods. In all these ways, the science of surveying and mapping continues to serve the people by keeping pace with their needs and with the continual technological advances of our age.

The following is a brief summary of the functions of the various divisions of the Surveys and Mapping Branch:—

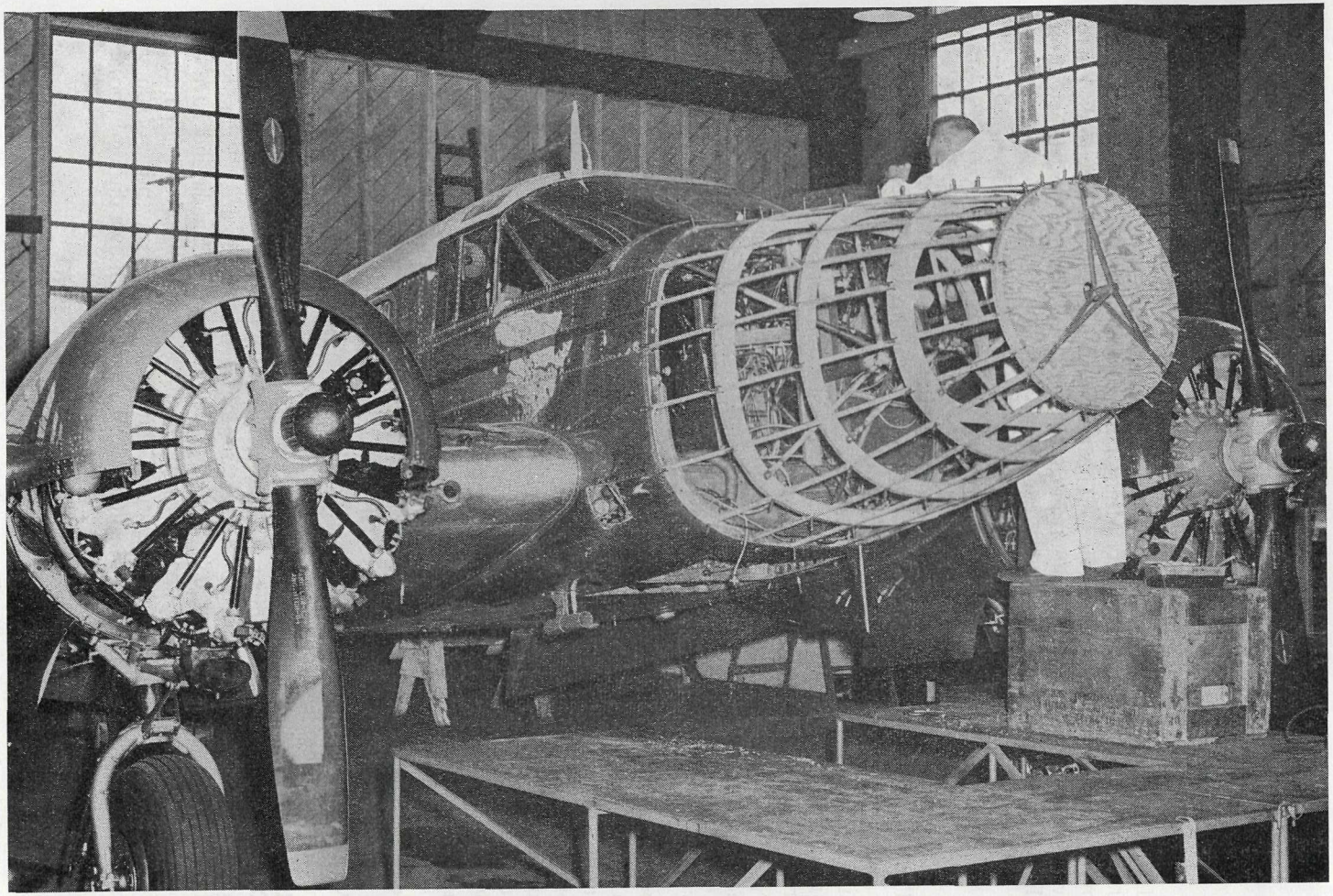
I. Administration.—General co-ordination of the four divisions of the Branch, being Legal Surveys, Geographic, Topographic, and Air; delineation and maintenance of boundaries under the Provincial Boundary Commissioner—namely, (*a*) Alberta-British Columbia Boundary and (*b*) British Columbia-Yukon-Northwest Territories Boundary; interdepartmental and intergovernmental liaison, such as the Fraser River Board.

II. Legal Surveys Division.—Regulations for surveys under the various Provincial Acts, such as Land, Land Registry, Mineral, Petroleum and Natural Gas; instructions to British Columbia land surveyors regarding surveys of Crown lands and subsequent check of field-notes and plans of same; preparation and custody of official plans; preparation and maintenance of Departmental reference maps, mineral reference maps, and composite (cadastral) maps; processing for status of all applications concerning Crown lands; field surveys of Crown lands, highway rights-of-way, etc.; preparation of legal descriptions; operation of blue-print and photostat sections; computational scrutiny of certain land registry subdivision plans; inspection surveys; restoration surveys.

III. Geographic Division.—Map compilation, drawing and negative engraving, editing, and reproduction; map checking, distribution, geographical naming—Gazetteer of British Columbia; field and culture surveys for preparation of land bulletins and maps; preparation of legal descriptions for and delineation of administrative boundaries; compilation and distribution of annual Lands Service Report; trigonometric computation and recording of geographic co-ordinates; general liaison between this Department and Federal and other mapping agencies on exchange of survey and mapping data; checking well-site survey plans under the *Petroleum and Natural Gas Act*.

IV. Topographic Division.—Propagation of field survey control—namely, triangulation, traverses, and photo-topographic control; operation of Beaver float-plane and M.V. "B.C. Surveyor"; helicopters on charter; compilation and fair drawing of manuscripts for standard topographic mapping; special field control for composite and photogrammetric mapping and other special projects; precise mapping from aerial photographs through the use of the most modern plotting-machines.

V. Air Division.—Aerial photographic operations involving maintenance and operation of three aircraft; photographic processing, air-photo distribution, and Provincial air-photo library; compilation of interim base maps, primarily for the forest inventory; air-photo control propagation; instrument-shop for the repair, maintenance, and development of technical equipment.



Extension and modification of Beech aircraft CF-BCE being carried out by mechanics of Air Division. Extended nose accommodates the navigator, with drift sight, for air photography.

SURVEYS AND MAPPING BRANCH

G. S. ANDREWS, M.B.E., B.Sc.F., P.ENG., B.C.R.F., B.C.L.S., F.R.G.S.,
DIRECTOR, SURVEYOR-GENERAL, AND BOUNDARIES COMMISSIONER

This report for the Surveys and Mapping Branch repeats the usual form of detailed narrative and statistical submissions for each of the four divisions in following pages, from which the Deputy Minister has selected synoptic highlights for his over-all review of the Lands Service. This arrangement leaves me free to deal here with selected topics of special import in Branch activities, and the impact thereof on the well-being of British Columbia.

INTEGRATION OF SURVEYS

A year ago the subject of survey integration was discussed at some length. The advantages of co-ordinating all surveys to an accurate well-monumented control network were mentioned—namely, the detection and remedy of old conflicting survey evidence, the reliable perpetuation of the true positions of surveyed boundaries, and the gradual elimination of costly re-establishment operations where original survey markers have been lost or destroyed. In addition to remarks about the operational aspects of setting up the control monuments for survey integration, the need of statutory authority for it was indicated.

During the current year a field programme of control establishment in the Lower Fraser Valley begun in 1962 was continued with good results, emphasis being placed, for the time being, on the areas of Surrey and New Westminster, with a view to early initiation of survey integration in these areas. The lack, due to short supply, of new tellurometer (MRA 3) equipment, which facilitates measurements of shorter distances (500 to 5,000 feet), prevented the full breakdown of control into the ultimate density required. Anticipating the early availability of this new equipment, it is hoped to finalize the control work in the said areas next year. Meanwhile the municipal administration of Surrey, through its engineering department, has shown commendable participation by constructing some 200 control monuments as a winter work programme. These monuments will be in readiness for precise co-ordination during the next field season with the MRA 3 tellurometer.

Attention has also been given to the statutory aspects of survey integration. With valuable suggestions from professional land surveyors, both in government service and outside, legal officers in the Attorney-General's Department, including the Registrar of Titles, and with the support of the Honourable the Minister of this Department, a draft amendment to the *Official Surveys Act* is in near final shape, for presentation in Bill form to the next session of the Legislature. Rumours of these activities have penetrated interested circles in Eastern Canada and have engendered interest to the point that the writer has been invited to present a paper on the subject of survey integration in British Columbia to a joint convention of Ontario land surveyors and the Canadian Institute of Surveying, in Ottawa during February, 1964.

ELECTRONIC DATA-PROCESSING

The installation of the 1620 I.B.M. computer by the Provincial Government in place of the former 650 has improved the scope and efficiency of computational operations of this Branch. Practically all our " Surmap " 650 programmes have been revamped for the 1620, with the advantages offered by it. A new programme

for a more sophisticated adjustment of elevation data of our control net in Northeast British Columbia has been applied with good effect. A programme for application to hydraulic investigations by the Water Resources Service in the Okanagan Valley has also been developed by our surveyor specialized in this field. Further applications for the computer are foreseen.

A further expansion in the data-processing field was the installation of a Wild EK 5 co-ordinate printer with hook-up to a Friden flexowriter for automatic derivation of machine x, y, and z co-ordinates on the Wild A 7 autograph precision air-photo plotter. This automation greatly accelerates co-ordinate extraction from the plotter, and eliminates human fatigue and error in reading vernier scales. The equipment, activated by a push button when the floating mark is positioned on any required point in the stereo model, produces almost instantly both a tabular and a punch-tape record of point identity and its co-ordinates.

BRITISH COLUMBIA-YUKON-NORTHWEST TERRITORIES BOUNDARY

Field survey operations to locate and mark the British Columbia-Yukon-Northwest Territories Boundary along the 60th parallel of north latitude terminated in 1959, the westernmost boundary monument, No. 187, having been established the previous year some 4½ miles west of the Alsek River crossing. From Monument No. 187 west to its intersection with the International Boundary between Canada and Alaska near Mount Jetté, the 60th parallel traverses such rugged and ice-bound terrain that further efforts to locate and mark it were considered neither practical nor economic at this time (*see* frontispiece photo of this Annual Report).

Office work arising from the physical demarcation of this boundary has been steadily in progress, but it comprises a voluminous and painstaking effort. An atlas of 36 map-sheets at a scale 1:63,360 covering the whole length of the boundary as surveyed was completed and bound during the present year, but must await publication until the formal report of the Boundary Commission has also been completed, submitted to, accepted, and confirmed by the principals concerned, being the Federal and Provincial Governments. Finalization of the Commission's report is anticipated during the coming year, the draft being practically complete now. Only final editing, selection of illustrations, and printing remain to be done. One difficulty in this task has been the necessity for the Commissioners, due to other official preoccupations, to delegate, on an opportunist basis, much of the work to their staff members, who, in their turn, are under pressures of other urgent work.

THE DEVILLE AIR-PHOTO PLOTTER

The production in this Branch of a new simple stereoplotter for air-photo mapping was reported a year ago, with reasons for naming it in honour of Dr. Edouard G. Deville, Surveyor-General of Dominion Lands (*circa* 1885–1924) and instigator of the science of photogrammetry in Canada. This instrument has now had a year's operational trial, with generally gratifying results, which reflect credit on the staff members responsible for its final design and construction. In addition to plotting the topography (drainage and contours) on several standard map-sheets, it has been valuable for revision and gap-filling operations on maps previously made in whole or in part with other equipment. Its capability of using normal non-distortion paper prints, in place of expensive glass diapositives, has been a special

advantage. Like most infants, the new plotter has exhibited a few unforeseen characteristics, many good and some requiring correction. One of these is that its optical normalization and calibration are quite critical, and, if not rigorously maintained, may cause errors, especially in elevation. On the other hand, if these adjustments, once adequately made, can be reasonably well stabilized, the accuracy of the instrument is very good. As was anticipated, large tilts in the photographs combined with extreme elevation range in the stereo model make difficult the orientation of the photos in the instrument. However, with modern flying procedures, excessive tilts in the phography are rare. In summary the Deville plotter has proven a worthwhile adjunct to our photogrammetric practices. A valuable store of experience with it is being accumulated, which will be useful in refining design of minor modifications to the present model or for a second unit, or both. A paper on the Deville plotter, co-authored with Mr. A. D. Wight, B.C.L.S., of our staff, was presented by the writer to the semi-annual meeting of the American Society of Photogrammetry at Wellesley Island, New York, in September, 1963.

FRASER RIVER BOARD

There is considerable satisfaction in the debut of the final report of the Fraser River Board coincident, for practical purposes, with the end of the year. It marks the end of more than eight years' service as a Board member for the writer, and parallel service as alternate member for Mr. A. H. Ralfs, B.C.L.S., D.L.S., Assistant Director of this Branch. Whereas participation in the comprehensive analysis of this great river's characteristics and potentialities, and the synthesis of a plan for its regulation to effect flood control with production of hydro-electric power, has been a unique privilege, it has nevertheless imposed a very real diversion of attention and energy from responsibilities intrinsic to the Surveys and Mapping Branch. Little of value can be had without cost. The price in this case has been unavoidable neglect of certain Branch matters, offset to some extent by the assumption of greater responsibility by the senior administrative staffs of the divisions. For example, preoccupation with Fraser River Board accounts very materially for the regrettable delay in finalizing the report of the British Columbia-Yukon-Northwest Territories Boundary Commission.

In addition to provision of services as member and alternate, this Branch has performed a substantial aggregate of special assignments in detail topographic mapping, including special air-photo cover, of the numerous reservoirs and dam-sites required for the Board's studies. The precise determination of a critical elevation on the Parsnip-McGregor divide at Arctic Lake offered a major feature in the Board's planning for the diversion of the McGregor River waters into the Peace River drainage basin. Here again these mapping activities have been done at the expense of progress on the still gigantic task of completing the standard topographic mapping and up-to-date air-photo cover of the Province.

Speaking for Mr. Ralfs and myself, it has been a stimulating and gratifying privilege to serve on the Fraser River Board, to work with our opposite numbers of the Provincial Water Resources Service, the Federal members of the Water Resources Branch, and the Department of Fisheries, as well as with the members of the Board staff, in the study of one of British Columbia's most important and fascinating rivers, so vital to the welfare of this Province. It is also with no small satisfaction that we may now contemplate a period of closer attention to the more specific survey and mapping problems, nearer to the line of responsibility in this Branch.

PERSONNEL

In my previous reports the benefits of automation and new techniques in the perennial struggle to keep abreast of increasing demands for Branch services have been emphasized, especially as helping to offset prevailing limitations on staff. The point has now been passed, however, where technological advantages can counteract the need for human beings. This Branch has excellent equipment and jealously maintains its espousal of the most modern methods but is now in dire need of a modest increase in personnel to give full effect to equipment and techniques now at our disposal. The existing staff, reduced to a hard core of experienced, capable, and conscientious people, is faced with formidable backlogs of work which can only be reduced temporarily and partially by neglect of various internal but necessary maintenance operations, with the inexorable penalties. It must also bear the brunt of complaints, sometimes petulant, for delay from customers, including the public, who do not understand the difficulties faced. It is not enough to drape a near-skeleton with elegant fabrics of modern methods and appendages of spectacular technical equipment. Some good warm human flesh and blood is sorely needed.

The Deputy Minister has paid tribute to the memory of Cyril G. Green, late member of this Branch, whose death occurred November 24, 1963. "Cy," as he was affectionately known, began his service as Junior Clerk in the File Vault in October, 1944, transferring to the Legal Surveys Division of this Branch in November, 1946. His performance was of such high calibre that for health reasons he was transferred, by special arrangement, to the Government Agent's office in Kamloops from May, 1956, to March, 1958, after which we were pleased to have him return to the Legal Surveys Division, where he remained until his untimely demise in his 40th year. In spite of his delicate health, he was a most diligent and conscientious worker. His bright, kindly, and obliging personality, combined with his artistic talents, endeared him to his colleagues in work and to a wide circle of friends in the Government service. "Cy" Green's memory serves to enhance the mute bonds of comradeship among us who survive him.

In concluding my report I wish to express my appreciation of the outstanding industry, skill, and loyalty of all members of my staff, of the understanding support of the Honourable Minister of this Department and his deputy, of the helpful co-operation of other Provincial and Federal agencies, of the land-surveying profession, of the many industries and private citizens who find need for our services, and who sympathize with our difficulties in trying to maintain top service at all times.

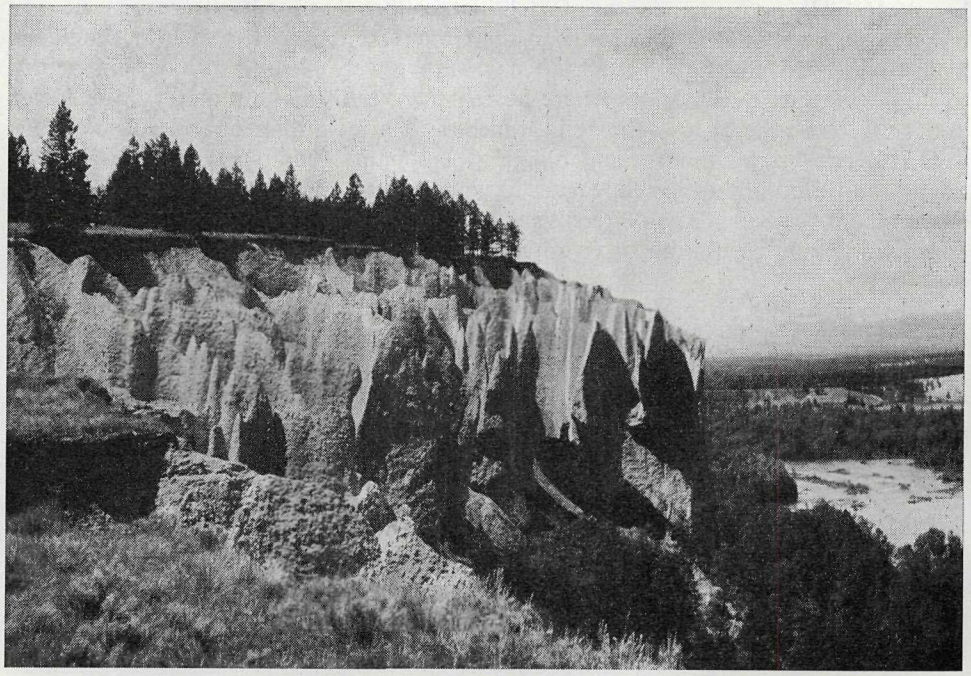
LEGAL SURVEYS DIVISION

D. PEARMAIN, CHIEF

The Legal Surveys Division, under the direction of the Surveyor-General, is responsible for cadastral surveys of all Crown lands of the Province. This entails the issuing of instructions to the land surveyors engaged to make each survey and supplying them with copies of the field-notes and plans of adjoining or adjacent surveys. After the completion of the survey, the returns are forwarded to this office for checking and plotting. Included in the above returns are all right-of-way surveys, including those for highways, railways, and transmission-lines. During the year 921 sets of the above instructions were issued.

In 1963, 582 sets of field-notes covering the survey of 893 lots were received in this office and duly indexed, checked, plotted, and official plans prepared therefrom. This is an increase of 127 and 272 respectively over 1962. Of the above-mentioned surveys, 881 were made under the *Land Act* and 12 under the *Mineral Act*. At the present time there are approximately 97,920 sets of field-notes on record in our vaults.

There were 579 plans received from land surveyors covering surveys made under the *Land Registry Act*. These were duly indexed and checked, and certified copies deposited in the respective Land Registry Offices.



Buttes caused by erosion along banks of St. Mary River, vicinity of Fort Steele.

In order that a graphic record may be kept of alienations of both surveyed and unsurveyed Crown lands together with reserves, a set of reference maps, 210 in number, covering the whole of the Province must be maintained. These show all cadastral surveys which are on file in the Department, and are kept up to date by adding new information as it accrues from day to day. Prints of them are available to the public (*see* Indexes 1 to 7 in the envelope attached to the back cover of this

Annual Report). It is unfortunate that through pressure of other work it has been impossible to carry out the necessary renewing and redrawing of the reference maps, which become worn through constant use and handling. Whereas the Division should be renewing a minimum of 25 of these maps each year, only 16 could be done in 1963, and these only by a makeshift mechanical process.

All applications to purchase or lease Crown lands or foreshore which are received by the Lands Branch and all applications to purchase Crown timber received by the Forest Service are channelled through this Division for clearance. The orderly processing of these applications requires that an exhaustive status be made from the reference maps, official plans, and Land Registry Office plans. From the reference maps, together with other information and facilities maintained by this Division, it is possible to give an up-to-the-minute status on any parcel of Crown land in the Province.

It was necessary during the year, for status and compilation purposes, to obtain 5,633 plans from the various Land Registry Offices.

This Division co-operates with the other departments of Government by preparing and checking legal descriptions which they require. Those assisted in this way were the Attorney-General's Department (descriptions of Small Debts Courts), the Department of Agriculture (descriptions of disease-free areas and pound districts), the Department of Municipal Affairs (descriptions for the incorporation or amendment of municipal areas), the Forest Service (descriptions of tree-farm licences and working circles), and the Lands Branch (descriptions for gazetted reserves, etc.). During the year 158 of the above descriptions were prepared, and this entailed 275 man-hours.

REPRODUCTION SECTION

The Legal Surveys Division, through this Section, continues to supply a service to all departments of Government and to the public, as well as supplying all the prints and photostats, etc., required by the Surveys and Mapping Branch. The total number of prints made during the year was 222,057, in the preparation of which 156,810 yards or 89.1 miles of paper and linen were used. The number of photostats, films, and autopositives made was 104,973.

Of the 222,057 prints made, 79,404 were for the Surveys and Mapping Branch, 53,841 for other branches of the Department of Lands, Forests, and Water Resources, 78,103 for other departments of Government, and 10,709 for the public. Likewise, of the 104,973 photostats, films, etc., made, 32,757 were for the Surveys and Mapping Branch, 51,012 for other branches of the Department, 14,555 for other departments of Government, and 6,649 for the public.

The multilith machine turned out 300,415 copies during the year, compared with 163,436 during 1962.

The Xerox 914 copier has been a real boon; it has speeded up the service, given much more legible copies, and is much more economical to operate than the machine previously used.

COMPOSITE MAP SECTION

This Section is responsible for the compilation and fair drawing of composite maps, mostly at a scale of 500 feet to 1 inch, of the more densely subdivided areas of the Province, and especially where they occur in unorganized territory.

During the year two sheets were completed covering the Village of Hope.

This Section was diverted from its usual work during the year and took over the renewing and redrawing of some of the more dilapidated reference maps. They

were responsible for the 16 reference maps which were renewed this year. It would seem that with the very large amount of work going through the main draughting-room, it will be necessary that the Composite Map Section be again taken from its usual duties and assigned the responsibility of renewing more of our reference maps.

The tri-annual revision of the composite maps is presently under way.

LAND EXAMINATION PLANS SECTION

This Section is responsible for the preparation of plans for the use of the Land Inspectors in their examination of applications for Crown lands. These plans are a consolidation of all the information available in this Department and pertinent to the applications requiring inspection. A synopsis of the work accomplished by this Section during the past six years is as follows:—

Year	Plans Prepared	Year	Plans Prepared
1958	2,192	1961	2,660
1959	2,473	1962	2,941
1960	2,609	1963	2,944

LAND REGISTRY OFFICE PLAN CHECKING SECTION

This Section supplies a service to the Land Registry Offices at Victoria, Kamloops, Nelson, and Prince Rupert by giving a thorough mathematical check to plans tendered for deposit in the said offices.

This check is accomplished through the electronic computer which is available to this Division.

During the year 1,558 plans received this check.

GENERAL

The receiving and distribution of survey-posts, which are stored at 859 Devonshire Road, has operated smoothly and efficiently. The following synopsis shows the quantities of posts shipped during the past year and to whom:—

	Standard Pipe	Driveable Pipe	Standard Rock	B.C.L.S. Bars
Purchased by private surveyors from headquarters	372	465	228	50
Supplied to Departmental surveyors	120	801	190	1,783
Shipped to Government Agents for resale	500	2,554	784	1,550
Totals	992	3,820	1,202	3,383

SUMMARY OF OFFICE WORK FOR THE YEARS 1962 AND 1963, LEGAL SURVEYS DIVISION

	1962	1963
Number of field-books received	455	582
,, lots surveyed	621	893
,, lots plotted	447	722
,, lots gazetted	418	743
,, lots cancelled	16	12
,, lots amended	163	190
,, mineral-claim field-books prepared	22	5
,, reference maps compiled or renewed	13	16
,, applications for purchase cleared	2,465	2,741

SUMMARY OF OFFICE WORK FOR THE YEARS 1962 AND 1963, LEGAL SURVEYS DIVISION—*Continued*

	1962	1963
Number of applications for pre-emption cleared	147	120
,, applications for lease cleared	3,193	3,837
,, water licences cleared	158	23
,, timber sales cleared	5,422	5,290
,, Crown-grant applications cleared	1,156	1,064
,, cancellations made	5,027	5,706
,, inquiries cleared	1,504	1,654
,, letters received and dealt with	6,019	6,195
,, land-examination plans	2,941	2,944
,, Crown-grant and lease tracings made	4,675	4,582
,, miscellaneous tracings made	10	35
,, photostats made	68,688	104,973
,, blueprints made	268,515	222,057
,, offset prints made	163,436	300,415

FIELD WORK

The field surveys carried out by Divisional personnel are mostly at the request of various Government departments and follow the same pattern from year to year. However, in the restoration of old surveys, which it is hoped may be increased yearly, the opportunity is ours to select areas where it is known that monumentation is in a deplorable state and where the expenditure of funds will do the most immediate good. Ideally these areas should also be near established Provincial control stations so that all restored areas are integrated into the co-ordinate control network.

As the conduct of all surveys through Crown land is governed by regulation, the opportunity arose on a large-scale transmission-line survey being carried out during the past year by a private survey company to require some restoration of old survey corners and regular ties to Provincial control along the route. By the Department assisting with the extra costs involved and because of the excellent co-operation of those carrying out the work, a very creditable, integrated survey route will result from Seton Lake through to Prince George. The centre line and all ties to established control are being made with a precise electronic distance-measuring instrument, and although the survey is still incomplete, at the present time there have been 350 old corners restored by permanent monuments and 205 additional permanent monuments set to mark the limits of the right-of-way, all of which can be co-ordinated at any time by calculation from the plans.

The driveable pipe post mentioned in last year's report is being used extensively, but further modifications are needed before it is entirely satisfactory.

SUBDIVISION OF CROWN LAND

Subdivision of rural land providing home-sites with road access was carried out at Lantzville, Sproat Lake, Brackendale, Gambier Island, Spences Bridge, at Apex Mountain north of Keremeos, and at Fort St. John, for a total of 66 lots. Surveys of waterfront property produced 139 lots located at Gun Lake, Charlotte Lake, Norman Lake, Kimberley, Moyie Lake, Riondel, and Lac le Jeune. Acreage lots were created at Kamloops for a hospital addition, at Skookumchuck in the East Kootenay for home-site leases, at Fort Steele in connection with the restoration of that historical area, and at Cultus Lake for an existing fish hatchery.

Public Reserves

In unorganized areas there is usually a steady demand for Crown land to be set aside for sanitary reserves. Survey of these areas was required at Tulameen, Osoyoos, Lower Nicola, Tappen, Chief Lake, and Savona. Recreational areas not under the Parks Department were surveyed at Princeton, Lac le Jeune, and Kimberley.

Park-sites

At Sproat Lake in the Alberni district, another 50 acres were surveyed as an addition to the existing picnic and boat-launching site. A small 5-acre park at Seton Lake was laid out and another existing park at Gardom Lake was resurveyed. The survey of a very interesting park area to cover old fossil beds on Driftwood Creek in the vicinity of Smithers was begun, but due to lateness of the season will be completed next year.

Forest Service Roads and Sites

Sites for lookouts and forestry buildings were surveyed at Cowichan Lake, at Orford Bay on Bute Inlet, and at Grand Forks. Where Forest Service access roads are through privately owned land, it is usual to survey these portions only. In this connection a total of 7.8 miles was legally surveyed at Orford Bay, Enderby, and at Cayoosh and Slok Creeks in the vicinity of Lillooet.

Repostings and Restorations

Restoration of old main lot and section corners in connection with highway surveys was increased again this year to a total of 203 corners. The bulk of these were in the Bulkley Valley, where a high percentage of old corners is completely unmarked. A number of areas were given attention in the general programme. Boundaries of six lots close to Victoria, dating to the earliest surveys in the district, were remonumented. The work at Shirley was continued, where four more lots were posted. Both these areas will continue to be expanded as the opportunity arises. Four sections on Saltspring Island at St. Mary Lake were posted because, although the land had been sold, it had never been surveyed. One lot each at Sharpe Lake, Alert Bay, and Grand Forks were among the smaller jobs. The main efforts in this programme were in the vicinity of Lumby, Buck Ridge, and McBride, where 111 corners were permanently monumented. The grand total of all Departmental restorations was 393 corners.

A survey of the Parliament Buildings precinct area was carried out to determine the boundaries of Government-owned land within the area. This entailed fixing the alignment of 12 streets from a mass of cadastral survey evidence, and in the process 12 old monuments set pursuant to the City of Victoria Official Map Act of 1880 were recovered. These, together with 13 additional permanent monuments set on this survey, were tied into the local Provincial survey control network. The co-ordinates of these 25 key monuments were tabulated on the face of the plan which was deposited in the Land Registry Office. This permanently fixes these cadastral corners with respect to all future surveys integrated into the common datum.

The Department assisted in restorations on Hornby Island and in the Smithers area by bearing part of the costs of very involved surveys caused by old corners having been destroyed. There were also a number of minor cases of assistance in various parts of the country.

Highways

In the Bulkley Valley, on the Houston–Telkwa section of the Northern Trans-Provincial Highway there were 22.6 miles of highway surveyed. On the Trans-Canada Highway, the remaining 6 miles at Blaeberry were completed, which finishes the Rogers Pass route from Sicamous through to Golden. East of Golden another remainder of 4.9 miles was surveyed through to Yoho Park boundary. On the Kootenay–Columbia route 7.1 miles from Radium north and 12.2 miles from Fort Steele to Wasa were completed. On the Southern Trans-Provincial Highway a small section of 3.1 miles from Goatfell to Yahk was filled in.

Work on the Kootenay–Columbia Highway and in the Bulkley Valley was tied into the Provincial co-ordinate control system.

The total of 55.9 miles is less than last year due to the fact that no unsurveyed land was encountered and all the areas were ones requiring a great deal of searching for old evidence.

Inspections

Three requests for inspections of plans through the Land Registry Office involved surveys at Alberni, Haney, and Penticton. The presentation of an independent examination of all the evidence enables a solution to these troublesome matters to be found, and consequently this continues to be a valuable service. Two inspections were initiated by this Division—one of a right-of-way in the Peace River District and the other centred around some sections of a very old township in the vicinity of Salmo. In the latter case a very substantial error in the original survey was proved, enabling the question of alleged trespass on Crown timber to be settled.

TOPOGRAPHIC DIVISION

A. G. SLOCOMB, B.C.L.S., CHIEF

The old saying that commences " The best laid plans of mice and men, etc.," could certainly be applied to this season's field operation. The original plan called for a continuation north of the previous year's field work in the Takla Lake area as the main effort, to be supported by the Department's Beaver aircraft and a four-month helicopter contract. Upon learning that the Federal Government decided to let a contract for high-altitude photography in the Chilcotin District, and that our requirements would be given priority, our plan was changed to take advantage of this opportunity. Work in the northern area was postponed so as to allow a programme of targetting positions prior to the anticipated Federal photography in Map-areas 93B, 93F, and the North Half of 93C. The targetting was commenced on the 1st of June, using both the helicopter and the Beaver, and the personnel of two survey crews. Although over difficult terrain, all went well till the 13th of June, when we were informed that because of prior commitments the Federal programme of photography had been cancelled. At that time, targets had been set covering 93B and the eastern edge of 93C. In order to salvage this work, the Air Division was requested to extend an area that it was currently flying to include 93B. Photography commenced the following day, although a complication arose because the original high-altitude photography had been planned for east-west flight strips from an altitude of 30,000 feet, while Air Division photo cover was flown with north-south strips from an altitude of 20,000 feet. This change in photographic specifications required modifications to the targetted network by additional targets set to meet requirements of a block adjustment for the new photo cover. We were able to complete the horizontal control for eight map-sheets and vertical control for three.

In an endeavour to make the best use of the helicopter contract, the remaining vertical control was left to a later date and the survey crew moved north to the Takla Lake area, where work commenced on the 15th of July, with the first camp at Babine Lake supplied from a base established at Tyee Lake, near Telkwa (*see* Fig. 1). The second camp was built at Bear Lake, near the site of the old Hudson's Bay Company fur-trading post at Fort Connelly. Control was completed for 18 map-sheets and, coupled with the eight from the Chilcotin operation (*see* Fig. 2), gave a season's total of 26 map-sheets covering approximately 8,700 square miles.

Poor weather, particularly in September, hampered operations. A check on the helicopter diary shows 58 of the 122 days available were unproductive, of which 25 were in September, which was a very unstable flying-weather month. The total flying-time on the contract was 338½ hours, just 18½ above the minimum.

On the Coast, the motor-vessel " B.C. Surveyor " sailed approximately 5,200 miles to allow the crew to photo-identify 282 triangulation stations, which will be used to control this area when reflown by the Federal Government. Of these, 46 were new stations which were established by 162 miles of tellurometer traverse, the balance being old Coast triangulation. Many of the old iron pins had rusted away, which made the search difficult and, on occasion, impossible.

In addition, a park-site at Bella Coola was surveyed for the Legal Surveys Division, and its own personnel manned the ship for two separate trips. A Land Inspector also made a 10-day trip in May from Campbell River to Bella Bella, Smith Inlet, and Alert Bay. The " B.C. Surveyor " performed to perfection during the whole summer. The new manifold installed on its engine during the winter cured the overheating problem that had troubled us for several seasons.

In the Lower Fraser Valley, a further breakdown of the 1962 triangulation, mainly in the Surrey and Langley Municipalities, was accomplished. This area is relatively flat and tree covered, so that towers were erected to raise the line of sight. They were built with standard steel scaffolding frames which were found to be ideal

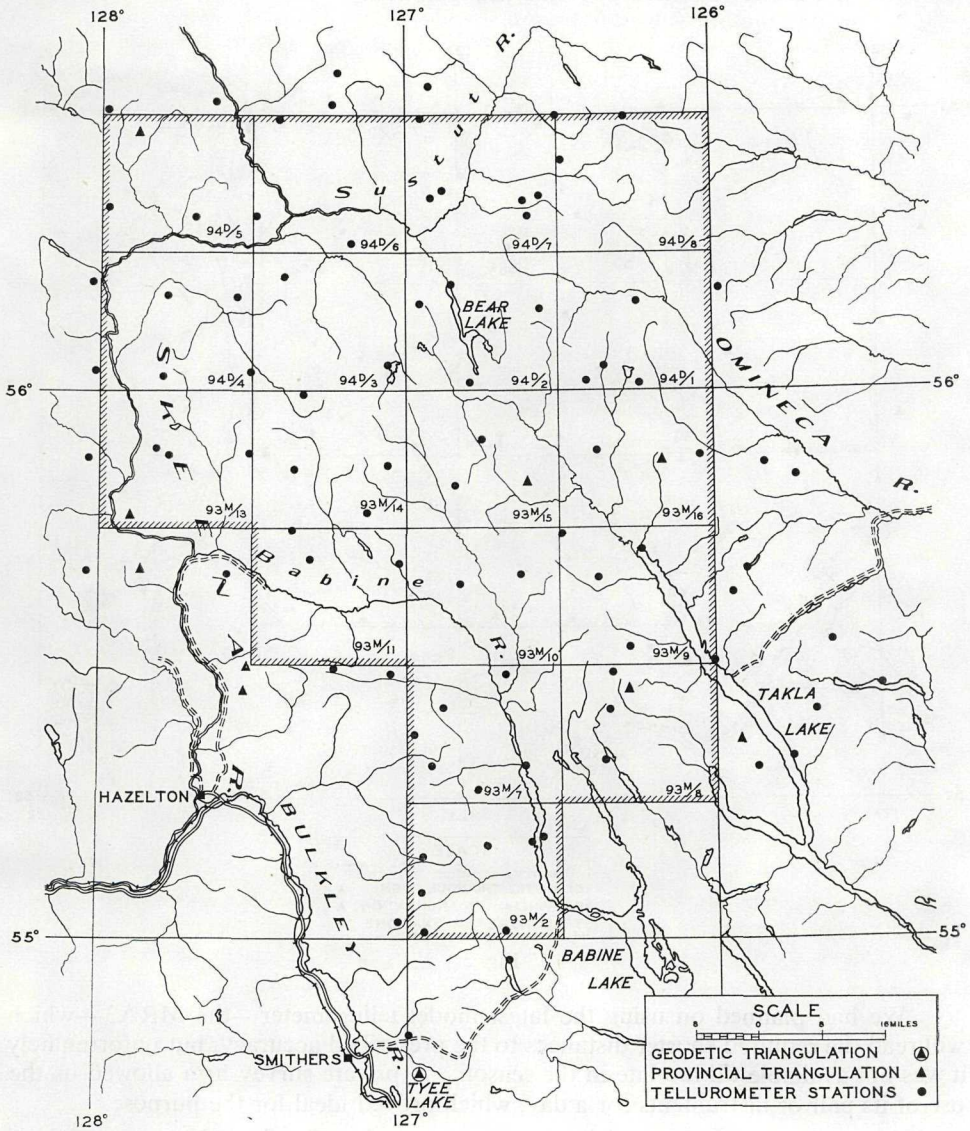


Fig. 1.

for the purpose. Twelve towers, ranging in height from 20 to 106 feet, were fabricated. The inside observing tower was 3 by 5 feet at the base, and the outside tower was 5 by 7 feet. Although both were guyed every 20 feet, the observer who had to do the instrument work at the top of the highest one likened it to flagpole sitting. In conjunction with the scaffolding towers, a giraffe-type lift was used for reconnaissance and location of tower-sites. Both were on a rental basis, with the giraffe required for two days only, to locate all the sites. These were mainly on private

property and not readily available for future work, so that pairs of monuments were set in the centre of the adjacent public right-of-way to facilitate easy access for future surveys. These monuments were set in concrete below road grade and capped with a 4-inch circular metal service-box with a removable lid. Twenty-six pairs of these monuments were set and tied in to the triangulation.

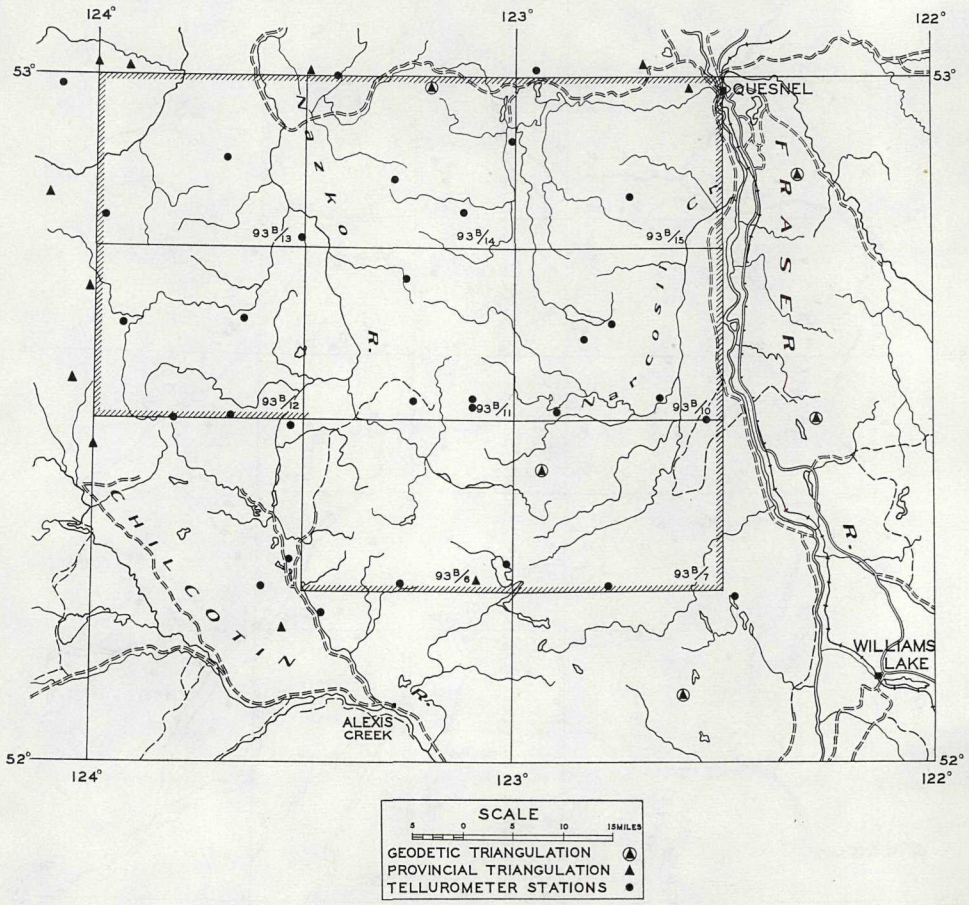


Fig. 2.

We had planned on using the latest model tellurometer—the MRA3—which will read the required shorter distances to the prescribed accuracy, but unfortunately it was not available till too late in the season. A private survey firm allowed us the use of its pair of instruments for a day, which proved ideal for the purpose.

A programme of map revision was commenced on Southern Vancouver Island early in the year, whenever the weather was suitable and personnel available. The crews photo-identified the existing triangulation and traverse stations, and also checked the vertical control, adding to it wherever required. The planimetry of these southern sheets was completed in the early 1930's without the aid of modern plotting-machines. Rather than try to improve the existing sheets, it was decided that it would be quicker to replot them.

The Review and Edit Section handled six field projects, two of which were control surveys completed while engaged on map checks in the vicinity.

Eighteen National Topographic Series map-sheets, totalling approximately 6,100 square miles, were completed in the Photogrammetric Section. In addition, there were 15 large-scale projects ranging in scale from 40 to 1,000 feet to 1 inch. These include one plot for road revision and one for reconnaissance purposes only, as well as large-scale detailed plans of various Government buildings.

The Draughting Section reports the completion of 23 standard topographic manuscripts at the scale of 2 inches to 1 mile, 72 large-scale mapping plans at various scales, plus 7 large plans at 20, 40, 50, and 100 feet to 1 inch of the Legislative Precinct, the Kamloops Government Buildings, and the Brannan Lake School. In addition, the plotting of the cadastral survey on 37 Federal Government 1:50,000 manuscripts was completed. Two mosaics were assembled and rephotographed to the scale required by the Department involved for use in planning.

The Federal Government now has 78 of our 1:50,000 scale manuscripts on hand for printing, which are in various stages of reproduction.

Copies of the photogrammetric large-scale mapping and the completed manuscripts as shown on the indexes following this report are available upon request.

List of Large-scale Mapping

No.	Name	Available	Scale	Contour Interval	No. of Sheets	Date
X 1	Goldfields	No	1″=800′, 900′, 1,000′, 1,320′	100′	----	-------
S.P. 1	Richmond	Yes	1″=200′, 600′	Mosaic	----	-------
S.P. 2	Lower Fraser Valley	Yes	1″=1,000′	5′–50′ then 50′	18	1957
S.P. 3	Lower Fraser Valley	Yes	1″=1,000′	5′–50′ then 50′	20	1958
1	Squamish	Yes	1″=20 ch.	20′	(1)	1952
2	Aleza Lake	No	1″= 550′	20′	----	1951–52
3	Tamihi Creek	No	1″=10 ch.	100′	----	1950
4	Marle Creek	No	1″=10 ch.	50′	----	1951–52
5	Lawless Creek	Yes	1″=10 ch.	50′	13	1951
6	Kemano	No	1″=1,300′	50′	----	1952–53
7	Mount Farrow	Yes	1″=13 ch.	500′	1	1951
8	Moran Dam-site	Yes	1″= 100′	5′	1	1951–52
9	Salmo	Yes	1″=1,000′	50′	38	1952
10	Moran Pondage	Yes	1″= 500′	20′–40′	8	1952
11	University Lands	No	1″= 100′	5′	----	1952
13	Trout Lake	No	1″=1,000′	50′	----	1953
14	Fraser Pondage	Yes	1″= 500′	10′–20′	6	1951
15	Fraser Pondage	Yes	1″= 500′	20′–40′	13	1953
16	Gulf Islands	No	1″=1,320′	50′	----	1953
17	Agassiz	Yes	1″= 200′	5′	28	1953
18	Delta Municipality	Yes	1″= 200′	Spot heights	73	1953–54
19	Doukhobor Lands—					
	Grand Forks	Yes	1″= 400′	5′–10′–25′	2	1953–54
	Krestova, Raspberry, etc.	Yes	1″= 400′	5′–10′–25′	7	1953–54
	Krestova revision	Yes	1″= 400′	Planimetric	1	1963
20	Brooks Peninsula	No	1″=1,320′	100′	----	1953–54
21	Agassiz (Extension)	Yes	1″= 400′	20′–100′	(2)	1954
24	Moran Pondage	Yes	1″= 500′	20′–40′	11	-------
28	Clearwater	Yes	1″= 500′	20′–40′	12	-------
M 2	Morice Lake	Yes	1″=1,000′	50′	8	1954–55
M 3	Naver Creek	Yes	1″=1,320′	50′	6	1955
M 4	Chilcotin River	Yes	1″= 500′	20′–40′	6	1955
M 5	Gaspard Creek	Yes	1″= 500′	20′–40′	1	1955
M 6	Churn Creek	Yes	1″= 500′	20′–40′	1	1955
M 7	Willow River	Yes	1″=1,000′	50′	26	1955–56
M 8	Upper McGregor River	Yes	1″=1,000′	20′	5	1956
M 9	Sinclair Mills	Yes	1″= 500′	20′	48	1956–62
M 11	Hobson Lake	Yes	1″=1,000′	50′	8	1955
M 12	Moran-Lytton	Yes	1″= 500′	20′–40′	23	1955
M 13	Penticton-Osoyoos	Yes	1″= 500′	10′	11	1954
M 14	Kelowna	Yes	1″= 500′	10′	5	1954
M 15	Westbank	Yes	1″= 500′	10′	2	1954
M 16	Lower McGregor River	Yes	1″=1,000′	20′	7	1956
M 17	Creston	Yes	1″= 500′	5′–10′–15′	7	1954
M 21	Clearwater	Yes	1″= 500′	20′–40′	20	1955
M 24	San Jose	Yes	1″= 500′	10′	8	1956
M 26	Taghum	No	1″= 300′	5′–10′–20′	----	-------
M 27	Peace River Pondage	Yes	1″=1,000′	20′	11	1958
M 29	Naramata	Yes	1″= 400′	10′	2	1956
M 30	Goat River	Yes	1″= 200′	Planimetric	4	1956
M 34	Fruitvale	Yes	1″= 500′	10′–20′	2	1957
M 36	Moose River	Yes	1″=1,000′	20′–40′	4	1957
M 37	Mount Robson	Yes	1″=1,000′	20′–40′	5	1956–57
M 38	McLennan River	Yes	1″=1,000′	20′–40′	3	1956–57
M 39 (1957)	Dease River Dam-sites	Yes	1″= 500′	20′	9	1956–57
M 39 (1958)	Dease-Stikine Dam-sites	Yes	1″= 500′	10′	16	1959
M 39 (1960)	Dease-Stikine Dam-sites	Yes	1″= 500′	10′–20′	40	1960
M 40	Chilliwack River	Yes	1″= 600′	20′	7	1956
M 41	Summit Lake Diversion	Yes	1″=1,000′	20′	3	1958
M 42	Peace River Dam-site	Yes	1″= 600′	20′	10	1957
M 43	Alert Bay	No	1″=1,320′	50′	----	1956
M 44	Prince George East	Yes	1″= 200′	5′	2	1958
M 45	Prince George West	Yes	1″= 200′	5′	8	1958
M 52	Kaslo	Yes	1″= 500′	50′	17	1959
M 54	Big Bar	Yes	1″=2,640′	100′	1	1957
M 56	Lac la Hache	Yes	1″= 500′	20′	10	1958
M 59	Eaglet Lake	Yes	1″=1,320′	20′	2	1958

1 One (Map 5E). 2 *See* No. 17.

LIST OF LARGE-SCALE MAPPING—*Continued*

No.	Name	Available	Scale	Contour Interval	No. of Sheets	Date
M 62	Alberni	Yes	1"= 500'	10'	2	1958
M 63	Parsnip River Pondage	Yes	1"=1,320'	20'	98	1958–63 1961–63
M 63A	Parsnip River Pondage Addition	Yes	1"=1,000'	20'	5	1962
M 66	Glen Lake	Yes	1"= 400'	10'	10	1958
M 67	Chemainus River	Yes	1"= 400'	10'	4	1958
M 68	Hansard Lake	Yes	1"=1,320'	20'	3	1958
M 70	Courtenay-Comox	Yes	1"=1,320'	25'	10	1958
M 73	North Okanagan	Yes	1"=1,000'	20'	48	1959
M 73	North Okanagan	Yes	1"= 500'	10'	5	1959
M 74	Glinz Lake	Yes	1"= 200'	10'	1	1959
M 75	Duncan	Yes	1"= 500'	10'–20'	25	1959
M 76	Nanaimo	Yes	1"= 500'	10'–20'	20	1960
M 77	Prince George	Yes	1"=1,000'	20'	17	1960–61
M 83	Oakalla	No	1"= 40'	2'	4	1960
M 84	Victoria University, Gordon Head	No	1"= 40'	2'	5	1960–61
M 88	South Okanagan	Part	1"= 500'	10'	11	1964
M 88	South Okanagan	.....	1"=1,000'	20'	...	.....
M 89	North Thompson	Yes	1"= 300'	5'	5	1960
M 89	North Thompson	Yes	1"= 500'	20'	14	1960
M 90	Similkameen	Yes	1"= 500'	5'	15	1960
M 92	Skeena River	Yes	1"= 500'	20'	11	1962
M 98	Aberdeen-Haddo Lake	Yes	1"= 500'	10'	4	1960
M 100	Essondale	No	1"= 50'	2'	4	1962
M 100	Essondale	No	1"= 100'	Spot heights	2	1962
M 105	Clearwater Lake-Azure Lake	Yes	1"=1,000'	50'	6	1962
M 107	Campbell River	Yes	1"=1,000'	20'	5	1961
M 108	Kootenay River	Yes	1"= 500'	Planimetry	12	1961
M 111	Clearwater River Dam-site	Yes	1"= 250'	5'	4	1961
M 113	Nanaimo	Yes	1"= 500'	5'–10'	8	1963
M 114	Tranquille	No	1"= 50'	2'	2	1962
M 114	Tranquille	No	1"= 100'	2'	3	1962
M 117	Liard River	Yes	1"=1,000'	20'	68	1962
M 117	Liard River Dam-site	Yes	1"= 500'	10'	7	1962
M 118	Nitinat	Yes	1"= 500'	10'–20'	7	1962
M 121	Winfield	Yes	1"= 500'	10'–20'	4	1961
M 122	Stuart Lake Pondage	Yes	1"=1,320'	20'	9	1962
M 125	Port Hardy	Yes	1"= 100'	2'	3	1962
M 126	Thompson River	Yes	1"= 200'	10'–20'	3	1962
M 127	Parksville	.....	1"= 500'	10'	...	.....
M 129	Aleza Lake	Yes	1"= 40'	2'	1	1962
M 130	McGregor River Pondage	Yes	1"=1,000'	20'	6	1962
M 131	Long Lake	Yes	1"=1,320'	50'–100'	4	1962
M 134	Kamloops Lake	Yes	1"=1,000'	20'	4	1962
M 135	Quesnel	Yes	1"= 500'	10'	2	1963
M 136	Haney	Yes	1"= 500'	25'	2	1962
M 138	Hobson Lake Extension	Yes	1"=1,000'	50'	2	1962
M 139	Norbury Creek	Yes	1"= 400'	10'	1	1962
M 141	Legislative Precinct, Victoria	No	1"= 40'	2'	2	1963
M 141	Legislative Precinct, Victoria (under-surface plan)	No	1"= 40'	.....	1	1963
M 142	Kaleden	Yes	1"= 500'	10'	1	1963
M 144	Marysville	Yes	1"=1,000'	25'–50'	1	1963
M 145	Kamloops Government Buildings	No	1"= 40'	2'	1	1963
M 146	Brannan Lake School	No	1"= 100'	10'	1	1963
M 146	Brannan Lake School	No	1"= 50'	2'	1	1963
M 150	Prince George Gaol	No	1"= 100'	10'–10'	...	1963
M 150	Prince George Gaol	No	1"= 50'	2'–5'	...	1963
M 151	Prospect Lake	Yes	1"= 200'	2'	1	1963
M 152	Ruby Burn	Yes	1"= 200'	5'	1	1963
M 155	Sechelt	Part	1"= 500'	20'	8	1964
M 158	Parksville Building Site	Yes	1"= 600'	20'	1	1964
M 160	Ladysmith	Yes	1"= 600'	20'	1	1964
M 161	Hudson Bay Mountain	Yes	1"=1,000'	50'	8	1964
.....	Government House Grounds	No	1"= 20'	2'	2	1959
.....	Victoria University Campus	No	1"= 20'	2'–5'	5	1960
.....	Colquitz Mental Home	No	1"= 20'	2'	1	1963

List of British Columbia Manuscripts Showing Date Surveyed

Sheet	Date
82 F/3	1951, 1960
82 F/4	1944, 1947
82 K/11, W.	1952
82 K/12	1958
82 L/7	1958
82 L/10	1958
82 M/13	1959
83 D/4	1959
83 D/5	1959
83 D/12	1959, 1960
83 D/13, W.	1960
92 B/5	1937, 1938, 1955, 1963
92 B/6, W.	1955
92 B/11, W.	1955
92 B/12	1938, 1955, 1963
92 B/13	1942, 1943, 1951
92 B/14	1951
92 C/8	1937, 1938
92 C/9	1937, 1938, 1963
92 C/10	1937, 1938
92 C/11	1938
92 C/13	1938
92 C/14	1938
92 C/15	1937, 1938
92 C/16	1937, 1938, 1942
92 E/1	1942
92 E/7	1946
92 E/8	1943, 1946
92 E/9	1938, 1946, 1947
92 E/10	1947
92 E/14	1948
92 E/16	1947
92 F/1	1942
92 F/2	1938, 1940, 1942
92 F/3	1938, 1940, 1941
92 F/4	1942
92 F/5	1937, 1938, 1943
92 F/6	1937, 1940, 1941, 1943
92 F/7	1942, 1943
92 F/8	1942, 1943, 1950
92 F/9	1950
92 F/10	1950, 1953
92 F/11	1934, 1935
92 F/12	1936, 1937, 1938
92 F/13	1935, 1936
92 F/14	1935
92 F/15, part	1950
92 F/16, part	1950
92 G/4	1942, 1943
92 G/5	1950, 1952
92 G/7, part	1940
92 G/10, part	1940
92 G/11	1952
92 G/12	1950, 1952
92 G/13	1950, 1952
92 G/14	1952
92 H/1	1920, 1923, 1949
92 H/2	1923, 1949
92 H/3	1924, 1931, 1948, 1949
92 H/4	1948, 1956
92 I/12	1958
92 I/13	1958
92 J/4, W.	1962
92 J/15	1948, 1949
92 J/16	1948, 1949
92 K/1, part	1950
92 K/2	1961, 1962
92 K/3	1949
92 K/4	1949
92 K/5	1949
92 K/6	1949
92 K/7	1961
92 K/8, W.	1962
92 K/10, W.	1962
92 K/11	1962
92 K/12	1962
92 K/13	1962
92 K/14	1962
92 K/15	1962
92 L/1	1932
92 L/2	1931, 1932
92 L/3	1948
92 L/4	1948
92 L/6	1931, 1934
92 L/7	1931
92 L/8	1931, 1932
92 L/10	1931, 1940, 1956
92 L/11	1940
92 L/12	1935, 1936
92 L/13	1936
92 M/2	1962
92 M/3	1959
92 M/4	1959
92 M/5	1959
92 M/6	1962
92 M/11, W.	1962
92 M/12	1962
92 M/13	1962
92 M/14, W.	1962
92 N/1	1958
92 N/7	1958
92 N/8	1958
92 N/9	1958
92 N/10	1958
92 N/15	1958
92 O/1	1950
92 O/2	1947
92 O/3	1958
92 O/4	1958
92 O/5	1958
92 O/6	1958
92 O/7	1950, 1958
92 O/8	1950
92 O/9	1951
92 O/10	1958
92 O/11	1958
92 O/12	1958
92 O/16	1951
92 P/2	1959
92 P/3	1959
92 P/4	1958
92 P/5	1958
92 P/6	1959
92 P/7	1959
92 P/10	1959
92 P/11	1959
92 P/12	1958
92 P/13	1958
92 P/14	1959
92 P/15	1959
92 P/16	1959
93 A/1	1959
93 A/2	1936, 1959, 1960
93 A/3	1959, 1960
93 A/4	1959
93 A/5	1935
93 A/6	1935
93 A/7	1936, 1959, 1960
93 A/8	1959
93 A/9	1959, 1960
93 A/10	1934, 1960
93 A/11	1933, 1934
93 A/12	1931, 1933, 1934
93 A/13	1934
93 A/14	1933, 1934
93 A/15	1934, 1960
93 A/16	1960
93 B/1	1951
93 B/6	1963
93 B/7	1963
93 B/8	1952

List of British Columbia Manuscripts Showing Date Surveyed—*Continued*

Sheet	Date
93 B/9	1950
93 B/10	1963
93 B/11	1963
93 B/12	1963
93 B/13	1963
93 B/14	1963
93 B/15	1963
93 B/16	1950
93 C/5	1959
93 D/2	1962
93 D/3	1962
93 D/4	1962
93 D/5	1962
93 D/6	1962
93 D/7	1958, 1962
93 D/8	1958, 1959
93 D/11, E.	1962
93 E/5, W.	1963
93 G/2	1933, 1960
93 G/3	1960
93 G/4	1960
93 G/5	1960
93 G/6	1960
93 G/7	1933, 1960
93 G/10	1960
93 G/11	1960
93 G/12	1960
93 G/14	1948
93 I/8	1956
93 I/9	1956
93 I/10	1956
93 I/11	1957
93 I/12	1957
93 I/13	1957
93 I/14	1957
93 I/15	1956
93 I/16	1956
93 J/2	1949
93 J/3	1949
93 J/5	1961
93 J/6	1961
93 J/11	1961
93 J/12	1961
93 J/13	1961
93 K/1	1946
93 K/2	1946
93 K/7	1960
93 K/8	1960
93 K/9	1960
93 K/10	1960
93 K/11	1961
93 K/12	1961
93 K/13	1961
93 K/14	1961
93 K/15	1961
93 K/16	1961
93 L/2	1951
93 L/7	1951
93 L/8	1951
93 L/9	1951
93 L/10	1950, 1951
93 L/11	1950
93 L/14	1950
93 L/15	1962
93 L/16	1962
93 M/1	1962
93 M/2	1963
93 M/5	1949
93 M/7	1963
93 M/8	1963
93 M/9	1963
93 M/10	1963
93 M/11	1963
93 M/12	1949
93 M/13	1963
93 M/14	1963
93 M/15	1963
93 M/16	1963
93 N/1	1962
93 N/2	1962
93 N/3	1962
93 N/4	1962
93 N/5	1962
93 N/6	1962
93 N/7	1962
93 N/8	1962
93 N/9	1962
93 N/10	1962
93 N/11	1962
93 N/12	1962
93 O/1	1957
93 O/4	1961
93 O/5	1961
93 O/6	1957
93 O/8	1957
93 O/11	1957
93 O/12	1957
93 O/13	1957
93 O/14	1957
93 P/1	1956
93 P/2	1956
93 P/3	1957
93 P/4	1957
93 P/5	1957
93 P/6	1957
93 P/7	1956
93 P/8	1956
94 B/4	1939, 1957
94 C, part	1939
94 D/1	1963
94 D/2	1963
94 D/3	1963
94 D/4	1963
94 D/5	1963
94 D/6	1963
94 D/7	1963
94 D/8	1963
94 E, part	1939
94 F, part	1939
94 L, part	1940, 1941
94 M, part	1941
102 I/8	1935, 1937
102 I/9	1935, 1936, 1937
102 I/15	1937
102 I/16	1936, 1937
102 P/8, E.	1961
102 P/9, E.	1961
102 P/16	1961
103 A/1	1961
103 A/2, E.	1961
103 A/6	1963
103 A/7	1963
103 A/8	1961
103 A/9	1961
103 A/10	1963
103 A/11	1963
103 A/13, E.	1961
103 A/14	1963
103 A/15	1963
103 A/16	1963
103 G/1, E.	1961
103 G/7, E.	1961
103 G/8	1961
103 G/9	1961
103 G/10, E.	1961
103 G/15, E.	1961
103 G/16	1961
103 H/1	1963
103 H/2	1963
103 H/3	1961
103 H/4	1961
103 H/5	1961

List of British Columbia Manuscripts Showing Date Surveyed—*Continued*

Sheet	Date
103 H/6	1961
103 H/7	1962
103 H/8	1962
103 H/10	1962
103 H/15	1962
103 I/2	1949
103 I/7	1962
103 I/10	1947
103 P/9	1949
103 P/10, E.	1950
103 P/14, E.	1950
103 P/15	1950
104 A/2, W.	1950
104 A/3	1950
104 A/5, E.	1950
104 A/6	1950
104 A/11, W.	1951
104 A/12	1951
104 A/13, W.	1951
104 B/16	1951
104 G/1	1951
104 G/8	1951
104 G/9	1951
104 G/14	1951
104 G/15	1951
104 G/16	1951
104 H/12, W.	1951
104 H/13, W.	1951
104 J/2, W.	1952
104 J/3	1952
104 J/4	1952
104 J/5	1952
104 J/12	1952
104 J/13	1952
104 K/16, E.	1952, 1953
104 N/1	1952, 1953
104 N/2	1953
104 N/3, E.	1953
104 N/5	1952
104 N/6	1952, 1953
104 N/7, part	1953
104 N/11, W.	1952
104 N/12	1952
104 N/13	1952
104 P, part	1941
104 P/15	1941
104 P/16, part	1941

GEOGRAPHIC DIVISION

W. R. YOUNG, B.C.L.S., CHIEF, AND PROVINCIAL REPRESENTATIVE ON CANADIAN PERMANENT COMMITTEE ON GEOGRAPHICAL NAMES

During 1963 steady advances were made in the Provincial mapping programme.

As outlined in the 1961 Annual Report, full-colour reprinting of 10 map-sheets at 1:250,000 scale for Coastal British Columbia was nearing completion by the end of the year. New seven-colour status editions of Maps 92J (Pemberton), 93D (Bella Coola), 103B-C (Moresby Island), and 103F-G-J-K (Graham Island) were released, while second status editions of 103I-J (Terrace) and 103P (Nass River) had reached the draughting stage by December (*see* Tables G and I). Compilation and draughting of three sheets at 1:250,000 scale to replace Pre-emptor's and Provincial Topographical Series sheets in the Interior of the Province was under way. Three more are contemplated in the coming year.

The very popular 1-inch-to-2-miles National Topographic Series continued to replace the former Degree Series. Field culture checks have now been completed for the five remaining sheets in South-eastern British Columbia, and all but one of them were being compiled or draughted at the end of the year. Three new 1-inch-to-2-miles maps—82G/SE (Flathead), 82 G/SW (Elko), and 82 K/SE (Lardeau)—were published, thus raising the total Provincial output to date for this series to 26 sheets. Because of public demand, several of these status maps have been reprinted during the past few years, a situation which, though gratifying, has slowed the production of new sheets. On the credit side, the reprintings have usually enabled the updating and revision of status and cultural detail.

One regional map-sheet at 1-inch-to-10-miles scale (South-western British Columbia) was revised and reprinted in three editions in 1963. The landforms edition of this map was partially revised and printed in the new " sand " colour.

To round out the Provincial mapping programme, one map of the Topographical Series at 1-inch-to-4-miles scale, 5D (Revelstoke-Golden), and one of the Pre-emptor Series, 3C (Stuart Lake), were reprinted because stocks had been depleted before they could be replaced by new status sheets. A status overprint was done on Map 3E (Peace River) because of the rapid extension of Crown land alienation in the Peace River region.

The Army Survey Establishment at Ottawa printed 10 Provincial Government topographic manuscripts at 1:50,000 scale; another nine sheets were reprinted without revision (*see* Table H). An additional seven maps were compiled and printed by the Army Survey Establishment, and major stocks of each of them were sent to Victoria. Stocks of two maps at 1:250,000 scale which had been prepared by the Army Survey Establishment were also received.

The Federal Department of Mines and Technical Surveys produced 52 full-colour and 15 provisional (black and blue) National Topographic maps at 1:50,000 scale and 10 at 1:250,000 scale.

Good progress is being made on a manuscript for revision of the Gazetteer of British Columbia. Only a few copies of this publication remain in stock in Victoria, and, so far as is known, there are none in Ottawa. The task of adding some 4,600 new names is being done in co-operation with the Canadian Permanent Committee on Geographical Names. There has been a steady demand for this useful volume, and since 1954, 2,400 Gazetteers have been distributed from Victoria alone.

Fifty-nine charts, manuscripts, and maps were checked for place-names in 1963, and 375 new cards were added to the Gazetteer files (*see* Table C).

During the year 116,705 map-sheets were received into stock, compared with 130,420 for the previous 12 month period.

Effective January 1, 1963, the prices of all Federally produced maps were doubled. Prices of comparable Provincial map series, which had been raised slightly in 1962, were increased proportionately. Though the total number of map-sheets sold and distributed decreased by 21,159 (21 per cent) from 1962, the value of the maps issued rose by 38 per cent to $48,674 (*see* Table D).

Revision and reprinting of Land Series bulletins continued apace. Bulletin No. 11 (Acquisition of Crown Lands) was reprinted twice during the year, while Bulletin No. 4 (Vancouver Island) and No. 10 (Peace River) were reprinted with minor revision. Following a field trip to the Prince George area, a major revision was completed on Bulletin No. 7 (Fort Fraser-Fort George). Besides working on the bulletins, the research officer assisted in various inquiries and reports.

Eighteen special projects, with a value of $1,729, were undertaken on behalf of other Government departments and the general public (*see* Table E). Among these was publication of a second edition of the Air Facilities Chart of British Columbia. The Cartographic Section of the Geographic Division also began to prepare a special landforms sheet at 1-inch-to-30-miles scale to accompany a forthcoming Department of Mines and Petroleum Resources bulletin.

The Trigonometric Control Section handled 341 requests relating to survey control and examined 160 well-site plans surveyed under the *Petroleum and Natural Gas Act*. The conversion of file cards from the Dominion Manual System of Rectangular Co-ordinates to the Polyconic Rectangular Co-ordinates system continued throughout the year. Other work done by this Section is shown in Tables A and B.

The following tables provide a numerical account of the activities of the Geographic Division in 1963. In some cases, comparisons with the previous five-year period are given. Indexes 8 to 14 (Index to Published Maps) are contained in the envelope attached to the back cover of this Annual Report.

STATISTICAL COMPUTATIONS

Table A.—Least-square Triangulation Adjustments Completed

Net	Locality	Type of Bearings	Number of Triangles Involved
Provincial	Lower Fraser Valley	True	40
Canadian Hydrographic Service	Kitimat Arm	Grid	7

Checking of petroleum and natural-gas well-site surveys totalled 160.

Table B.—Computations

	1958	1959	1960	1961	1962	1963
Triangles adjusted by least squares	562	542	543	182	171	47
Stations calculated from rectangular co-ordinates	918	806	891	168	14	94
Stations fixed by tellurometer measurements	.....	.....	73	201	89	79
Ties to cadastral surveys	22	24	174	113	10	27
Elevation of stations determined	378	133	251	128	42	93
Index cards—						
New	1,173	1,563	1,419	1,930	917	781
Old (rewritten)	1,297	945	551	149	9	6
Total on file	27,462	29,025	30,444	32,374	33,291	34,072
Requests for control attended to	397	383	349	333	417	341

Table C.—Canadian Permanent Committee on Geographical Names

	1958	1959	1960	1961	1962	1963
Number of map-sheets or charts checked	49	51	41	74	35	59
Number of names checked	4,698	6,321	4,949	7,837	7,168	6,821
Number of new names recorded	278	372	322	360	215	375

Table D.—Map Stock and Distribution

	1958	1959	1960	1961	1962	1963
Maps issued to departments and public	62,544	78,074	68,518	87,198	99,324	78,165
Maps received into stock	117,729	92,374	175,495	126,502	130,420	116,705
Total value of maps issued	$21,911	$27,117	$24,378	$32,936	$35,391	$48,674

Table E.—Geographical Work for Other Departments and Public

	1958	1959	1960	1961	1962	1963
Total number of items	55	20	18	22	18	18
Total value of work	$1,447	$2,754	$1,370	$1,452	$1,708	$1,729

Table F.—Letters

	1958	1959	1960	1961	1962	1963
Letters received and attended to	6,545	6,865	6,929	8,670	8,790	7,274

Table G.—Maps Prepared and Reproduced by the Geographic Division, Victoria, during 1963

Map No.	Name	Scale	Remarks
1EL	South-eastern British Columbia, landforms	1 in. to 10 mi.	Reprint, no revision.
1K	South-western British Columbia, planimetric	1 in. to 10 mi.	Complete revision.
1KL	South-western British Columbia, landforms	1 in. to 10 mi.	Complete revision.
1KLS	South-western British Columbia, landforms in brown	1 in. to 10 mi.	Complete revision.
3C	Stuart Lake	1 in. to 3 mi.	Complete revision.
3E	Peace River	1 in. to 3 mi.	Status overprint only.
5D	Revelstoke-Golden	1 in. to 4 mi.	Reprint, no revision.
92J	Pemberton (second status edition)	1:250,000	New, seven colours, contoured.
93D	Bella Coola (second status edition)	1:250,000	New, seven colours, contoured.
93K	Fort Fraser (second status edition)	1:250,000	Reprint, complete revision.
103B-C	Moresby Island (first status edition)	1:250,000	New, seven colours, contoured.
103F-G-J-K	Graham Island (first status edition)	1:250,000	New, seven colours, contoured.
82 G/SE	Flathead (first status edition)	1 in. to 2 mi.	New, seven colours, contoured.
82 G/SW	Elko (first status edition)	1 in. to 2 mi.	New, seven colours, contoured.
82K/SE	Lardeau (first status edition)	1 in. to 2 mi.	New, seven colours, contoured.

Table H.—Provincial Government Topographic Manuscripts Prepared and Reproduced at 1:50,000 Scale by the Canadian Government, Ottawa, during 1963

Map No.	Name	Map No.	Name
92 C/15, E. & W.	Nitinat (second edition reprint).	104 A/5, E.	Bowser Lake (first edition).
92 F/2, E. & W.	Alberni Inlet (second edition reprint).	104 A/6, E. & W.	Bell-Irving River (first edition).
92 F/4, E. & W.	Tofino (second edition reprint).	104 A/11, W.	Taft Creek (first edition).
92 G/7, E. & W.	Coquitlam (second edition reprint).	104 A/12, E. & W.	Delta Peak (first edition).
92 K/3, W.	Quadra Island (first edition reprint).	104 A/13, W.	Mount Alger (first edition).
104 A/2, W.	Kwinageese River (first edition).	104 B/16, E. & W.	Bob Quinn (first edition).

Table I.—Maps Being Prepared by the Geographic Division, Victoria, during 1963

Map No.	Name	Scale	Remarks
1J	British Columbia	1 in. to 30 mi.	Draughting completed.
82M	Seymour Arm (first status edition)	1:250,000	In compilation.
82N	Golden (first status edition)	1:250,000	In draughting.
83C-D	Canoe River (first status edition)	1:250,000	In compilation.
93F	Nechako River (first status edition)	1:250,000	In lithography.
103I-J	Terrace (second status edition)	1:250,000	In draughting.
103P	Nass River (second status edition)	1:250,000	In draughting.
82 G/NW-NE	Cranbrook (first status edition)	1 in. to 2 mi.	In draughting.
82J/SE-SW	Canal Flats (first status edition)	1 in. to 2 mi.	In draughting.
82K/NE	Invermere (first status edition)	1 in. to 2 mi.	In compilation.
82K/NW	Beaton (first status edition)	1 in. to 2 mi.	In compilation.
82L/NE	Revelstoke (first status edition)	1 in. to 2 mi.	In compilation.

Table J.—Provincial Government Topographic Manuscripts Being Prepared at 1:50,000 Scale by the Canadian Government, Ottawa, during 1963

Map No.	Name	Map No.	Name
82 F/3, E. & W.	Salmo (second edition).	93 I/14, E. & W.	Kinuseo Falls (first edition).
82 K/11, W.	Trout Lake (first edition).	93 I/15, E. & W.	Kinuseo Creek (first edition).
82 K/12, E. & W.	Beaton (first edition).	93 I/16, E. & W.	Redwillow River (first edition).
82 L/7, E. & W.	Lumby (first edition).	93 O/6, E. & W.	Morfee Lakes (first edition).
82 L/10, E. & W.	Mabel Lake (first edition).	93 O/11, E. & W.	Cut Thumb Creek (first edition).
82 M/13, E. & W.	Raft River (first edition).	93 O/12, E. & W.	Blackwater Creek (first edition).
92 L/10, E. & W.	Alert Bay (first edition).	93 O/13, E. & W.	Finlay Forks (first edition).
92 M/3, E. & W.	Belize Inlet (first edition).	93 O/14, E. & W.	Point Creek (first edition).
92 M/4, E. & W.	Cape Caution (first edition).	93 P/1, E. & W.	Kiskatinaw River (first edition).
92 M/5, E. & W.	Goose Bay (first edition).	93 P/2, E. & W.	Flatbed Creek (first edition).
92 O/9, E. & W.	Dog Creek (first edition).	93 P/3, E. & W.	Bullmoose Creek (first edition).
93 C/5, E. & W.	Atnarko (first edition).	93 P/4, E. & W.	Sukunka Creek (first edition).
93 D/7, E.	Bella Coola (first edition).	93 P/5, E. & W.	Burnt River (first edition).
93 D/8, E. & W.	Stuie (first edition).	93 P/6, E. & W.	Gwillim Lake (first edition).
93 I/8, E. & W.	Narraway River (first edition).	93 P/7, E. & W.	Sundown Creek (first edition).
93 I/9, E. & W.	Belcourt Creek (first edition).	93 P/8, E. & W.	Tupper Creek (first edition).
93 I/10, E. & W.	Wapiti Lake (first edition).	94 B/4, E. & W.	Wicked River (first edition).
93 I/11, E. & W.	Monkman Pass (first edition).	104 K/16, E.	Nahlin River (first edition).
93 I/12, E. & W.	Missinka River (first edition).	104 N/1, E. & W.	Nakina Lake (first edition).
93 I/13, E. & W.	Sentinel Peak (first edition).	104 N/2, E. & W.	Nakina (first edition).
		104 N/3, E.	Sloko River (first edition).

AIR DIVISION

A. C. KINNEAR, B.C.R.F., CHIEF

MAPPING AND COMPILATION

Some 16,000 square miles of 1-inch-to-20-chains interim mapping was undertaken during the year with about 2,800 square miles of final sheets completed and available for all users. The balance of 13,000 square miles is in varying work stages and will be available as principal-point lay-downs, in pencil form, as required by Forest Surveys Division.

Since the 1-inch-to-20-chains programme was started six years ago, only 10,150 square miles of final interim maps have been completed and are available to other departments and the public from Surveys Branch. An additional area of some 50,000 square miles of control and compilation is available, in pencil form, in our draughting offices (*see* Index Maps Nos. 15 to 18, which are contained in envelope attached to back cover of this Annual Report).

A revision area of some 3,000 square miles of 1-inch-to-40-chains mapping has also been undertaken for forest inventory requirements and will be completed during 1964.

The special project for the Surveyor of Taxes, Department of Finance, in the E. & N. Land Grant area, as reported last year, progressed as planned. Two-thirds of the area has now been completed, and the balance will be photographed and mapped in 1964.

The scribing method of draughting is being studied to determine its application to use in this Division. If it is found acceptable and put into practice, it is hoped that the production of final interim maps can be increased.

FLYING OPERATIONS

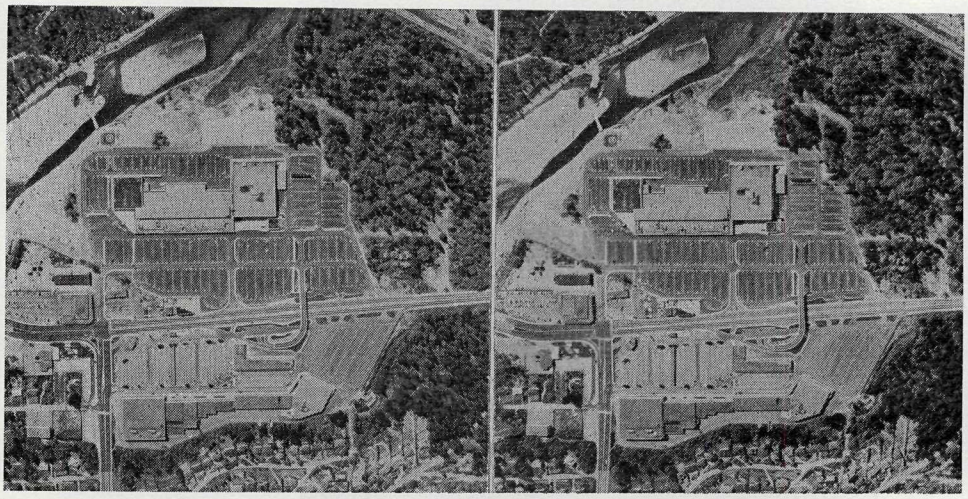
The last of the two Anson aircraft (CF-EZI), which have done such noble work on air photography for this Division, was retired from service in June, 1963. During the past 17 years these two Anson Mark V aircraft have flown a total of 7,152 hours (over a million miles) on Departmental business with only one minor accident, and that occurred on the taxi strip at Patricia Bay, to mar a most impressive record of reliability. Credit at this time must be paid to the extremely capable pilots and mechanics who have flown and maintained the aircraft during these many years.

Modifications of the second Beech D18 (CF-BCD) were completed in early summer, and the main bulk of the photography was accomplished with these two aircraft. The first Beech D18 (CF-BCE), as reported in last year's Annual Report, went into service in 1962. The change-over from Anson aircraft to Beech D18's has provided this Division with excellent replacement equipment and made the working conditions of the aircrew much more pleasant, but, as mentioned last year, they have not appreciably increased the range, altitude, or pay load over the Anson capabilities.

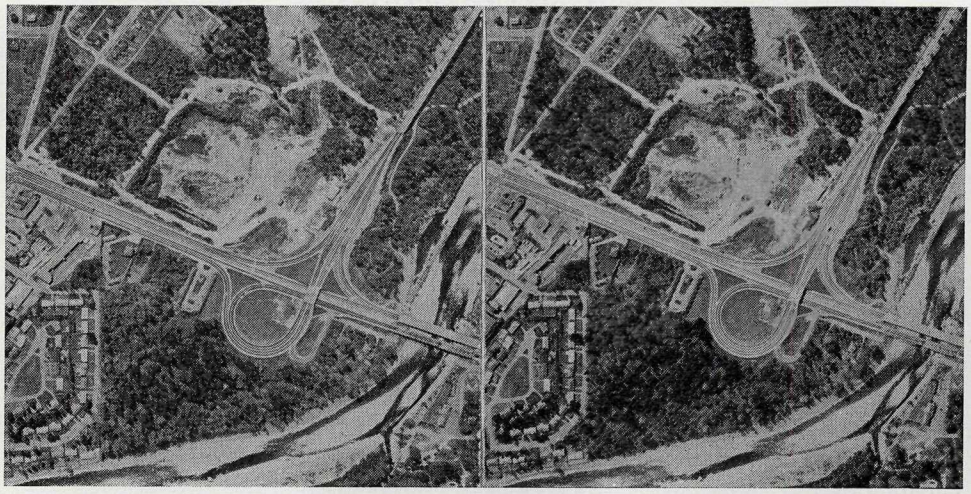
At the risk of becoming monotonous, this season's weather pattern was one of the poorest on record. The mid-season was characterized by a total absence of clear photographic conditions for 11 weeks in the southern half of the Province. This in itself was a record. Even the usually reliable forecasting facilities were often misleading throughout most of the summer, resulting in a " scrambly " type of operation, in which the aircrew had to chase after good weather. This is both frustrating and expensive.

STEREOGRAMS

Stereograms may be viewed through a small magnifying pocket stereoscope to obtain three-dimensional effect.



Shopping centre in West Vancouver. Date of photography, April 28, 1963.
Scale, 1 inch to 1,000 feet. BC 5059, Nos. 225 and 226 (portions only).



North end of Lions Gate Bridge, Vancouver. Date of photography, April 28, 1963.
Scale, 1 inch to 1,000 feet. BC 5059, Nos. 224 and 225 (portions only).

Of 73 special requests from various Provincial departments for photography, 61 projects were flown satisfactorily, and the 19,000 square miles of forest inventory cover is second only to 1960's record accomplishment. This effort was achieved primarily by the vigilance and enthusiasm maintained by all members of the aircrew in spite of the frustrating weather pattern. The particular projects are itemized in detail and tabulated at the end of this report.

Some air time was lost due to camera unserviceability, but most of the trouble was caused by worn-out components in the O.S.C. cameras. As new units are being installed as replacements, we anticipate that a minimum amount of lost time will be encountered in the future.

PROCESS LABORATORY

The production figure of 134,507 10- by 10-inch reprints is a slight increase over the figure of 1962. As might be expected, contact 10- by 10-inch reprints are increasing in numbers over the older projection 10- by 10-inch reprints due to the fact that all new photography is being exposed on 9½- by 9½-inch film. While contact printing is slower than projection printing, the total output of the Process Laboratory is a creditable figure.

The production of enlargements, up to 40 inches in size, has been considerably increased this year. As air photos are being used more extensively for administrational purposes in many areas, the trend to an increase in requests for enlargements will probably continue.

With air photos becoming such a useful tool to so many Governmental activities, the demand for larger-scale, better-quality prints is a natural sequence, and to this end the Process Laboratory must be geared. As staff is a limited factor, it becomes necessary to install methods and equipment to ensure that the over-all output will be maintained at a high standard. Considerable effort in time and money is being expended in the laboratory to meet these requirements, and more features of the automated age will be required to keep this section up to date.

Details of production will be found at the end of this report.

INSTRUMENT-SHOP

One of the original reasons for the establishment of an Instrument-shop was to develop and build specialized equipment for use in the Surveys and Mapping Branch. Again this year the Instrument-shop fufilled this duty by making shutter blades for the O.S.C. air cameras after it was discovered they were unobtainable on the private market. Special shutter steel was purchased from Sweden, and an ingenious method of punching a blade with a hydraulic punch was developed. These shutter blades have been given considerable shop tests, and they appear to operate as well as the blades originally installed in the shutter at the time of manufacture. Had the shop not been able to produce these shutter blades, a major decision on replacement cameras would have been required.

Two new replacement epidiascopes were designed for the specific purpose of transferring planimetric detail from air photos to the interim base maps. These instruments, properly designed and constructed, enable the mapping technicians to do their work more efficiently and with a considerable saving in time. It is expected that both of these epidiascopes will be in operation early in the new year.

Some minor modifications were added to the Deville plotter prior to the instrument being used in its intended role of topographic mapping.

The shop continues to provide specialized services and facilities for an ever-increasing number of Government departments. Most of the technical maintenance

services required by this Division for equipment in the Process Laboratory, Mapping Sections, and Flying Operations is handled by this shop.

AIR PHOTO LIBRARY

A slight increase over 1962 figures in the number of reprints distributed through the library was recorded. Provincial Government departments, primarily the Forest Service, were supplied with a greater number of reprints, and there was a decrease in the number of air photographs purchased by the Federal Government. The sale of reprints to the public remained about the same.

The total number of loans has increased this year by some 33,000 prints, due to the fact that previously considered mapping prints were made available for the loan service. The public borrowed an additional 3,000 prints over 1962, and an extra 30,000 were borrowed by Provincial Government departments.

Details of the reprint and loan traffic are tabulated at the end of this report.

Index maps for all previously flown special projects were revised during the year, and this photography has now been separated from the normal forest inventory photography. This is intended to make the selection of larger-scale special photography easier.

Stereograms of a few interesting features, seen on this year's photography, are shown on page 66 of this report.

ORDERS FOR STANDARD PRINTS (9 BY 9 INCHES) FROM BRITISH COLUMBIA NEGATIVES, 1963

	Reprints		Loans	
	Requisitions	Number	Requisitions	Number
Public—				
Individuals	689	3,532	191	3,152
Mining	139	6,434	79	4,067
Schools	37	261	11	64
University of British Columbia and University of Victoria	72	1,277	8	857
Other universities	10	387	----	----
Companies and organizations	136	2,091	38	645
Cities and towns	27	1,266	5	17
Oil and natural gas	18	1,385	2	56
Commercial air survey	54	5,328	35	902
Forest industries	233	5,732	142	2,684
Real estate	26	88	22	124
Totals	1,441	27,281	533	12,568
Federal Government—				
Department of Mines and Technical Surveys	12	3,681	1	11
Department of National Defence	3	39	1	46
Farm Credit Corporation	26	173	1	2
Lower Mainland Regional Planning Board	4	94	----	----
Indian Affairs Branch	5	43	1	5
Department of Forestry	6	171	8	81
Department of Fisheries	6	178	----	----
Soldier Settlement and Veterans' Land Act	19	36	----	----
Miscellaneous	16	98	9	122
Totals	97	4,513	21	267
Provincial Government—				
Surveys and Mapping	280	14,204	832	29,589
Land Inspectors	50	3,894	30	217
Water Resources	32	490	68	1,084
Lands Branch (miscellaneous)	1	1	2	9
Department of Highways	57	1,424	189	2,527
Forest Surveys	149	77,631	391	20,076
Department of Finance	34	2,267	3	14
Department of Agriculture	14	597	2	15
Department of Mines	20	1,340	27	505
British Columbia Hydro and Power Authority	7	43	16	159
Department of Recreation and Conservation	23	567	135	2,270
Department of Public Works	4	13	5	11
Pacific Great Eastern Railway	5	242	----	----
Fraser River Board	----	----	8	371
Regional Planning	----	----	6	54
Health Services	----	----	10	61
Miscellaneous	----	----	2	4
Totals	676	102,713	1,726	56,966
Grand totals	2,214	134,507	2,280	69,801

PUBLIC LOANS AND REPRINTS

	1959	1960	1961	1962	1963
Loans	13,981	11,840	13,399	9,960	12,568
Reprints	45,644	49,627	34,659	28,226	27,281
Totals	59,625	61,467	48,058	38,186	39,849

PRODUCTION RECORD TO 1963, PROCESS LABORATORY

	1946–60	1961	1962	1963	Grand Total
Processing completed—					
Air camera films—					
O.S.C. and RC8	24	57	103	107	291
F24 and Eagle III	2,709	72	17	23	2,821
Obliques	71	.....	1	1	73
Test rolls	20.5	.....	.....	2	22.5
Colour film	3	1.5	1	.....	5.5
70-mm. helicopter	.....	400 ft.	960 ft.	.....	1,360
Topographic mountain station films (118)	3,733	30	71	32	3,866
K20–F24 (Dominion Hydrographic, H.M.C. Dockyard)	.....	.....	5	.....	5
Printing completed—					
Standard prints, 5 by 5 inches enlarged to 10 by 10 inches	1,552,970	127,043	75,344	49,195	1,804,552
Contact prints, 5 by 5 inches	46,017	30	.....	.....	46,047
Kenora prints, 9 by 9 inches reduced to 5 by 5 inches	.....	.....	.....	4,132	4,132
Contact prints, 10 by 10 inches	8,066	22,777	56,682	85,312	172,837
Contact prints, 20 by 24 inches and larger	3,244	133	122	229	3,728
Enlargements, up to 40 by 96 inches	21,189	1,345	952	1,286	24,772
Topographic, 11 by 14 inches	21,428	410	263	194	22,295
Lantern slides, 2 by 2 inches	372	.....	.....	6	378
Autopositive films, up to 40 by 42 inches	6,993	635	320	103	8,051
Film transparencies, up to 40 by 42 inches	.....	70	204	366	640
Kelsh A7–A8 plates, miscellaneous copies (photos)	2,681	352	597	397	4,027
Requisitions completed	23,626	2,627	1,923	2,373	30,549

1963 AIR OPERATIONS COST SUMMARY BY PROJECTS

	Aircraft-hours	Number of Photographs	Accomplishment			Flying Costs	Photographic Costs	Total Costs
			Square Miles	Lineal Miles	Stations			
A. Basic vertical cover—	Hr. Min.							
1. New cover	.....	.....	.....	.....	.....	.....	.....	.....
2. Revision—								
Block 93B	17 45	695	3,265	.....	.....	$2,954.88	$1,750.20	$4,705.08
South-west Vancouver Island	9 10	320	1,560	.....	.....	1,525.99	805.85	2,331.84
Sub-totals	26 55	1,015	4,825	.....	.....	$4,480.87	$2,556.05	$7,036.92
3. Improvement flying	6 05	312	.....	.....	.....	1,012.71	785.70	1,798.41
Totals	33 00	1,327	4,825	.....	.....	$5,493.58	$3,341.75	$8,835.33
Average cost	.....	$6.66	$1.83	.....	.....	.....	.....	.....
B. Basic tricamera cover—								
New cover—								
Canoe River-Columbia River	12 50	790	.....	325	.....	$2,136.40	$1,989.44	$4,125.84
Rocky Mountain Trench-Peace River	11 15	1,330	.....	585	.....	1,872.82	3,349.31	5,222.13
Stikine River-Iskut River	3 40	.....	.....	.....	.....	610.39	.....	610.39
Totals	27 45	2,120	.....	910	.....	$4,619.61	$5,338.75	$9,958.36
Average cost	.....	$4.70	.....	$10.94	.....	.....	.....	.....
C. Triangulation control identification	.....	.....	.....	.....	.....	.....	.....	.....
D. Forest inventory cover (approximately 20 chains to 1 inch)—								
1. New cover—								
Blueberry S.Y.U.	92 50	4,580	4,850	.....	.....	$15,454.19	$11,533.71	$26,987.90
Burns Lake S.Y.U.	12 25	825	1,100	.....	.....	2,067.03	2,077.58	4,144.61
Cranbrook S.Y.U.	25 05	1,490	1,435	.....	.....	4,175.68	3,752.24	7,927.92
Okanagan S.Y.U.	56 55	3,380	3,535	.....	.....	9,475.05	8,511.80	17,986.85
Ootsa S.Y.U.	8 05	590	695	.....	.....	1,345.65	1,485.79	2,831.44
Parsnip S.Y.U.	30 45	2,330	2,760	.....	.....	5,119.02	5,867.59	10,986.61
Upper Kootenay S.Y.U.	6 30	.....	.....	.....	.....	1,082.07	.....	1,082.07
Sub-totals	232 35	13,195	14,375	.....	.....	$38,718.69	$33,228.71	$71,947.40
Hecate S.Y.U. (approximately 40 chains to 1 inch)	23 00	750	3,800	.....	.....	3,828.87	1,888.71	5,717.58

1963 Air Operations Cost Summary by Projects—*Continued*

	Aircraft-hours		Number of Photographs	Accomplishment			Flying Costs	Photographic Costs	Total Costs
				Square Miles	Lineal Miles	Stations			
D. Forest inventory cover—*Continued*	Hr.	Min.							
2. Improvement flying, all districts	3	50	185				$538.14	$465.88	$1,104.02
Totals	259	25	14,130	18,175			$43,185.70	$35,583.30	$78,769.00
Average cost			$5.57	$4.33					
E. Forest engineering—									
Bench Creek F.D.R.	1	00	30		27		$166.47	$75.55	$242.02
Canyon Creek		40	23		15		110.98	57.92	168.90
Duncan River	5	55	120		83		984.97	302.19	1,287.16
Duncan Tree-farms		25	3		1		69.36	7.55	76.91
East Barriere Lake	1	30	30		21		249.71	75.55	325.26
Glenogle Creek	1	10	16		11		194.22	40.29	234.51
Kettle River F.D.R.	4	20	105		80		721.38	264.42	985.80
Peace River Pondage	9	15	650		490		1,539.88	1,636.89	3,176.77
Perry Creek Nursery	1	20	6		1		221.96	15.11	237.07
Sukunka River F.D.R.	1	25	50		38		235.83	125.91	361.74
Tulameen River F.D.R.	2	35	26		20		430.05	65.48	495.53
Waitabit Creek	1	30	32		23		249.71	80.58	330.29
Wildhorse River	2	00	23		20		332.94	57.92	390.86
Totals	33	05	1,114		830		$5,507.46	$2,805.36	$8,312.82
Average cost			$7.46		$10.01				
F. Precision mapping projects—									
Bridge River		50					$138.72		$138.72
Cross Flights 94c and 94d	11	20	440		740		1,886.69	$1,108.04	2,994.73
Prospect Lake		45	2		1		124.85	5.04	129.89
Provincial Gaol, Prince George		35	2		1		97.10	5.04	102.14
Rodd Hill		20	2		1		55.49	5.04	60.53
Ruby Burn	3	45	2		1		624.28	5.04	629.32
Shuttleworth Creek	2	55	65		33		485.55	163.68	649.23
Totals	20	30	513		777		$3,412.68	$1,291.88	$4,704.56
Average cost			$9.17		$6.05				
G. Special projects—									
Assessment Commission — Lower Fraser Valley	14	40	2,205		1,310		$2,441.60	$5,552.82	$7,994.42
Dyking Commission—Fraser River high water	2	00	72		120		332.95	181.32	514.27
Forest Surveys Division—Quesnel-Prince George revision	19	05	685		1,130		3,176.86	1,725.03	4,901.89
Geographic Division — Highway, Donald to Glacier	1	15	45		40		208.09	113.32	321.41
Land Inspection Division—									
Alberni Canal	2	40	23		28		443.92	57.92	501.84
Alouette Lake		25					69.36		69.36
Highway, Brakendale to Pemberton	1	10	45		35		194.22	113.32	307.54
Pitt Lake		50					138.72		138.72
Stave Lake	2	55	42		26		485.54	105.77	591.31
Legal Surveys—									
Highway, Fort Steele to Wasa		40	18		12		110.98	45.33	156.31
Highway, Sinclair Creek to Vermilion Canyon		40	15		12		110.98	37.77	148.75
Highway, Yoho Park to Park Bridge		40	16		12		110.98	40.29	151.27
Highway, Houston to Telkwa		30	38		35		83.24	95.69	178.93
Highway, Palling to Perow	1	00	58		45		166.47	146.06	312.53
Surveyor of Taxes—									
Indian River valley		50	22		30		138.72	55.40	194.12
Peace River extension	7	25	430		640		1,234.68	1,082.86	2,317.54
Water Resources—									
Beach Grove	1	00	21		7		166.47	52.88	219.35
Chilliwack and Vedder Rivers	3	45	65		34		624.27	163.69	787.96
Cowichan Lake		30	35		11		83.24	88.14	171.38
Cowichan River		50	78		20		138.72	196.43	335.15
Doukhobor lands	5	50	126		68		971.08	317.30	1,288.38
Fraser River low water	3	05	63		105		513.29	158.65	671.94
Lower Fraser extension	1	50	57		83		305.20	143.54	448.74
Okanagan Flood-control	1	55	25		28		319.07	62.96	382.03
Port Edwards cannery		30	5		2		83.24	12.59	95.83

1963 Air Operations Cost Summary by Projects—*Continued*

	Aircraft-hours		Number of Photographs	Accomplishment			Flying Costs	Photographic Costs	Total Costs
				Square Miles	Lineal Miles	Stations			
G. Special projects—*Continued*	Hr.	Min.							
Internal — Kootenay River trig. identification	2	25	57		45		$402.31	$143.54	$545.85
Totals	78	25	4,246		3,878		$13,054.20	$10,692.62	$23,746.82
Average cost			$5.59		$6.12				
H. Miscellaneous flying—									
Highways Department—Administration flights	5	15					$873.98		$873.98
Public Relations and Information—									
Crofton Mill obliques		45					124.85		124.85
Duncan Tree-farm obliques		40					110.98		110.98
Travel Bureau—Photographic flights	3	20					554.91		554.91
Internal—									
Administration	13	20					2,219.63		2,219.63
Aircraft maintenance[1]	18	40							
Camera maintenance[1]	4	55							
Development test	5	55					984.96		984.96
Training[1]		45							
Totals	53	35					$4,869.31		$4,869.31
Grand totals	505	45	23,450	23,000	6,395		$80,142.54	$59,053.66	$139,196.20

[1] Cost of maintenance and training charged to all projects.

UNIVERSITY ENDOWMENT LANDS

UNIVERSITY ENDOWMENT LANDS

M. E. FERGUSON, PROJECT MANAGER

During the year 1963 there was no indication of any major development or expansion, with the result the operations were, in the main, of a routine maintenance type.

The increased enrolment at the University brought a further increase in vehicles, which added to the traffic problem and the parking problem. Through the co-operation of the police and an enforcement of regulations, these problems were well controlled. During the year, consideration was given to the need for a new access road to the campus, and there will be further investigations at an early date to determine where such a road should be located to best serve the ultimate parking and road plan of the campus.

The Erosion Committee did not have any meetings during the year pending the submission of sub-committee reports and recommendations. There is little doubt that any plan that may be adopted will be of the long-range type owing to cost and scope. In the meantime the erosion continues in several locations, which will, no doubt, require some steps be taken to at least control these areas in the very near future.

The agreement with the City of Vancouver whereby special assistance was provided in case of fire expired March 31, 1963. Following negotiations a new agreement was reached whereby reasonable protection can be provided until more permanent plans are made regarding future operations.

We were all shocked at the sudden passing of our Fire Chief, who suffered a heart attack. A replacement is expected early in 1964 as the competition closed on December 18, 1963, and applications are being considered at the time of writing this report.

As mentioned briefly in the 1962 Annual Report, there was a growing need for additional fraternity lots. Through the co-operation of the University a solution was found when property just east of the existing fraternities was deeded back to the Endowment Lands from the University. This provided sufficient area for eight new fraternity lots. It is hoped to have these lots serviced and available to the fraternities during the early part of 1964. At present, water and sewer services have now been laid and plans and specifications being prepared for the balance of the services.

Probably the item of most significance for the year was the question of water supply. As a result of many meetings and surveys over a considerable period, several factors were decided. Of first importance was the establishment of a reservoir-site, which is leased to the Greater Vancouver Water District. Plans are presently being prepared for the first of the pumping units, and it is planned to have these in operation for the summer of 1964. The next stage will be to commence the first of the actual reservoirs, which will be concrete with concrete covers to allow for recreational use, such as tennis-courts, when completed.

A joint water-supply and distribution line to serve the Endowment Lands and the University is presently being considered, with the hope this will be constructed by the spring of 1964, and which will give a new 12-inch service along University Boulevard from Western Parkway to the Main Mall and replace the existing 4-inch line along Western Parkway from University Boulevard to Chancellor Boulevard. When completed this line should solve the low-pressure area as well as a means of levelling off pressures in other sections of the present residential area.

Number and Value of Building Permits Issued during the Calendar Years 1961, 1962, and 1963

	1961		1962		1963	
	Number	Value	Number	Value	Number	Value
Churches	1	$150,000.00	----	----------	----	----------
Alterations to churches	----	----------	1	$11,000.00	----	----------
New dwellings	1	20,000.00	----	----------	1	$60,000.00
Alterations to dwellings	10	44,450.00	11	48,400.00	14	39,125.00
New fraternity houses	1	50,000.00	----	----------	----	----------
Alterations to fraternity houses	----	----------	----	----------	1	17,400.00
Garages, etc.	9	8,400.00	1	1,000.00	6	7,325.00
Swimming-pools	1	13,000.00	----	----------	3	47,300.00
Totals	23	$285,850.00	13	$60,400.00	25	$171,150.00

SUMMARY OF REVENUE RECEIVED DURING THE PAST 10 YEARS TO DECEMBER 31, 1963

Year	Sale of Repossessed Property		Local Improvement Taxes		Loans		Land Sales		99-year Lease Rentals	Water Account	Sundry Rents and Leases	Miscellaneous and Permits	Total
	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest					
1954	$430.70	$107.41	$9,532.13	$92.99	$21,254.60	$2,806.22	$11,612.02	$106.36	$976.26	$22,151.77	$10,981.01	$7,693.94	$87,745.41
1955	531.64	6.60	11,250.35	126.28	5,505.39	2,070.89	15,544.43	411.79	561.53	43,078.28	7,311.23	6,632.94	93,031.35
1956	———	———	7,487.45	29.94	8,719.99	2,713.73	1,575.00	———	818.10	62,401.20	7,379.23	8,404.33	99,528.97
1957	———	———	7,819.29	36.77	5,908.69	1,022.42	1,000.00	135.00	———	62,205.11	11,564.73	10,302.65	99,994.66
1958	———	———	8,832.53	17.97	11,067.28	544.28	2,000.00	92.50	146.10	67,388.26	13,768.93	2,223.97	106,081.82
1959	———	———	6,758.89	6.24	5,051.43	245.03	———	———	146.10	70,867.86	6,536.23	1,894.11	91,505.89
1960	———	———	7,352.79	20.91	3,123.88	166.07	———	———	146.10	82,346.14	16,022.63	3,337.84	112,516.36
1961	———	———	12,427.09	31.35	537.87	12.56	———	———	146.10	84,435.63	11,622.23	10,333.27	119,546.10
1962	———	———	10,320.99	16.49	———	———	———	———	146.10	86,400.08	15,131.63	11,213.19	123,228.48
1963	———	———	10,384.36	40.17	———	———	———	———	146.10	112,994.52	10,507.23	10,443.74	144,516.12
Totals	$962.34	$114.01	$92,165.87	$419.11	$61,169.13	$9,581.20	$31,731.45	$745.65	$3,232.49	$694,268.85	$110,825.08	$72,479.98	$1,077,695.16

LAND SETTLEMENT BOARD

LAND SETTLEMENT BOARD

CLARA STEPHENSON, SECRETARY

The Land Settlement Board was transferred from the Department of Agriculture to the Department of Lands, Forests, and Water Resources in June, 1963.

During the year the sales made by the Board amounted to $68,212. Fifty-nine purchasers completed payment and received title deeds, and eight borrowers paid up in full and received release of mortgage. Collections were as follows:—

Loans	$8,085.22
Land sales	34,809.52
Foreclosed properties and areas—rentals, etc.	1,041.75
Total	$43,936.49

The above figures include collections from the sale of Doukhobor lands in the amount of $23,201.76.

Activities of the Board were concentrated this year on the sale of Doukhobor lands in accordance with the recommendations of the report of His Honour Justice Arthur E. Lord, and good progress was made in that regard.

PERSONNEL OFFICE

PERSONNEL OFFICE

J. H. PALMER, B.A., B.COM., PERSONNEL OFFICER

Organizational changes within the Department in 1963 were minor. They included the establishment of a position as Junior Clerk in the Accounting Division on a permanent basis rather than the previous casual appointment and the conversion of a Field Survey Assistant position in the Topographic Division to that of a Draughtsman.

From a total Civil Service and non-Civil Service staff averaging 304 persons (excluding part-time and seasonal employees), the following separations occurred: Resignations, 22; involuntary terminations, 1; retirements, 1; deaths, 3; transfers to other departments, 3.

The retirement mentioned was that of Mr. Stanley C. Hawkins, who left the position of Principal Clerk in charge of the Crown Grant Section of the Lands Branch after more than 50 years of service. Mr. Hawkins joined the Government service in May, 1913, two weeks before his 15th birthday. When he retired in June, 1963, he had established an enviable record of service to the Province under 10 Premiers. On leaving, Mr. Hawkins was presented with a gold watch and a scroll for meritorious service by the Honourable Ray Williston, Minister of Lands, Forests, and Water Resources, on behalf of the Provincial Government. Mr. Hawkins has the best wishes of all his former colleagues.

The Department was grieved by the deaths at very early ages of three employees during the year. Mr. G. T. Foran, Fire Chief, University Endowment Lands, died, aged 47 years, after 17 years of service; Mr. G. C. Green, Darkroom Assistant, Legal Surveys Division, died, aged 39 years, after 19 years of service; and Mr. D. H. Stuart, Administrative Officer, Lands Branch, died, aged 41 years, after 24 years with the Department. These employees are all sadly missed by their former associates.

During the year 12 promotions through Civil Service competitions were processed, and 17 reclassifications were implemented. Five transfers within the Department occurred, and 18 new employees were recruited for permanent positions.

Mr. J. S. Caldwell, Mapping Assistant 3, Air Division, was awarded a Diploma in Public Administration following completion of the three-year study course under the Executive Development Training Programme. Mr. F. M. Cunningham, Assistant Chief Land Inspector, and Messrs. J. G. Callan and T. F. Moore, Draughtsmen 4, Legal Surveys Division, completed the second year of this course, and Messrs. A. Paulsen and H. R. C. Gavin, Land Inspectors 2, completed the first year's training. Messrs. A. M. Barber, B.C.L.S., A. D. Wight, B.C.L.S., and A. P. McLaughlin, B.C.L.S., of the Surveys and Mapping Branch, and Mr. R. P. Murdock, Senior Clerk, University Endowment Lands, were enrolled in the first year of this course.

Revisions in salaries for the staff of the University Endowment Lands were implemented as a result of direction from the Civil Service Commission following submissions by staff representatives to that body. This was the first year in which the non-Civil Service group at the University Endowment Lands dealt directly with the Civil Service Commission in the matter of wages and conditions of employment.

MAIL AND FILE ROOM

MAIL AND FILE ROOM

JOHN A. GRANT

Letters received in the Department during 1963 amounted to 250,164, compared to 228,015 in 1962, an increase of 22,149 or 9½ per cent.

A total of 10,493 new files was created during the year, and consequently it has been necessary to move many thousands of the less active files to the Topaz Avenue vaults.

It is noted that, by actual count, reference was made to 2,540 reels of microfilm.

LETTERS INWARD

Branch	1962	1963	10-year Average, 1954–63
Lands	45,514	48,504	40,429
Forests	137,979	154,178	126,979
Water Resources	24,150	26,463	23,639
Survey and Mapping	20,372	21,019	18,175
Totals	228,015	250,164	209,222

LETTERS OUTWARD (RECORDED)

Branch	1962	1963	10-year Average, 1954–63
Lands	17,374	17,685	12,644
Forests	2,045	1,565	2,756
Water Resources	2,275	2,491	1,928
Totals	21,694	21,741	17,328

MISCELLANEOUS REPORTS

Designation	1962	1963	10-year Average, 1954–63
Forest-fire reports	5,551	2,345	5,081
Logging-inspection reports	13,724	15,704	15,153
Land-classification reports	4,134	4,235	3,212
Stumpage-adjustment notices	2,473	3,285	.....
Totals	25,882	25,569	23,446

NEW FILES CREATED

Designation	1962	1963	10-year Average, 1954–63
"0" files	7,404	6,700	5,238
Timber-mark files	1,450	1,513	1,395
Timber-sale files	2,520	2,280	3,225
Totals	11,374	10,493	9,858

Printed by A. SUTTON, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia.
1964

1,060-464-5465

1964

INDEXES 1 TO 7

PROVINCE OF BRITISH COLUMBIA
DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES
LANDS SERVICE

HON. R. G. WILLISTON - - MINISTER
E. W. BASSETT, DEPUTY MINISTER OF LANDS

DECEMBER 31st, 1963

INDEX TO DEPARTMENTAL REFERENCE MAPS AND MANUSCRIPTS

EXPLANATION OF THE VARIOUS MAP SERIES

Most of the maps listed in this index were prepared originally for Departmental use, and, having proved of value to the public, copies of same are for sale. As the originals of these maps are on tracing-linen or paper-backed manuscript, the copies are available only in white print or ozalid print form, which shows the map detail with dark-blue or black lines on a white-background paper.

The topographic manuscripts shown on Index 4 are being published on a scale of 1:50,000. Index 14, showing the progress of this programme is available on request.

Address all orders and inquiries to:—

Director, Surveys and Mapping Branch,
Attention: Legal Surveys Division,
Department of Lands, Forests, and Water Resources, Victoria, B.C.

Applicants are requested to enclose the correct payment with their orders as Government Publications must be paid for in advance. Orders to points within Canada may be sent C.O.D. upon request. For orders to be delivered within the Province 5-per-cent social services tax must be added. Cheques or money orders should be made payable to the Minister of Finance for British Columbia.

To avoid misunderstanding, applicants are requested to state the map number and index map of sheets required. Maps supplied from these indexes are not kept in stock but have to be printed especially to fulfil each individual request. As we have no way of making use of same once they have been printed, they have no returnable value.

LAND BULLETINS

The LAND BULLETINS listed below give information both on the agriculture potentialities and general economy of the various districts to incoming settlers.

LAND BULLETINS		Date of Issue
No. 1	Kootenay Bulletin Area	1962
2	Okanagan Bulletin Area	1961
3	Lower Coast Bulletin Area	1962
4	Vancouver Island Bulletin Area	1963
5	Quesnel-Lillooet Bulletin Area	1961
6	Kamloops Bulletin Area	1960
7	Fort Fraser—Fort George Bulletin area	1964
8	Prince Rupert-Smithers Bulletin Area	1961
9	Atlin Bulletin Area	1964
10	Peace River District	1963
11	Acquisition of Crown Lands in British Columbia	1964

FOREST SERVICE

"How to Obtain a Timber Sale." F.S. 223	1960
Grazing Regulations	1960

ADDITIONAL INFORMATION AND SERVICES AVAILABLE

FIELD-NOTES.—Prints or photostat copies of original survey notes of District Lot Divisions are obtainable, cost depending on the size of the original. Prices on request.

TOWNSHIP PLANS.—Prints are obtainable of most of the townships within the old Dominion Railway Belt and Peace River Block within British Columbia. Price, 30¢ per print.

LAND REGISTRY PLANS.—Inquiries regarding Land Registry plans of subdivisions of district lots should be addressed to the Land Registry Office in the district concerned. The districts and offices are as follows:—

Kamloops.	Nelson.	New Westminster.
Prince Rupert.	Vancouver.	Victoria.

(*See also* Index 3 for composite maps of L.R.O. plans.)

PHOTOSTAT REPRODUCTIONS.—Photostat copies of survey plans, maps, documents, etc., recorded in the Department, can be supplied to any size or scale—enlargement or reduction. Price:—

One sheet 18″×24″, $ 1.15 per photostat.
One half-sheet 12″×18″, 60¢ per photostat.

PUBLISHED MAPS—A separate Index to Published Maps will be supplied upon request, showing the various types of maps covering the Province. Series are as follows:—

General Maps ..... Index 8
Regional Maps ..... Index 9

National Topographic Maps on the scale of:

1 inch to 2 miles ..... Index 10
1:250,000 and 1 inch to 4 miles ..... Index 11
1 inch to 8 miles ..... Index 12
1:1,000,000 ..... Index 13
1:50,000 and 1 inch to 1 mile ..... Index 14

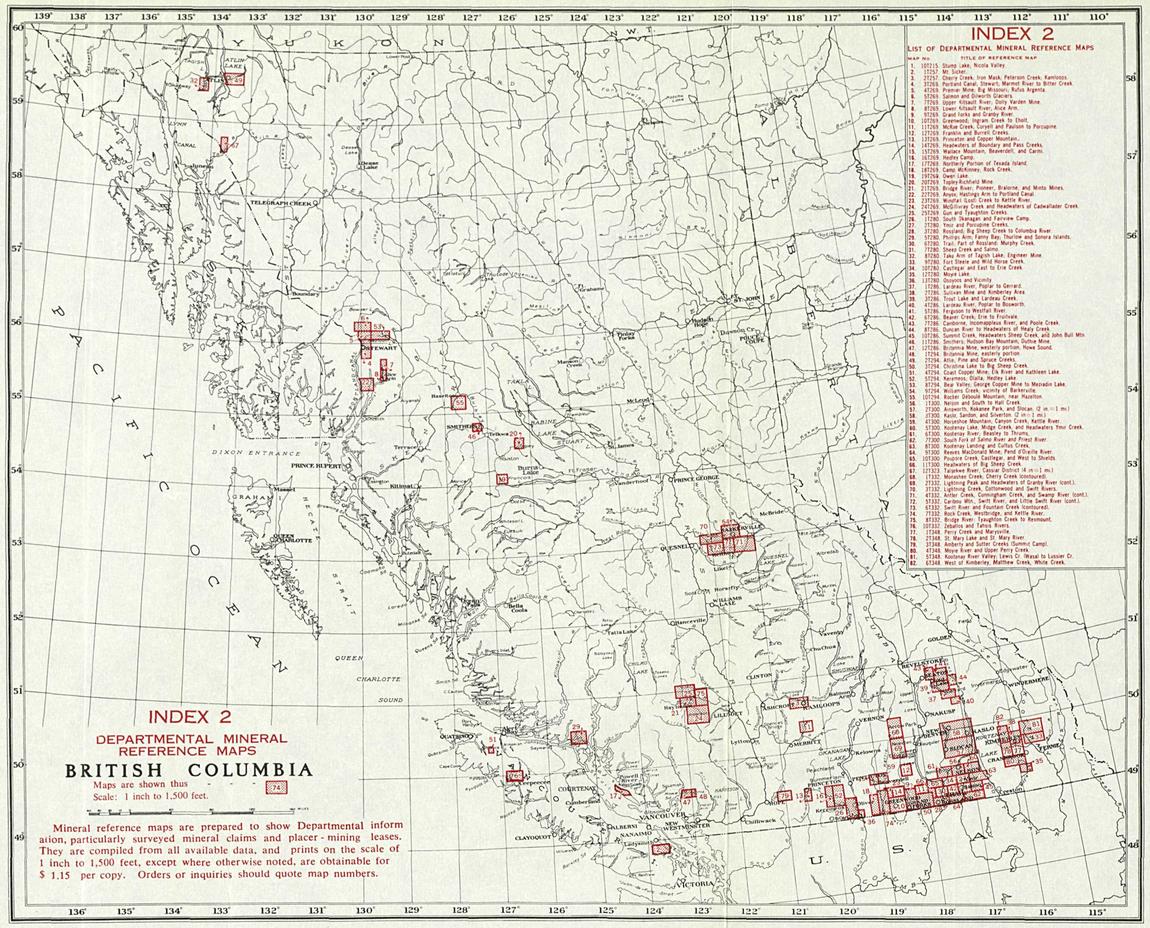
AIR PHOTOGRAPHS—Prints of British Columbia Government air photographs are available to the public. Indexes 15, 16, 17, and 18 show photographs taken at various altitudes. **Prices will be supplied on request.**

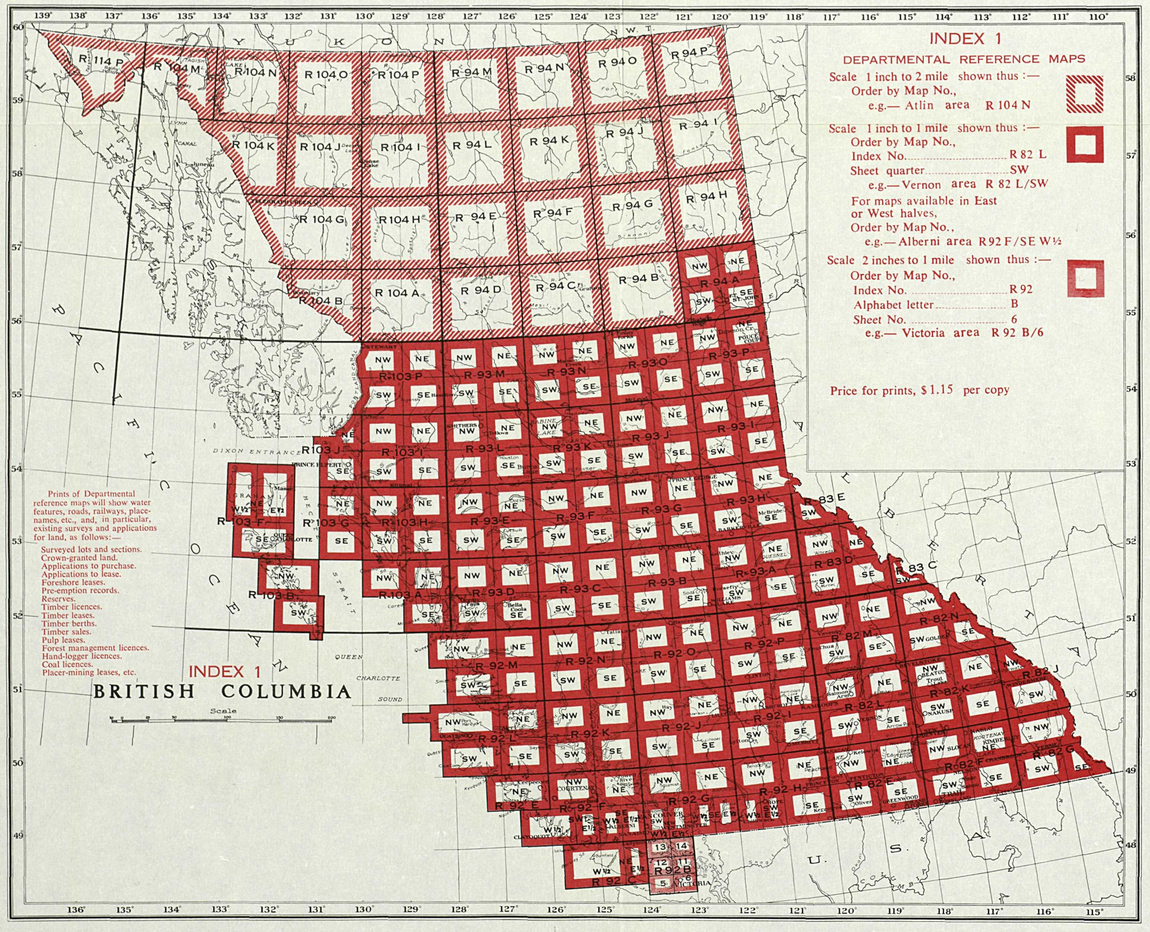
DEPARTMENT OF MINES

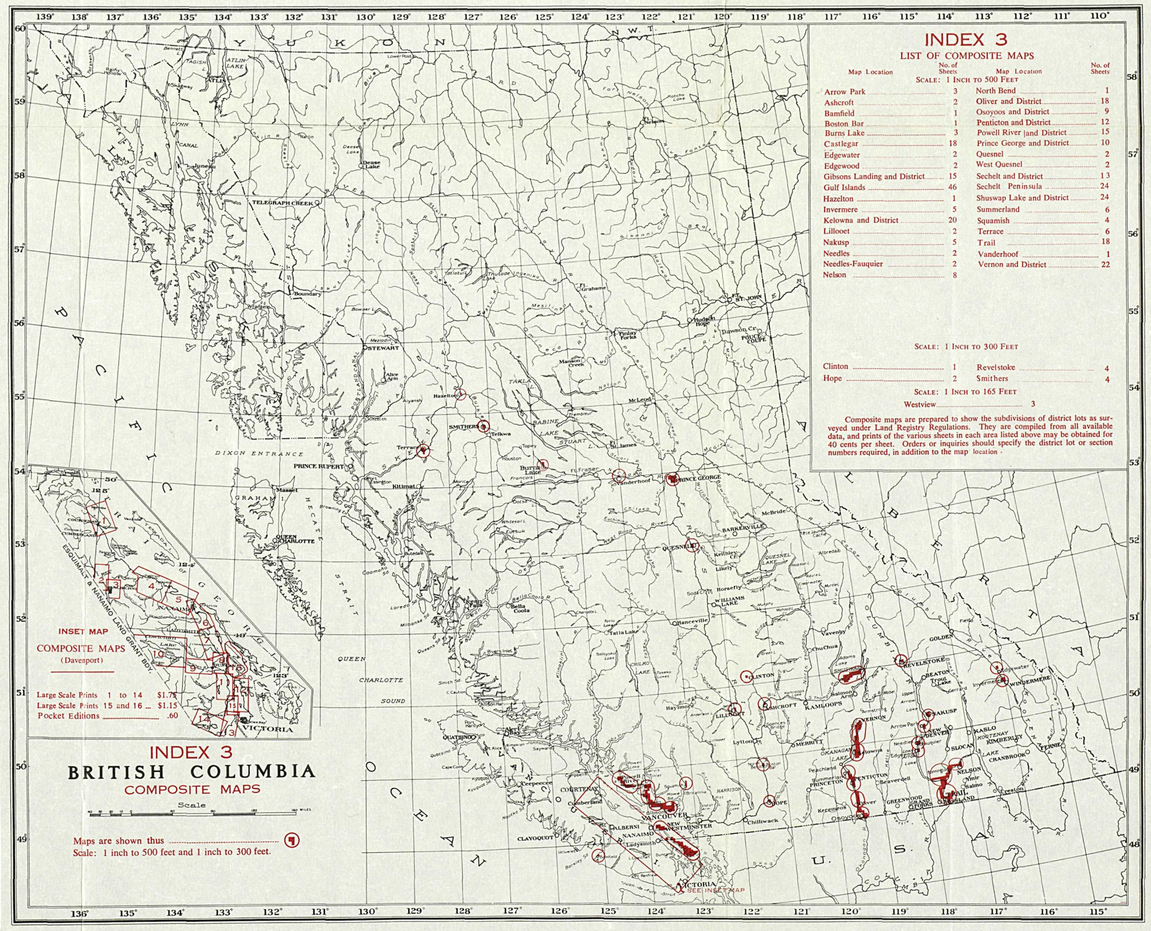
PETROLEUM AND NATURAL GAS LOCATION MAPS.—Prints of these maps showing permits and licences are available to the public. Price, $3.45 per print. An index to areas covered by location maps will be supplied on request.

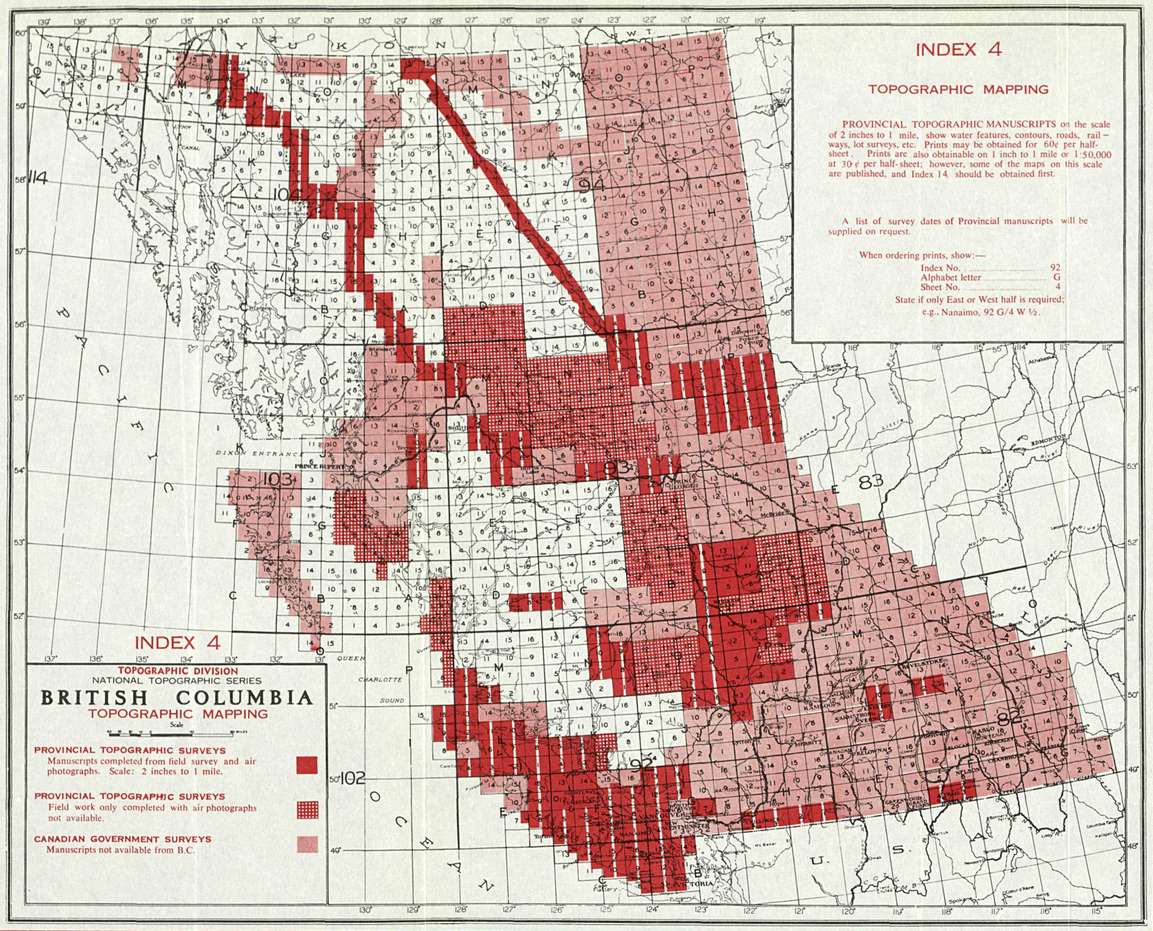
MINERAL CLAIMS AND PLACER LEASES,—Prints showing the approximate locations of staked mineral claims and placer-mining leases are available to the public. These maps conform in geographical detail, size, and number to the reference maps shown on Index 1 and mineral reference maps shown on Index 2. Price, $1.15 per print.

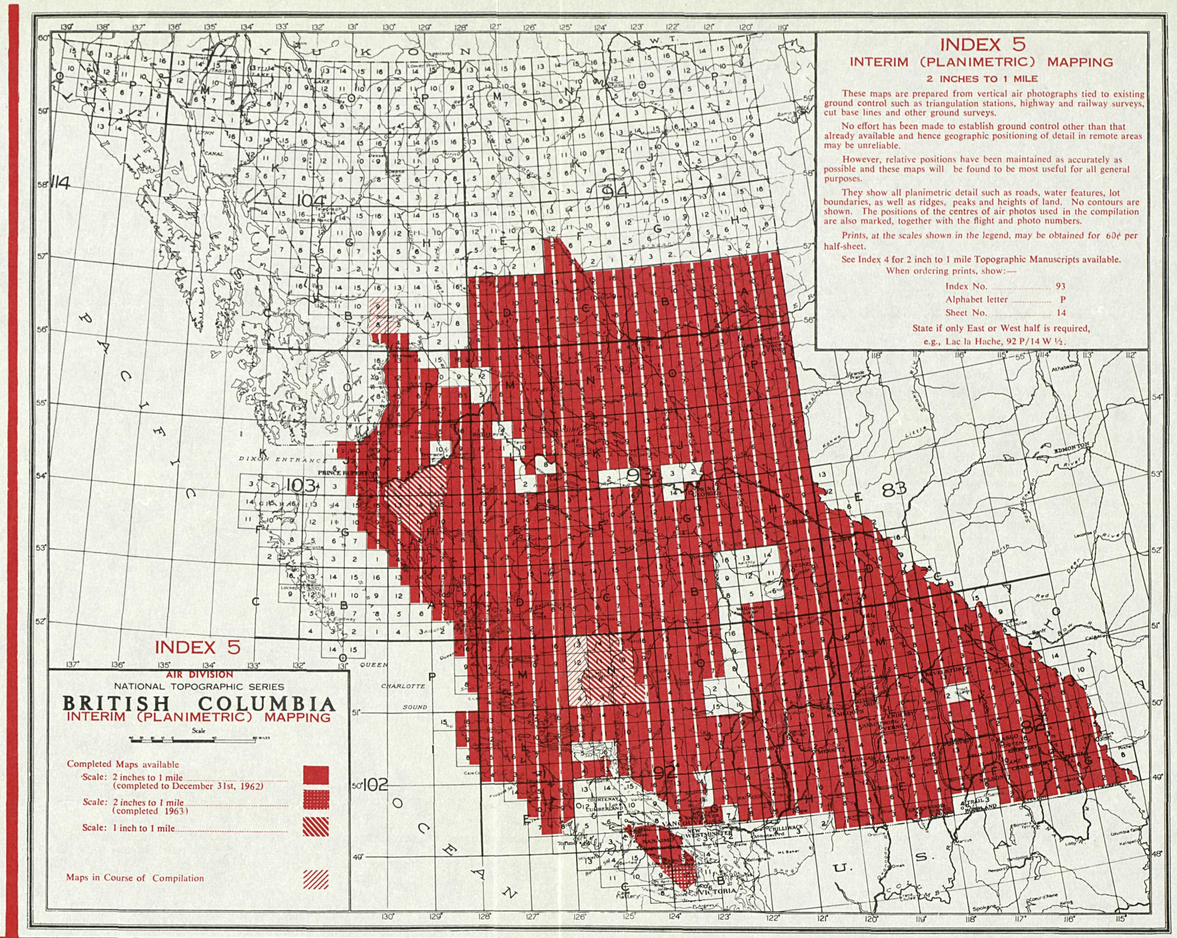
Address all inquiries to:— Chief Gold Commissioner, Victoria, B.C.

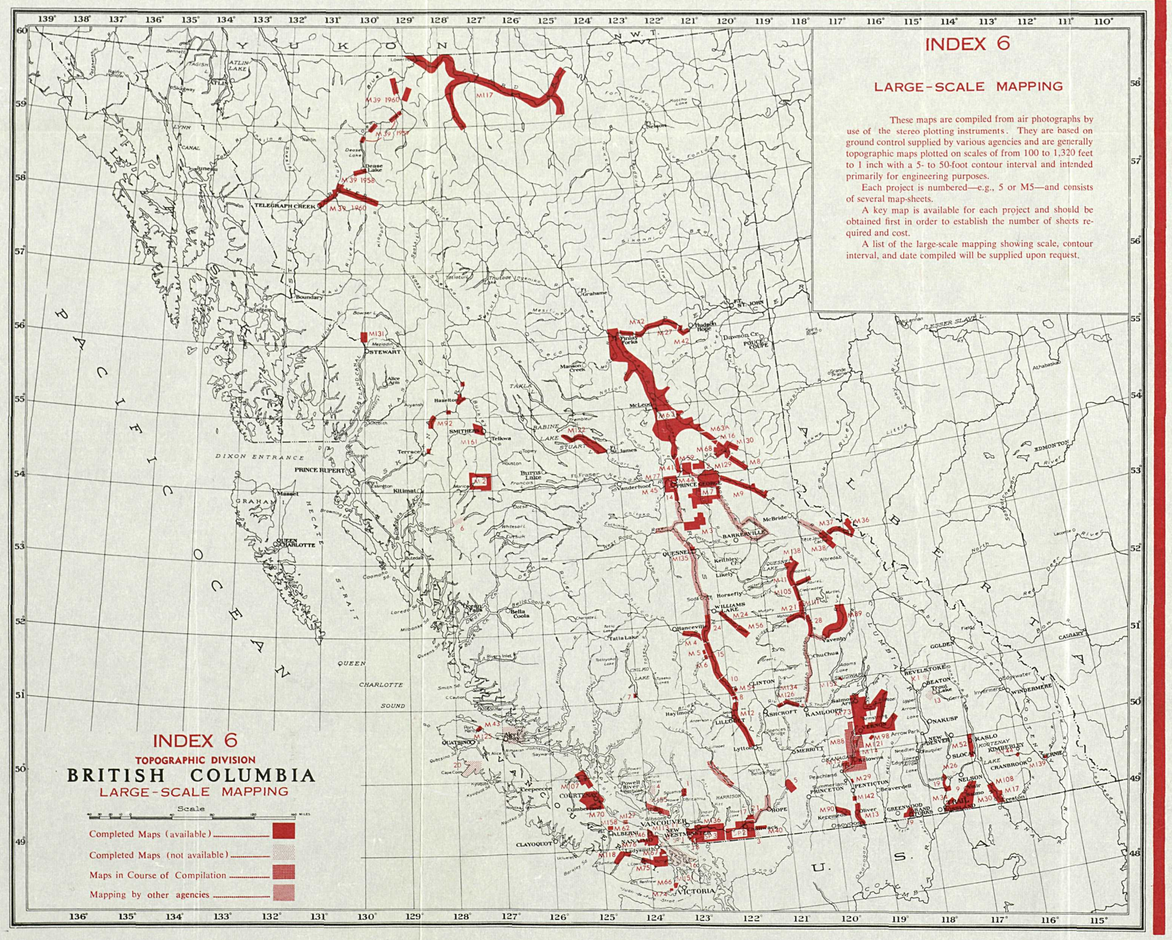


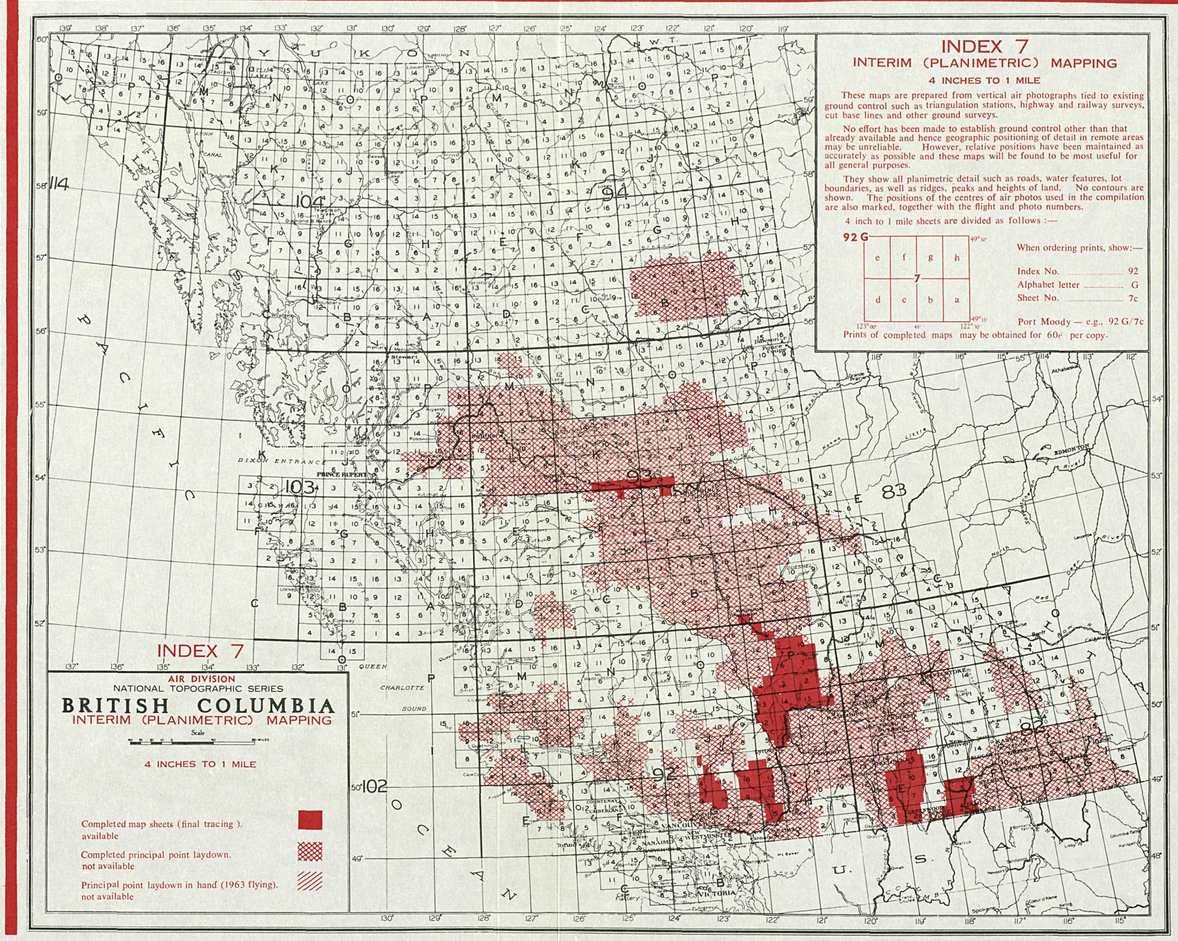





INDEX 4
TOPOGRAPHIC MAPPING
PROVINCIAL TOPOGRAPHIC MANUSCRIPTS on the scale of 2 inches to 1 mile, show water features, contours, roads, rail – ways, lot surveys, etc. Prints may be obtained for 60¢ per half-sheet. Prints are also obtainable on 1 inch to 1 mile or 1:50,000 at 30¢ per half-sheet; however, some of the maps on this scale are published, and Index 14 should be obtained first.
A list of survey dates of Provincial manuscripts will be supplied on request.
When ordering prints, show:—
Index No. 92
Alphabet letter G
Sheet No. 4
State if only East or West half is required;
e.g., Nanaimo, 92 G/4 W ½.
INDEX 4
TOPOGRAPHIC DIVISION
NATIONAL TOPOGRAPHIC SERIES
BRITISH COLUMBIA
TOPOGRAPHIC MAPPING
PROVINCIAL TOPOGRAPHIC SURVEYS
Manuscripts completed from field survey and air photographs. Scale: 2 inches to 1 mile.
PROVINCIAL TOPOGRAPHIC SURVEYS
Field work only completed with air photographs not available.
CANADIAN GOVERNMENT SURVEYS
Manuscripts not available from B.C.


INDEX 5
INTERIM (PLANIMETRIC) MAPPING
2 INCHES TO 1 MILE
These maps are prepared from vertical air photographs tied to existing ground control such as triangulation stations, highway and railway surveys, cut base lines and other ground surveys.
No effort has been made to establish ground control other than that already available and hence geographic positioning of detail in remote areas may be unreliable.
However, relative positions have been maintained as accurately as possible and these maps will be found to be most useful for all general purposes.
They show all planimetric detail such as roads, water features, lot boundaries, as well as ridges, peaks and heights of land. No contours are shown. The positions of the centres of air photos used in the compilation are also marked, together with the flight and photo numbers.
Prints, at the scales shown in the legend, may be obtained for 60¢ per half-sheet.
See Index 4 for 2 inch to 1 mile Topographic Manuscripts available.
When ordering prints, show:—
Index No. 93
Alphabet letter P
Sheet No. 14
State if only East or West half is required,
e.g., Lac la Hache, 92 P/14 W ½.
INDEX 5
AIR DIVISION
NATIONAL TOPOGRAPHIC SERIES
BRITISH COLUMBIA
INTERIM (PLANIMETRIC) MAPPING
Completed Maps available
Scale: 2 inches to 1 mile (completed to December 31st, 1962)
Scale: 2 inches to 1 mile (completed 1963)
Scale: 1 inch to 1 mile
Maps in Course of Compilation


INDEX 6
LARGE-SCALE MAPPING
These maps are compiled from air photographs by use of the stereo plotting instruments. They are based on ground control supplied by various agencies and are generally topographic maps plotted on scales of from 100 to 1,320 feet to 1 inch with a 5- to 50-foot contour interval and intended primarily for engineering purposes.
Each project is numbered—e.g., 5 or M5—and consists of several map-sheets.
A key map is available for each project and should be obtained first in order to establish the number of sheets required and cost.
A list of the large-scale mapping showing scale, contour interval, and date compiled will be supplied upon request.
INDEX 6
TOPOGRAPHIC DIVISION
BRITISH COLUMBIA
LARGE-SCALE MAPPING
Completed Maps (available)
Completed Maps (not available)
Maps in Course of Compilation
Mapping by other agencies


INDEX 7
INTERIM (PLANIMETRIC) MAPPING
4 INCHES TO 1 MILE
These maps are prepared from vertical air photographs tied to existing ground control such as triangulation stations, highway and railway surveys, cut base lines and other ground surveys.
No effort has been made to establish ground control other than that already available and hence geographic positioning of detail in remote areas may be unreliable. However, relative positions have been maintained as accurately as possible and these maps will be found to be most useful for all general purposes.
They show all planimetric detail such as roads, water features, lot boundaries, as well as ridges, peaks and heights of land. No contours are shown. The positions of the centres of air photos used in the compilation are also marked, together with the flight and photo numbers.
4 inch to 1 mile sheets are divided as follows :—
92 G
e f g h
7
d c b a
When ordering prints, show:—
Index No. 92
Alphabet letter G
Sheet No. 7c
Port Moody — e.g., 92 G/7c
Prints of completed maps may be obtained for 60¢ per copy.
INDEX 7
AIR DIVISION
NATIONAL TOPOGRAPHIC SERIES
BRITISH COLUMBIA
INTERIM (PLANIMETRIC) MAPPING
4 INCHES TO 1 MILE
Completed map sheets (final tracing). available
Completed principal point laydown. not available
Principal point laydown in hand (1963 flying). not available

1964

INDEXES 8 TO 14

PROVINCE OF BRITISH COLUMBIA
DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES
LANDS SERVICE

HON. R. G. WILLISTON MINISTER
E. W. BASSETT DEPUTY MINISTER OF LANDS

INDEX TO PUBLISHED MAPS

EXPLANATION OF THE VARIOUS MAP SERIES

The Pre-emptor and Degree Series of regional maps (Index 9) are gradually being replaced by the National Topographic System maps on the 1-inch-to-2-mile and 1:250,000 (approx. 1 in. to 4 mi.) scales.

The latter system is a series of map sheets on the following scales designed to cover Canada in a regular manner using lines of latitude and longitude for the borders.

1 inch to 2 miles	See Index 10
1:250,000 (approx. 1 in. to 4 mi.)	" " 11
1 inch to 8 miles	" " 12
1:1,000,000 (approx. 1 in. to 16 mi.)	" " 13
1:50,000 and 1 inch to 1 mile	See Index 14 (on reverse)

Address all orders and inquiries to:—

Director, Surveys and Mapping Branch,
Attention: Geographic Division,
Department of Lands, Forests, and Water Resources, Victoria, B.C.

Applicants are requested to enclose the correct payment with their orders as *Government Publications must be paid for in advance.* Orders to points within Canada may be sent C.O.D. upon request. For orders to be delivered within the Province 5-per-cent social services tax must be added. Cheques or money orders should be made payable to the Minister of Finance for British Columbia.

To avoid misunderstanding, applicants are requested to state the map number and index map of sheets required.

Government Agents throughout the Province stock copies of maps available within their districts for over-the-counter sale

Unless otherwise requested, maps will be sent folded.

LAND BULLETINS

The LAND BULLETINS listed below give information both on the agriculture potentialities and general economy of the various districts to incoming settlers.

LAND BULLETINS	Date of Issue
No. 1. Kootenay Bulletin Area	1962
2. Okanagan Bulletin Area	1961
3. Lower Coast Bulletin Area	1962
4. Vancouver Island Bulletin Area	1963
5. Quesnel-Lillooet Bulletin Area	1961
6. Kamloops Bulletin Area	1960
7. Fort Fraser—Fort George Bulletin area	1964
8. Prince Rupert-Smithers Bulletin Area	1961
9. Atlin Bulletin Area	1964
10. Peace River District	1963
11. Acquisition of Crown Lands in British Columbia	1964

(Status maps showing vacant Crown land will be found on Indexes 9, 10, and 11.)

FOREST SERVICE	
"How to Obtain a Timber Sale." F.S. 223	1960
Grazing Regulations	1960

Detailed topographic maps are also available of the B.C.-Alberta Boundary, B.C.-U.S.A. Boundaries, of the 1:25,000 series, Victoria-Vancouver area, and the valleys of the Columbia River Basin. Indexes will be supplied on request.

GENERAL MAPS

INDEX 8

Map No.	Year of Issue	Title of Map	Size of Sheet (in Inches)	Scale, Miles, etc.	Per Copy
1A	1958	Wall Map of British Columbia. In two sheets. Roads, trails, railways, etc. ..... When joined—	57×71	1:1,000,000 or 1 in. to 15.78 m.	$ 3.45
1CR	1951	British Columbia—Tentative Range Map	17×22	1 in. to 55 m.	Free
‡ MD	1961	Ditto —Mining Divisions	17×22	1 in. to 52 m.	Free
1J	1964	British Columbia. In one sheet. Showing post offices, railways, main roads, trails, parks, distance charts, etc.	30×38	1 in. to 30 m.	$0.90
‡ 1JB	1957	B.C. Land Districts	30×39	1 in. to 30 m.	.90
‡ 1JC	1957	B.C. Land Recording Districts (revised, 1960)	30×38	1 in. to 30 m.	.90
‡ 1JD	1957	B.C. Mining Divisions (revised, 1958)	30×38	1 in. to 30 m.	.90
‡ 1JE	1957	B.C. Assessment and Collection Districts (revised, 1960)	30×38	1 in. to 30 m.	.90
‡ 1JF	1957	B.C. Electoral Districts (redistribution, 1938) (revised, 1955)	30×38	1 in. to 30 m.	.90
‡ 1JG	1957	B.C. Counties (Revised Statutes, 1960) and Sheriffs' Districts	30×38	1 in. to 30 m.	.90
‡ 1JH	1957	B.C. School Districts (revised, 1963)	30×38	1 in. to 30 m.	.90
‡ 1JJ	1957	B.C. Forest and Grazing Districts (revised, 1964)	30×38	1 in. to 30 m.	.90
‡ 1JK	1957	B.C. Registration Districts, Bills of Sale (revised, 1950)	30×38	1 in. to 30 m.	.90
‡ 1JL	1957	B.C. Land Registration Districts (Revised Statutes, 1948)	30×38	1 in. to 30 m.	.90
‡ 1JNT	1957	B.C. Showing N.T. System	30×38	1 in. to 30 m.	.90
1JR	1960	B.C. Relief Map —Layer Colours (precipitation inset)	30×38	1 in. to 30 m.	1.15
1JS	1945	B.C. Census Divisions	32×41	1 in. to 27 m.	.90

Year of Issue	Reports	Per Copy
1953	Geographical Gazetteer of British Columbia—Contains recorded geographical names of cities, villages, post offices, railway stations, rivers, creeks, lakes, islands, mountains, etc.	$ 1.15

‡ Prints only available. * In course of compilation

Certain departmental reference plans and manuscripts are available to the public in ozalid or photostat form. Indexes of the following, showing scales and prices, will be supplied on request:—

Index 1—DEPARTMENTAL REFERENCE MAPS showing all land surveys, leases, applications, etc., to date of order (1 in. to 1 mi. except where noted on index)

Index 2—DEPARTMENTAL MINERAL REFERENCE MAPS showing surveyed mineral claims, placer mining leases, etc. (1 in. to 1,500 ft.).

Index 3—COMPOSITE MAPS showing subdivisions (1 in. to 500 ft.) (1 inch to 300 ft.).

Index 4—TOPOGRAPHIC SURVEY MAPPING showing lots and contours (2 in. or 1 in. to 1 mi.).

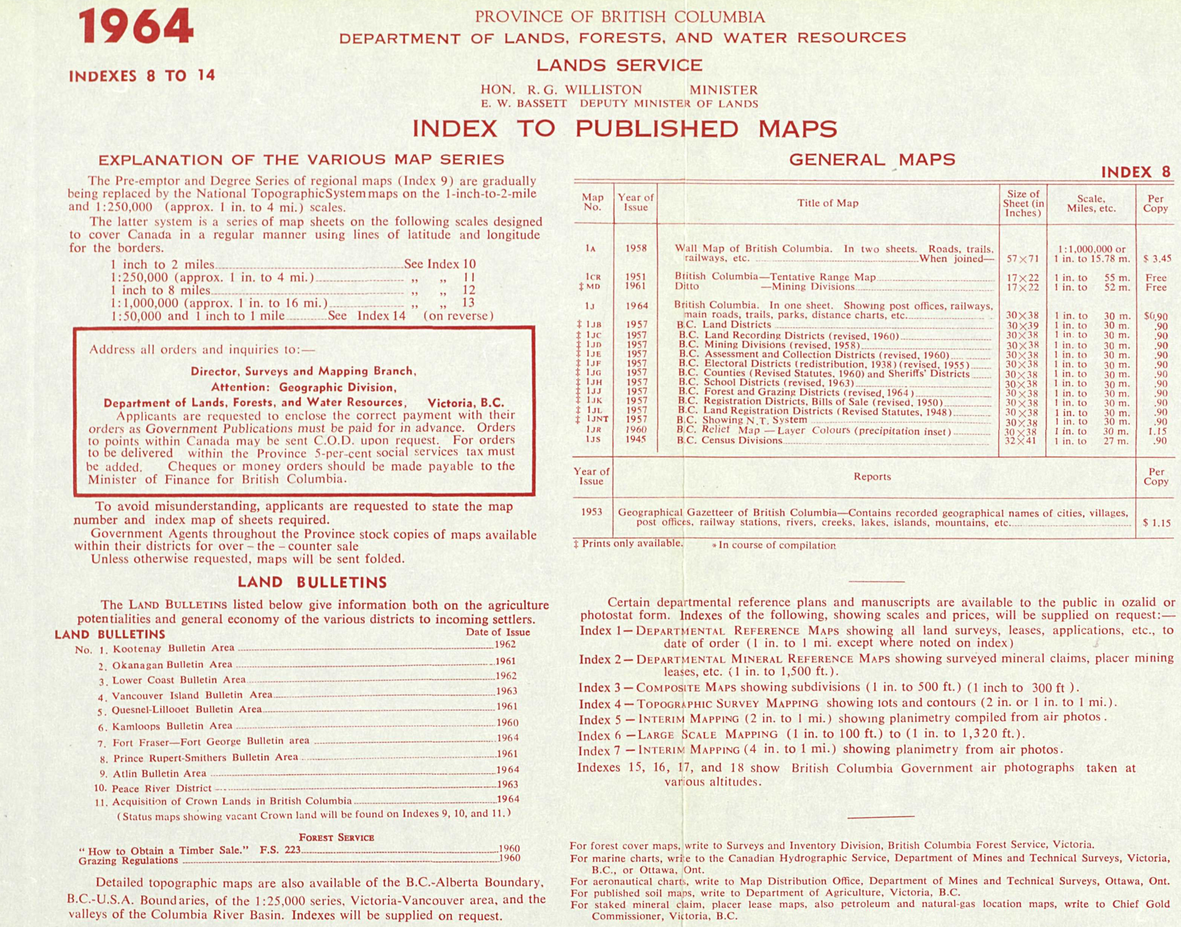
Index 5—INTERIM MAPPING (2 in. to 1 mi.) showing planimetry compiled from air photos.

Index 6—LARGE SCALE MAPPING (1 in. to 100 ft.) to (1 in. to 1,320 ft.).

Index 7—INTERIM MAPPING (4 in. to 1 mi.) showing planimetry from air photos.

Indexes 15, 16, 17, and 18 show British Columbia Government air photographs taken at various altitudes.

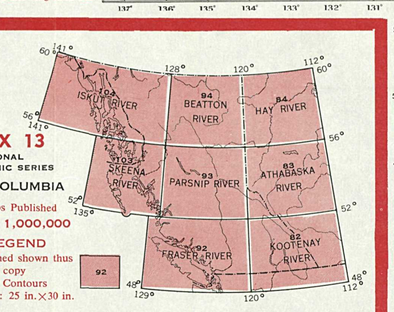
For forest cover maps, write to Surveys and Inventory Division, British Columbia Forest Service, Victoria.
For marine charts, write to the Canadian Hydrographic Service, Department of Mines and Technical Surveys, Victoria, B.C., or Ottawa, Ont.
For aeronautical charts, write to Map Distribution Office, Department of Mines and Technical Surveys, Ottawa, Ont.
For published soil maps, write to Department of Agriculture, Victoria, B.C.
For staked mineral claim, placer lease maps, also petroleum and natural-gas location maps, write to Chief Gold Commissioner, Victoria, B.C.

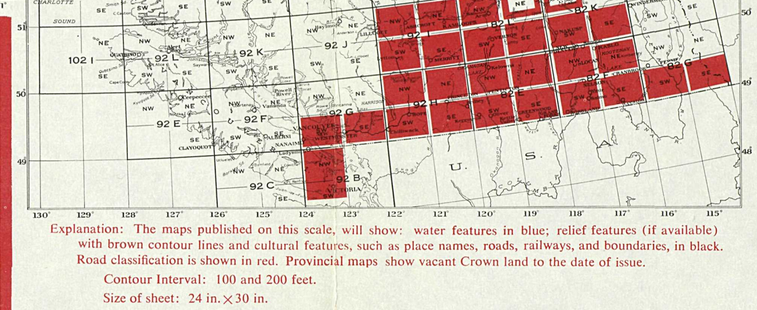


Map No. / Date

*82 E/SW	S L 1960
*82 E/NW	S L 1960
*82 E/SE	S L 1959
*82 E/NE	S L 1957
*82 F/SW	S L 1959
82F/NE	S L 1961
*82F/NW	S L 1962
*82F/SE	S L 1962
*82G/SW	S L 1962
*82 G/SE	S L 1963
82 J/NE, NW—Parts of	1923
*82 K/SE	S L 1963
82 K/NW	L 1956
*82 K/SW	SL 1961
*82 L/SE	SL 1956
82 L/NE	L 1950
*82 L/NW	SL 1959
*82 L/SW	SL 1957
82 N/NE	1931
82 N/SE	L 1932
82 N/SW	L 1955
*92 B/NW, SW Parts of	SL 1958
*92 G/SE	SL 1958
*92 G/SW	SL 1959
*92 H/NE	SL 1958
*92 H/NW	SL 1957
*92 H/SE	SL 1958
*92 H/SW	SL 1960
*92 I/SW	SL 1958
*92 I/NW	SL 1958
*92 I/NE	SL 1959
*92 I/SE	SL 1961
*93 P/NE	P L 1951
*93 P/NW	P L 1951
*94 A/NW	P L 1951
*94 A/SE	P L 1953
*94 A/SW	P L 1954
*94 A/NE	P L 1951

* denotes sheets which were compiled with the use of air photographs.
L denotes sheets on which lot surveys are shown.
P denotes preliminary maps without contours.
S denotes maps showing land status.





Explanation: The maps published on this scale, will show: water features in blue; relief features (if available) with brown contour lines and cultural features, such as place names, roads, railways, and boundaries, in black. Road classification is shown in red. Provincial maps show vacant Crown land to the date of issue.

Contour Interval: 100 and 200 feet.

Size of sheet: 24 in.×30 in.

REGIONAL MAPS

INDEX 9

Map No.	Year of Issue	Title of Map	Size of Sheet (in Inches)	Scale, Miles, etc.	Per Copy
		LAND SERIES			
2c	1958	Northerly Vancouver Island	28×42	1 in. to 4 m.	.90
		PRE-EMPTOR SERIES			
3A	1960	Fort George	28×42	1 in. to 3 m.	.60
3C	1963	Stuart Lake	28×42	1 in. to 3 m.	.60
3E	1960	Peace River (contoured) (Revised status 1963)	28×42	1 in. to 4 m.	.60
3F	1950	Chilcotin (Revised Status 1958)	28×42	1 in. to 3 m.	.60
3G	1949	Quesnel (contoured) (Revised Status 1957)	28×42	1 in. to 3 m.	.60
3H	1958	Tete Jaune	28×42	1 in. to 3 m.	.60
3J	1952	North Thompson (contoured)	28×42	1 in. to 3 m.	.60
		DEGREE SERIES			
‡ 4c	1936	Cranbrook	24×40	1 in. to 2 m.	.30
4b	1957	Fernie	28×39	1 in. to 2 m.	.30
‡ 4g	1925	Upper Elk River	22×32	1 in. to 2 m.	.30
4f	1956	Lardeau	25×42	1 in. to 2 m.	.30
‡ 4d	1956	Windermere	25×42	1 in. to 2 m.	.30

‡ Prints only available.

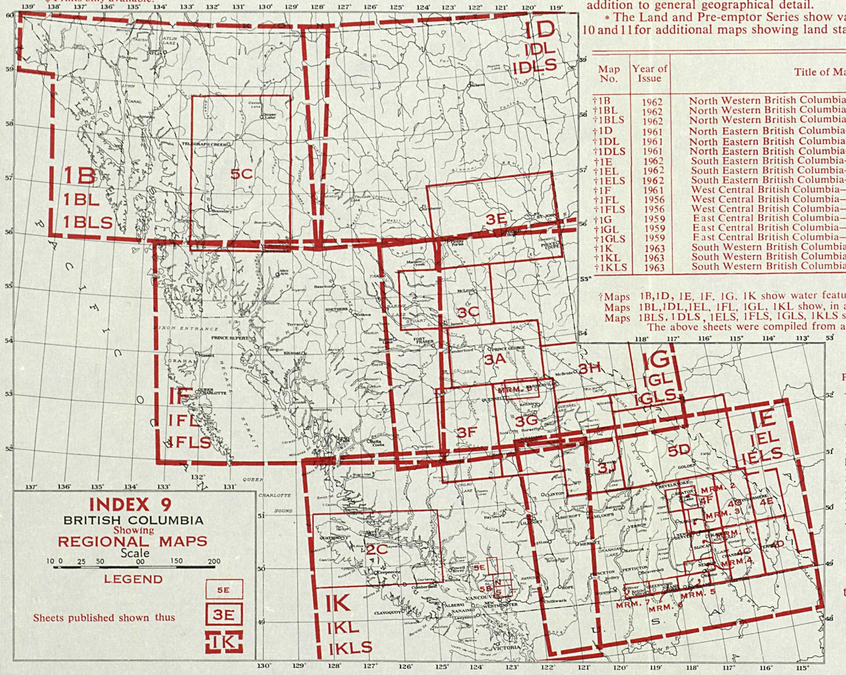
Map No.	Year of Issue	Title of Map	Size of Sheet (in Inches)	Scale, Miles, etc.	Per Copy
		TOPOGRAPHICAL SERIES			
5Bs	1929	Howe Sound-Burrard Inlet (contoured), South	28×42	2 in. to 1 m.	.60
5Bn	1929	" North	28×42	2 in. to 1 m.	.60
5c	1929	Stikine River (contoured)	28×42	1 in. to 5 m.	.60
* 5D	1953	Revelstoke-Golden (Big Bend-Columbia River) (cont.)	28×38	1 in. to 4 m.	.60
5E	1952	Lower Squamish Valley (contoured)	25×40	4 in. to 1 m.	.60
		MINERAL REFERENCE MAPS *printed*			
MRM1	1927	Slocan, Slocan City, Ainsworth, and Nelson	32×44	1 in. to 1 m.	.60
MRM2	1928	Trout Lake, Lardeau, and Ainsworth	28×43	1 in. to 1 m.	.60
MRM3	1928	Ainsworth, Trout Lake, and Slocan	22×42	1 in. to 1 m.	.60
MRM4	1929	Nelson and Trail Creek (Ymir)	24×42	1 in. to 1 m.	.60
MRM5	1929	Trail Creek and Nelson (Rossland)	22×42	1 in. to 1 m.	.60
MRM6	1932	Grand Forks, Greenwood, and Trail Creek	22×42	1 in. to 1 m.	.60
MRM7	1934	Greenwood and Osoyoos	22×42	1 in. to 1 m.	.60
MRM8	1935	Barkerville and Lightning Creek	32×44	1 in. to 1 m.	.60

The maps listed above are compilations of all available survey data and show lot surveys in addition to general geographical detail.

* The Land and Pre-emptor Series show vacant Crown land to the date of issue. *See* Indexes 10 and 11 for additional maps showing land status.

Map No.	Year of Issue	Title of Map	Size of Sheet (in Inches)	Scale, Miles, etc.	Per Copy
†1B	1962	North Western British Columbia—Planimetric	30x38	1 in. to 10 m.	.90
†1BL	1962	North Western British Columbia—Landforms	30x38	1 in. to 10 m.	1.15
†1BLS	1962	North Western British Columbia—Special	30x38	1 in. to 10 m.	1.15
†1D	1961	North Eastern British Columbia—Planimetric	30x38	1 in. to 10 m.	.90
†1DL	1961	North Eastern British Columbia—Landforms	30x38	1 in. to 10 m.	1.15
†1DLS	1961	North Eastern British Columbia—Special	30x38	1 in. to 10 m.	1.15
†1E	1962	South Eastern British Columbia—Planimetric	28x38	1 in. to 10 m.	.90
†1EL	1962	South Eastern British Columbia—Landforms	28x38	1 in. to 10 m.	1.15
†1ELS	1962	South Eastern British Columbia—Special	28x38	1 in. to 10 m.	1.15
†1F	1961	West Central British Columbia—Planimetric	30x38	1 in. to 10 m.	.90
†1FL	1956	West Central British Columbia—Landforms	30x38	1 in. to 10 m.	1.15
†1FLS	1956	West Central British Columbia—Special	30x38	1 in. to 10 m.	1.15
†1G	1959	East Central British Columbia—Planimetric	30x38	1 in. to 10 m.	.90
†1GL	1959	East Central British Columbia—Landforms	30x38	1 in. to 10 m.	1.15
†1GLS	1959	East Central British Columbia—Special	30x38	1 in. to 10 m.	1.15
†1K	1963	South Western British Columbia—Planimetric	30x38	1 in. to 10 m.	.90
†1KL	1963	South Western British Columbia—Landforms	30x38	1 in. to 10 m.	1.15
†1KLS	1963	South Western British Columbia—Special	30x38	1 in. to 10 m.	1.15

†Maps 1B, 1D, 1E, 1F, 1G, 1K show water features, place-names, railways, roads, airports, parks, etc.
Maps 1BL, 1DL, 1EL, 1FL, 1GL, 1KL show, in addition, relief in grey. (1BL, 1EL, 1KL also available in sand.
Maps 1BLS, 1DLS, 1ELS, 1FLS, 1GLS, 1KLS show only water features and relief in brown.
The above sheets were compiled from air photographs.



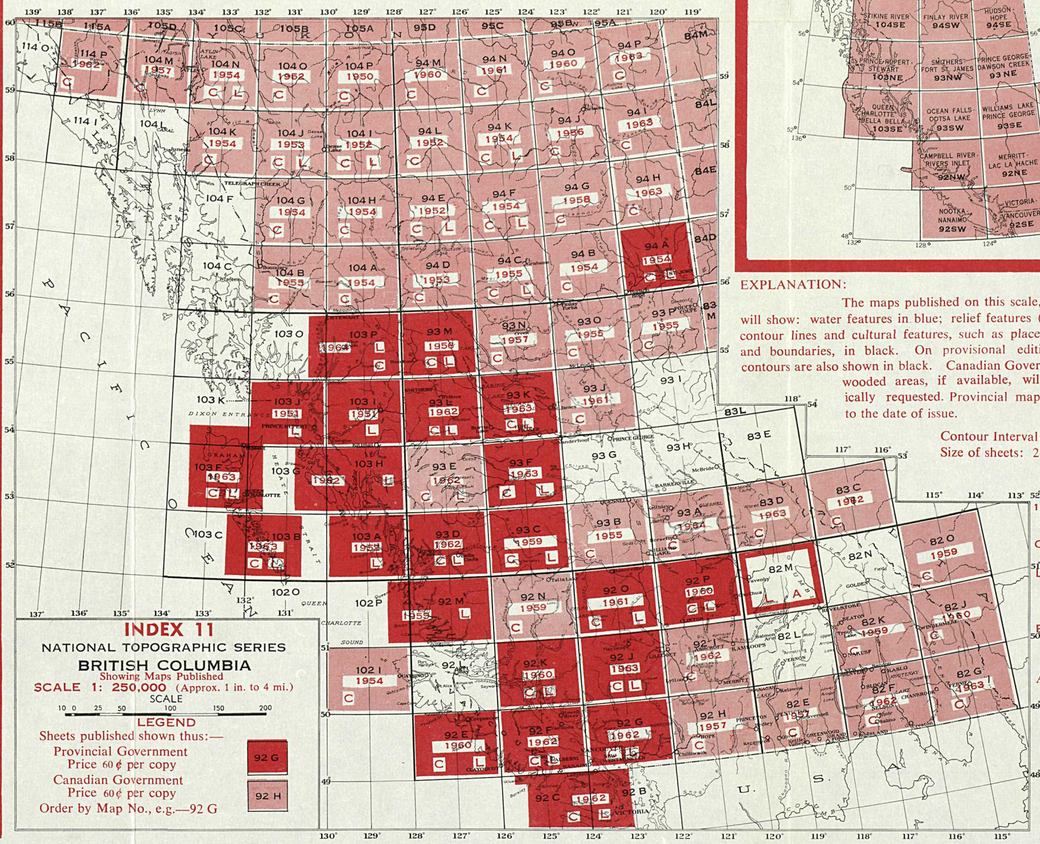
PROVINCIAL PARK MAPS—ADVANCE PRINTS ONLY

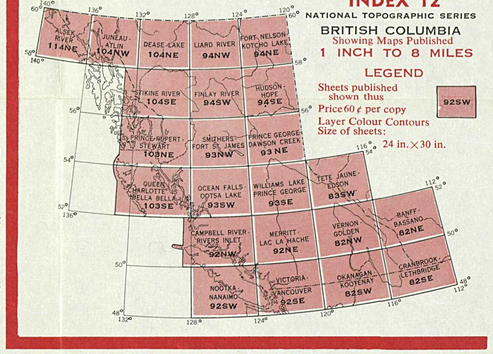
Map No.	Title of Map	Scale	Per Copy
P.S.G. 1	Garibaldi Park—planimetric	1 in. to 4 m.	$0.30
P.S.G. 2	Garibaldi Park—contoured	1 in. to 2 m.	.60
P.S.G. 3	Western Garibaldi—contoured	1 in. to 1 m.	.30
P.S.T. 1	Tweedsmuir Park—planimetric	1 in. to 8 m.	.30
P.S.T. 2	Tweedsmuir Park—planimetric	1 in. to 4 m.	.60
P.S.W. 1	Wells Gray Park—planimetric	1 in. to 4 m.	.30
P.S.W. 2	Wells Gray Park—contoured	1 in. to 2 m.	.60

For Vacation and Tourist Information, write to:—
The British Columbia Government Travel Bureau, Victoria, B.C.

INDEX 11

ONLY SHEETS SHOWN IN RED ARE PUBLISHED





EXPLANATION:

The maps published on this scale, on the index to the left, will show: water features in blue; relief features (if available) with brown contour lines and cultural features, such as place names, roads, railways, and boundaries, in black. On provisional editions water features and contours are also shown in black. Canadian Government series showing wooded areas, if available, will be supplied if specifically requested. Provincial maps show vacant Crown land to the date of issue.

Contour Interval: 500 feet.

Size of sheets: 24 in.×30 in.

1952—denotes date of publication.

C—denotes sheets showing contours.

L—denotes sheets on which lot surveys are shown. All published Provincial maps show land status.

P—denotes provisional maps.

A—denotes Advance ozalid prints only, no contours. Price, 30¢ per copy.

ONLY SHEETS SHOWN IN RED ARE PUBLISHED

LIST OF PUBLISHED MAPS — INDEX 14

SCALE: 1:50,000 (TWO SHEETS EACH UNLESS NOTED)

Map. No.	Date
82 E/4 (1 sheet)	P 1940
82 E/6, 7, 10, 11, parts of	P 1911
82 F/2 E	P 1925
82 F/4	L 1951
82 F/6	L 1958
82 F/9	L 1951
82 F/10	L 1963
82 F/12	L 1959
82 F/13	L 1962
82 F/15	L 1961
82 F/16	L 1951
82 G/1	L 1960
82 G/2	L 1960
82 G/3	L 1962
82 G/4	L 1959
82 G/5	L 1960
82 G/6	L 1960
82 G/7	L 1961
82 G/8	L 1960
82 G/10	L 1961
82 G/11	L 1959
82 G/12 (1 sheet)	P 1934
82 G/13	L 1954
82 G/14	L 1960
82 G/15	L 1960
82 J/2	L 1960
82 J/4	L 1954
82 J/7 W	L 1961
82 J/10 W	L 1954
82 K/1	1956
82 K/3	L 1962
82 K/4	L 1962
82 K/5	L 1961
82 K/6	L 1961
82 K/7	L 1962
82 K/8	L 1962
82 K/10	L 1961
82 K/11, E	L 1962
82 K/14	P 1961
82 K/15	L 1963
82 L/3	L 1961
82 L/6	L 1957
82 L/11	L 1962
82 L/12	L 1958
82 L/13	L 1958
82 L/14	L 1958
82 L/15	L 1959
82 L/16	L 1962
82 M/1	P 1962
82 M/2	P 1961
82 M/3	P 1962
82 M/4	P 1962
82 M/5	P 1962
82 M/6	P 1962
82 M/7	P 1962
82 M/8	P 1962
82 M/9	L 1962
82 M/10	L 1962
82 M/11	L 1961
82 M/12	L 1962
82 N/1	L 1961
82 N/2	L 1959
82 N/3	L 1961
82 N/4	L 1960
82 N/5	L 1963
82 N/6	L 1959
82 N/7	L 1959
82 N/8	L 1961
82 N/9 W	L 1961
82 N/11	L 1959
82 N/15	1962
82 O/4	L 1959
83 D/6	L 1963
83 D/11	L 1962
83 D/15	L 1960
83 D/16	1953
83 E/2	L 1960
92 B/5	L 1959
92 B/6 W	L 1960
92 B/11 W	L 1960
92 B/12	L 1960
92 B/13	L 1955
92 B/14	L 1956
92 C/8	L 1955
92 C/9	L 1958
92 C/10	L 1955
92 C/11 E	L 1954
92 C/13 E	L 1955
92 C/14	L 1956
92 C/15	L 1955
92 C/16	L 1955
92 E/1 E	L 1956
92 E/7 E	L 1955
92 E/8	L 1955
92 E/9	L 1955
92 E/10	L 1957
92 E/14	L 1958
92 E/15	L 1958
92 E/16	L 1958
92 F/1	L 1955
92 F/2	L 1956
92 F/3	L 1956
92 F/4	L 1956
92 F/5	L 1955
92 F/6	L 1956
92 F/7	L 1955
92 F/8	L 1956
92 F/9	L 1956
92 F/10	L 1956
92 F/11	L 1956
92 F/12	L 1957
92 F/13	L 1957
92 F/14	L 1957
92 G/1	L 1962
92 G/2	L 1961
92 G/3 E	L 1960
92 G/4	L 1955
92 G/5	L 1961
92 G/6	L 1961
92 G/7	L 1958
92 G/8	L 1958
92 G/9	L 1962
92 G/11	L 1958
92 G/12	L 1958
92 G/13	L 1957
92 G/14	L 1960
92 H/1	L 1960
92 H/2	L 1960
92 H/3	L 1959
92 H/4	L 1958
92 H/5	L 1958
92 H/6 W	L 1957
92 H/11 W	L 1955
92 H/12 E	L 1956
92 H/12 W	L 1956
92 H/13 E	L 1957
92 H/14 W	L 1957
92 I/3, W	L 1958
92 I/4, E	L 1958
92 I/5, E	L 1958
92 I/6	L 1960
92 I/9	L 1960
92 I/10	L 1958
92 I/11	L 1957
92 I/14	L 1957
92 I/15	L 1957
92 I/16	L 1957
92 J/1, 14, 15	L 1957
92 K/3	L 1956
92 K/4	L 1956
92 K/5	L 1957
92 K/6	L 1955
92 L/1	L 1957
92 L/2	L 1955
92 L/3	L 1955
92 L/4	L 1955
92 L/5	L 1956
92 L/6	L 1956
92 O/1	L 1954
92 O/2	L 1960
92 O/8	L 1960
92 O/9	L 1958
92 O/16	L 1961
92 P/1	L 1954
92 P/8	L 1961
92 P/9	L 1960
93 B/1	L 1955
93 B/8	L 1955
93 B/9	L 1955
93 B/16	L 1955
93 C/1	L 1962
93 C/2	L 1960
93 C/7	L 1960
93 C/8	L 1960
93 G/8	L 1961
93 G/9	L 1960
93 G/13	L 1960
93 G/14	L 1952
93 G/15	L 1960
93 G/16	L 1961
93 H/1	L 1961
93 H/2	1961
93 H/3	L 1962
93 H/4	L 1961
93 H/6	L 1960
93 H/11	L 1960
93 H/12	L 1960
93 H/13	L 1960
93 H/14	L 1960
93 I/4	L 1961
93 I/5	P 1961
93 I/6	L 1954
93 I/7	L 1955
93 I/8	P 1961
93 I/9	L 1954
93 I/10	L 1955
93 I/11	L 1955
93 I/12	L 1956
93 I/13	L 1956
93 I/14	L 1956
93 I/15	L 1956
93 I/16	L 1956
93 J/1	L 1956
93 J/2	L 1956
93 J/3	L 1953
93 J/4	L 1957
93 J/7	L 1957
93 J/8	P 1958
93 J/9	P 1958
93 J/10	P 1957
93 J/11	P 1957
93 J/14	P 1957
93 J/15	P 1958
93 J/16	L 1956
93 K/1	L 1956
93 K/2	L 1956
93 K/3	L 1960
93 K/4	L 1960
93 K/5	L 1960
93 K/6	L 1960
93 L/1	L 1960
93 L/2	L 1957
93 L/3	L 1957
93 L/8	L 1959
93 L/9	L 1958
93 L/10	L 1957
93 L/11	L 1955
93 L/14	L 1955
93 L/15 W	P 1923
93 M/3	L 1961
93 M/5	L 1953
93 M/6	L 1961
93 M/12	L 1953
93 O/2	L 1958
93 O/3	L 1958
93 O/7	L 1960
93 O/9 E	P 1944
93 O/9 W	L 1958
93 O/10	L 1959
93 O/15	L 1960
93 O/16 E	L 1960
93 O/16 W	L 1960
93 P/8 E	L 1952
93 P/9	L 1953
93 P/10	P 1959
93 P/11	P 1959
93 P/12 W	P 1944
93 P/12 E	P 1959
93 P/13	P 1958
93 P/15	L 1953
93 P/16	L 1952
94 A/1	L 1956
94 A/2	L 1956
94 A/3	L 1956
94 A/4	P 1957
94 A/5	P 1957
94 A/6	L 1956
94 A/7	L 1956
94 A/8	L 1961
94 A/9	L 1961
94 A/10	L 1955
94 A/11	L 1955
94 A/12	L 1955
94 A/13	L 1955
94 A/14	L 1955
94 A/15	L 1961
94 A/16	L 1961
94 B/1	P 1944
94 B/2	L 1961
94 B/3	L 1961
94 B/7	P 1958
94 B/8	P 1958
94 B/9	L 1960
94 B/10	P 1958
94 B/15	L 1961
94 B/16	L 1954
94 G/1	L 1954
94 G/2	L 1963
94 G/7	L 1953
94 G/8	1960
94 G/9 (1 sheet)	P 1959
94 G/10	L 1953
94 G/11 E	L 1953
94 G/15	L 1960
94 H/1 (1 sheet)	P 1959
94 H/2 (1 sheet)	P 1959
94 H/3	1955
94 H/4	1955
94 H/5	L 1960
94 H/6	L 1960
94 H/7 (1 sheet)	P 1959
94 H/8 (1 sheet)	P 1959
94 H/9 (1 sheet)	P 1959
94 H/10 (1 sheet)	P 1959
94 H/11 (1 sheet)	P 1959
94 H/12 (1 sheet)	P 1959
94 H/13 (1 sheet)	P 1959
94 H/14 (1 sheet)	P 1959
94 H/15 (1 sheet)	P 1959
94 H/16 (1 sheet)	P 1959
94 I/1	P 1960
94 I/2	P 1961
94 I/3	P 1961
94 I/4	P 1960
94 I/5	P 1961
94 I/6	P 1961
94 I/7	1961
94 I/8	P 1961
94 I/9	P 1961
94 I/10	1962
94 I/11	P 1961
94 I/12	1961
94 I/13	P 1963
94 I/14	P 1963
94 I/15	P 1960
94 I/16	P 1961
94 J/2	L 1954
94 J/7	L 1955
94 J/8	L 1956
94 J/9	P 1961
94 J/10	L 1955
94 J/11	L 1955
94 J/12	L 1955
94 J/13	L 1955
94 J/14	L 1955
94 J/15	1955
94 J/16	1955
94 K/9	1954
94 K/10	L 1954
94 K/11	1953
94 K/12	1953
94 K/13	L 1953
94 K/14	L 1954
94 K/15 W	1954
94 M/1 E	1954
94 M/7 E	1954
94 M/8	L 1954
94 M/9	1955
94 M/10	L 1956
94 M/11	L 1955
94 M/12	1955
94 M/13	L 1954
94 M/14	1953
94 M/15	1956
94 M/16	1957
94 N/4	1954
94 N/5	1954
94 P/1	P 1962
94 P/2	P 1962
94 P/3	P 1961
94 P/4	P 1962
94 P/5	P 1961
94 P/6	P 1961
94 P/7	P 1961
94 P/8	P 1961
94 P/9	P 1961
94 P/10	P 1961
94 P/13	P 1961
94 P/14	P 1961
94 P/15	P 1961
94 P/16	P 1963
102 I/8 E	L 1955
102 I/9	L 1957
102 I/16	L 1955
102 I/16 E	L 1955
103 B/2 W	P 1957
103 B/3	P 1957
103 B/5 E	P 1957
103 B/6	P 1957
103 B/11 W	L 1961
103 B/12	P 1957
103 B/13	P 1957
103 C/9 E	P 1957
103 C/16	P 1957
103 F/1	P 1957
103 F/2 E	P 1957
103 F/7	P 1958
103 F/8	P 1958
103 F/9	P 1958
103 F/10	P 1958
103 F/14 E	P 1958
103 F/15	P 1958
103 F/16	P 1958
103 G/4	P 1957
103 G/5 W	P 1958
103 G/12 W	P 1958
103 G/13	P 1958
103 H/11	L 1961
103 H/12	L 1962
103 H/13	L 1961
103 H/14	L 1961
103 I/2	L 1957
103 I/3	L 1961
103 I/4	L 1955
103 I/5	L 1962
103 I/6	L 1957
103 I/7	P 1958
103 I/9	L 1960
103 I/10	L 1960
103 I/15 E	P 1958
103 J/16	L 1958
103 K/1	L 1960
103 K/2	L 1960
103 K/3 E	L 1960
103 P/9	L 1955
103 P/10 E	L 1955
103 P/13 W	P 1929
103 P/14 E	L 1955
103 P/15	L 1955
104 A/2 W	1961
104 A/3	L 1955
104 A/4 W	P 1929
104 A/5 E	1963
104 A/6	L 1963
104 A/9	L 1954
104 A/11 W	1963
104 A/12	1963
104 A/13 W	1963
104 B/16	1963
104 G/1	1955
104 G/8	1957
104 G/9	1955
104 G/14	L 1958
104 G/15	L 1958
104 G/16	L 1958
104 H/1	L 1953
104 H/12 W	1960
104 H/13 W	1960
104 I/4 W	P 1959
104 I/5 W	P 1959
104 I/12 W	P 1959
104 I/13	P 1959
104 J/1	P 1959
104 J/2 E	P 1959
104 J/2 W	L 1958
104 J/3	L 1958
104 J/4	L 1957
104 J/5	L 1959
104 J/7 E	P 1959
104 J/8	P 1959
104 J/9 E	P 1959
104 J/12	L 1958
104 J/13	1958
104 J/16 E	P 1959
104 M/9	1960
104 M/10	1960
104 M/11 E	1960
104 M/14 E	1960
104 M/15	L 1960
104 M/16	1960
104 N/5	1957
104 N/6	1956
104 N/7 W	1956
104 N/11 W	L 1956
104 N/12	L 1956
104 N/13	L 1956
104 N/16	1954
104 O/13	1954
104 O/14	1955
104 O/15	1955
104 P/3 (1 sheet)	P 1961
104 P/4 (1 sheet)	P 1961
104 P/5 (1 sheet)	P 1959
104 P/6 (1 sheet)	P 1959
104 P/12 W	P 1961
104 P/15	L 1956
104 P/16	L 1956
114 P/9 W	L 1960
114 P/10 E	L 1960
114 P/15	P 1959
114 P/16 W	P 1959

L denotes sheets on which lot surveys are shown.
P denotes provisional maps with contours.

SCALE: 1 INCH TO 1 MILE

Map. No.	Date
93 A/5	L 1952
93 A/6	L 1952
93 A/11	L 1949
93 A/12	L 1949
93 A/13	L 1949
93 A/14	L 1949
104 A/16	L 1950

ADVANCE OZALID PRINTS

Map. No.	Date
82 F/3	LP 1960
82 L/7	LP 1958
82 L/10	LP 1958
82 M/13	LP 1959
92 P/16 E	LP 1957
92 L/10	LP 1956
92 M/3	LP 1959
92 M/4	LP 1955
92 M/5	LP 1959
92 N/1	P 1958
92 N/7	P 1958
92 N/8	LP 1958
92 N/9	LP 1958
92 N/10	LP 1958
92 N/15	LP 1958
93 C/5	LP 1959
93 D/7 E	LP 1959
93 D/8	LP 1959
93 I/8	P 1956
93 I/9	P 1956
93 I/10	P 1956
93 I/11	P 1957
93 I/12	P 1957
93 I/13	P 1957
93 I/14	P 1957
93 I/15	P 1956
93 J/2	LP 1957
93 J/3	P 1957
93 O/1	P 1957
93 O/6	LP 1957
93 O/8	P 1957
93 O/11	P 1957
93 O/12	P 1957
93 O/13	LP 1957
93 O/14	P 1957
93 P/1	LP 1956
93 P/2	P 1956
93 P/3	LP 1957
93 P/4	LP 1957
93 P/5	P 1957
93 P/6	LP 1957
93 P/7	LP 1956
93 P/8 W	P 1956
94 B/4	LP 1957

EXPLANATION

The topographic maps published on the scales listed below will show water features in blue; relief features with brown contour lines; and cultural features, such as place-names, roads, railways, and boundaries, in black. On maps containing further information, lot lines are shown in black and additional colours are used, such as red for road classification, green for wooded areas. Maps showing wooded areas, if available, will be supplied if specifically requested.

Provisional maps are contoured sheets either printed from the compilation stage or converted from existing 1 inch to 1 mile maps.

The list to the right gives the latest edition date and also indicates the maps which show lot surveys.

Size of sheets:
1:50,000—each half—22 × 29
1 inch to 1 mile (1:63,360)—24 in. × 30 in.
Contour Interval: 100 feet.

INDEX 14

NATIONAL TOPOGRAPHIC SERIES

BRITISH COLUMBIA

Showing maps published on

SCALES 1:50,000 (1¼ in to 1 mi) and **1 INCH TO 1 MILE** (1:63,360)

Scale
40 30 20 10 0 40 80 MILES

Provincial Government Surveys published.

Scale: 1:50,000 (E ½ & W ½) — Provisional 1:50,000

Canadian Government Surveys published.

Scale: 1:50,000 (E ½ & W ½) — Provisional 1:50,000

Scale: 1 inch to 1 mile

Prices
Scale: 1:50,000 (E ½ & W ½) 60¢ ea. half
Scale: 1 inch to 1 mile.....60¢ per copy

When ordering Maps, show:
Index No. 92
Alphabet letter ..... G
Sheet No. 4
State if only East or West half is required, e.g., Nanaimo,—92 G/4 W ½.

Advance ozalid prints
Scale: 1:50,000
Price, 30¢ each half

Note: Prints of manuscripts of this series not yet published are shown on Index 4, which is available on request.

ONLY SHEETS SHOWN IN RED ARE PUBLISHED

1964

INDEXES 15 TO 18

PROVINCE OF BRITISH COLUMBIA
DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES
LANDS SERVICE
HON. R. G. WILLISTON - - MINISTER
E. W. BASSETT DEPUTY MINISTER OF LANDS

DECEMBER 31st, 1963

AIR PHOTO COVER

EXPLANATION

The Federal Government and the Provincial Government are the main sources of air photographs covering the Province. Negatives of the photography taken by the Federal Government are held in Ottawa; negatives of the photography taken by the Provincial Government are held in Victoria.

Photographs are taken from various altitudes with various cameras, and provide overlapping or "stereo" cover of the ground. The scale of photography varies, depending upon the height of the aircraft above ground, the focal length of the camera used, and the size of the photographic print.

Indexes 15, 16, 17, and 18 show the air-photo cover of British Columbia as follows:—

Index 15: Tri-camera photography and 80-chain vertical photography.
Index 16: 40-chain vertical photography.
Index 17: 20-chain vertical photography.
Index 18: Special projects.

The vertical photography shown on Indexes 15, 16, and 17 consists of a series of parallel, overlapping strips covering large block areas; tri-camera photography is taken in single strips, usually along prominent geographical features such as valleys, coastlines, and highways.

AIR PHOTO INDEX MAPS

For ease of reference, photographs are keyed as accurately as possible on appropriate maps, copies of which are available at a nominal charge. These are indexes to the location of air photographs only; for maps compiled from air photographs, refer to Indexes 4, 5, 6, 7, 10, 11, and 14.

TRI-CAMERA PHOTOGRAPHY (INDEX 15)

The term "tri-camera" refers to single runs of photographs using an assembly of three cameras. One camera points straight down, while the other two point one to the right and one to the left. The three cameras are exposed simultaneously so that a tri-camera set consists of three photographs—two obliques and one vertical—that cover the ground from horizon to horizon. Any of the three photographs may be ordered individually.

Each tri-camera strip is identified by a number prefixed by the letter "X." Within these strips the left oblique, right oblique, and centre vertical photographs are distinguished by the prefixes "XL," "XR," and "XC," respectively.

80-CHAIN VERTICAL PHOTOGRAPHY (INDEX 15)

This small-scale air-photo cover was flown by the Federal Government. The photographs were taken from an altitude of 35,000 feet above sea-level with a 6-inch focal-length camera and are at a scale of approximately 1 mile to 1 inch for a standard 9″ x 9″ print. Each photograph covers approximately 80 square miles.

40-CHAIN VERTICAL PHOTOGRAPHY (INDEX 16)

These photographs were taken from 18,000 to 21,000 feet above sea-level (roughly 15,500 feet above average ground elevation). Over mountainous terrain the scale varies considerably within each photograph but averages about 2,640 feet to 1 inch for a standard 9″ x 9″ print. Each photograph covers approximately 20 square miles.

20-CHAIN VERTICAL PHOTOGRAPHY (INDEX 17)

These photographs were taken from roughly 15,500 feet above average ground elevation with a 12-inch focal-length camera. The scale is approximately 1,320 feet to 1 inch for a standard 9″ x 9″ print. Each photograph covers approximately 4 square miles.

SPECIAL PROJECTS (INDEX 18)

Special, mostly large-scale, photography is taken to supplement standard air-photo cover as required. These projects may consist of an entire block of several hundred photographs or as few as a single overlapping pair.

Index 18 is only a general guide to special photography; more detailed information of special projects or areas is available upon request.

B.C. PROVINCIAL AIR PHOTO LIBRARY

The Air Division, Surveys and Mapping Branch, maintains a library of air photographs taken by the Provincial and Federal Governments. These library prints are available for reference and may be viewed or taken out on loan at the following rates: Service charge for viewing prints in the library, 50 cents (minimum); loan service charge, $1 for five prints (or less) and 10 cents for each additional print. Loan requests must be prepaid.

The time-limit for loans in the Victoria-Vancouver area is two weeks; elsewhere, three weeks. Photographs are available on loan in Canada only.

PURCHASING INSTRUCTIONS

Reprints or enlargements of air photographs taken by the Provincial Government may be ordered at the prices noted below. The exact photo number and roll number may be ascertained from an index map of the area; otherwise, it is necessary to specify precisely the area for which photographs are required.

The prices of reprints and enlargements are as follows:—

Size	Price per Print
9″ x 9″	$0.70
18″ x 18″	4.60
30″ x 30″	8.30
30″ x 30″ (retouched)	12.00

Address all orders and inquiries to:—

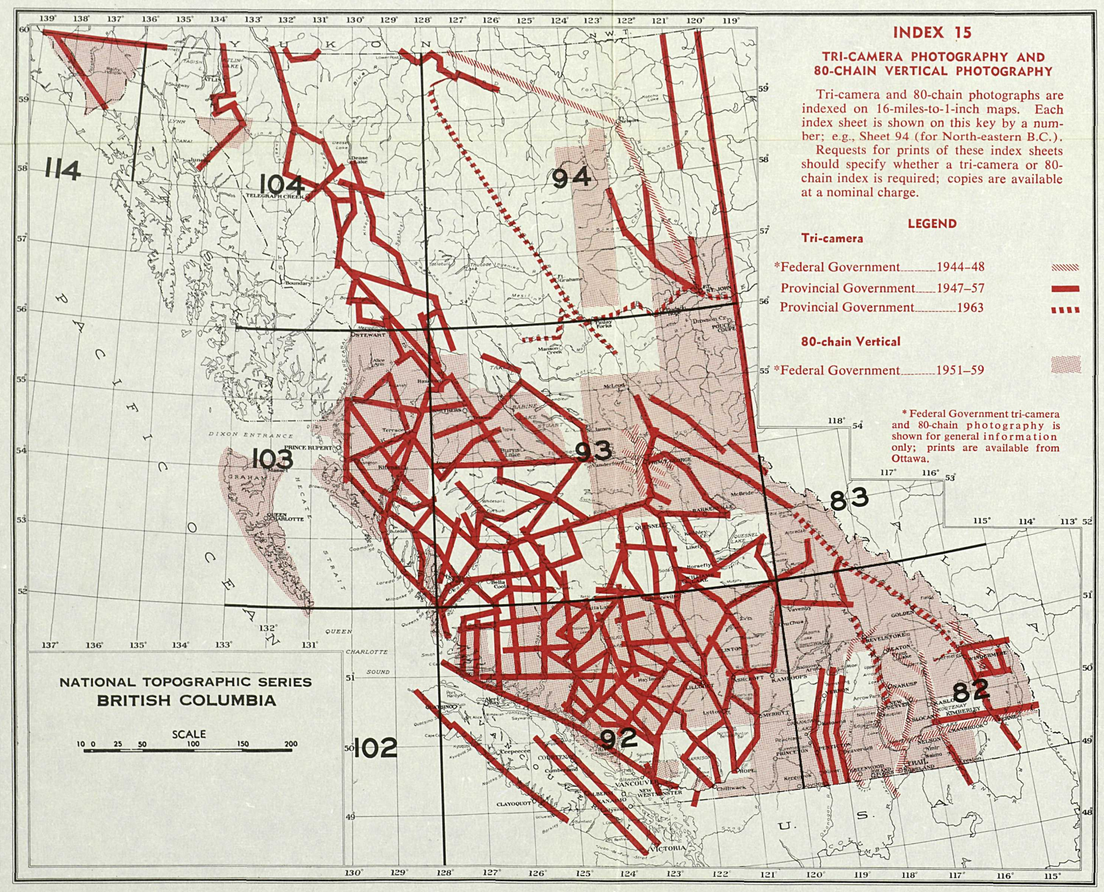
Director, Surveys and Mapping Branch,
Department of Lands, Forests, and Water Resources,
Victoria, B.C.
Attention: Air Division.

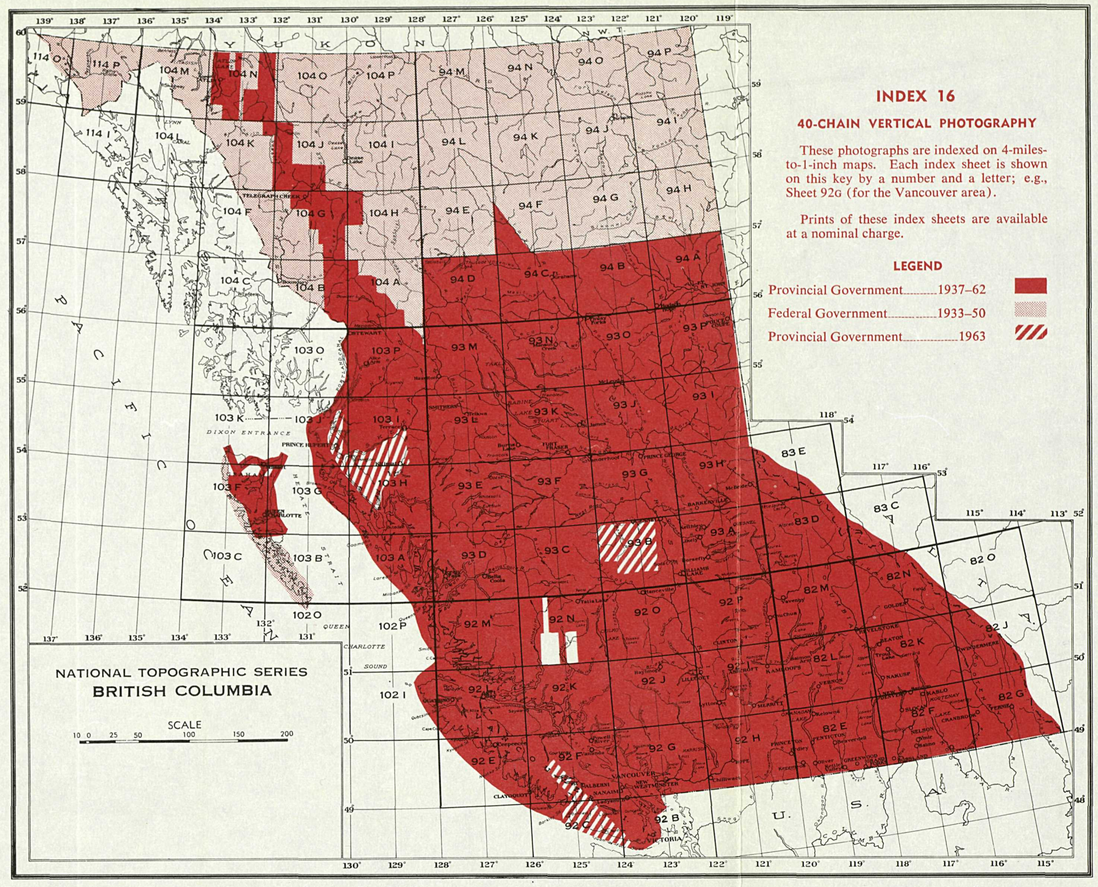
Government publications must be paid for in advance. Cheques or money orders should be made payable to the Minister of Finance for British Columbia. For orders to be delivered within the Province add 5 per cent social services tax.

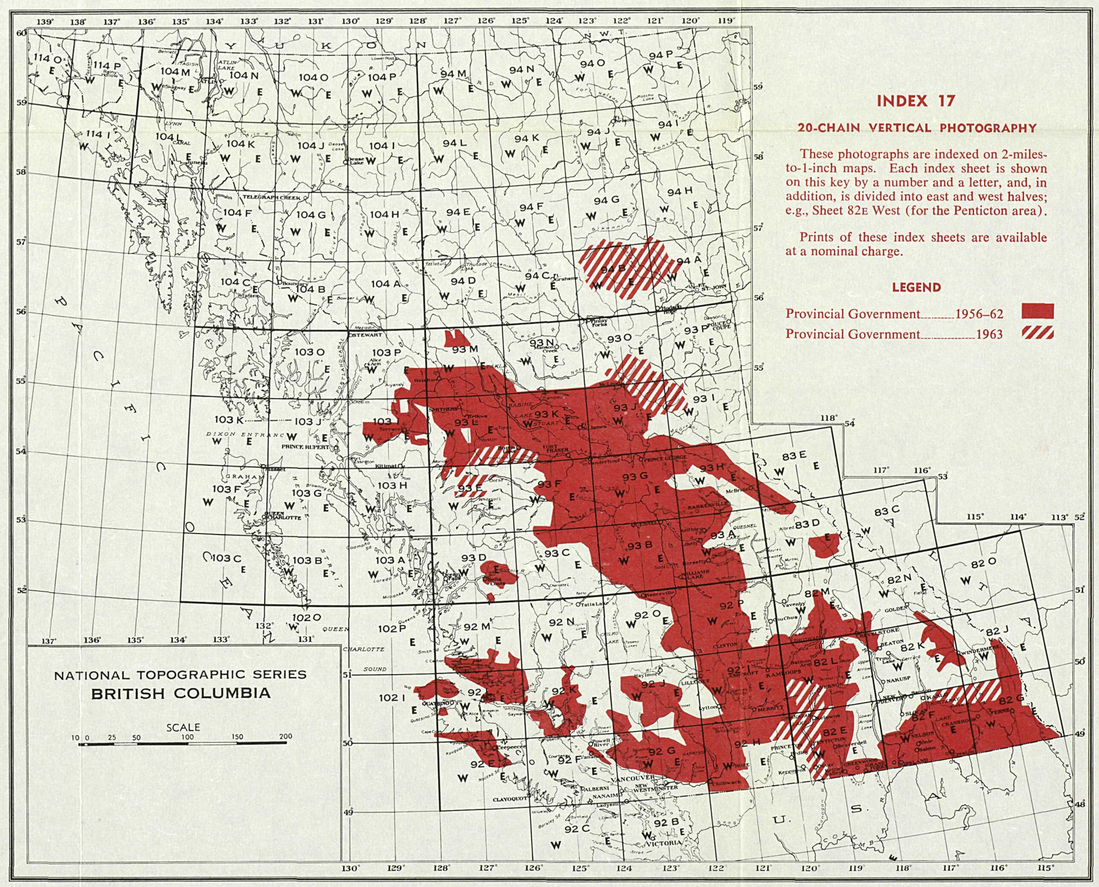
Orders to points within Canada may be sent C.O.D. upon request.

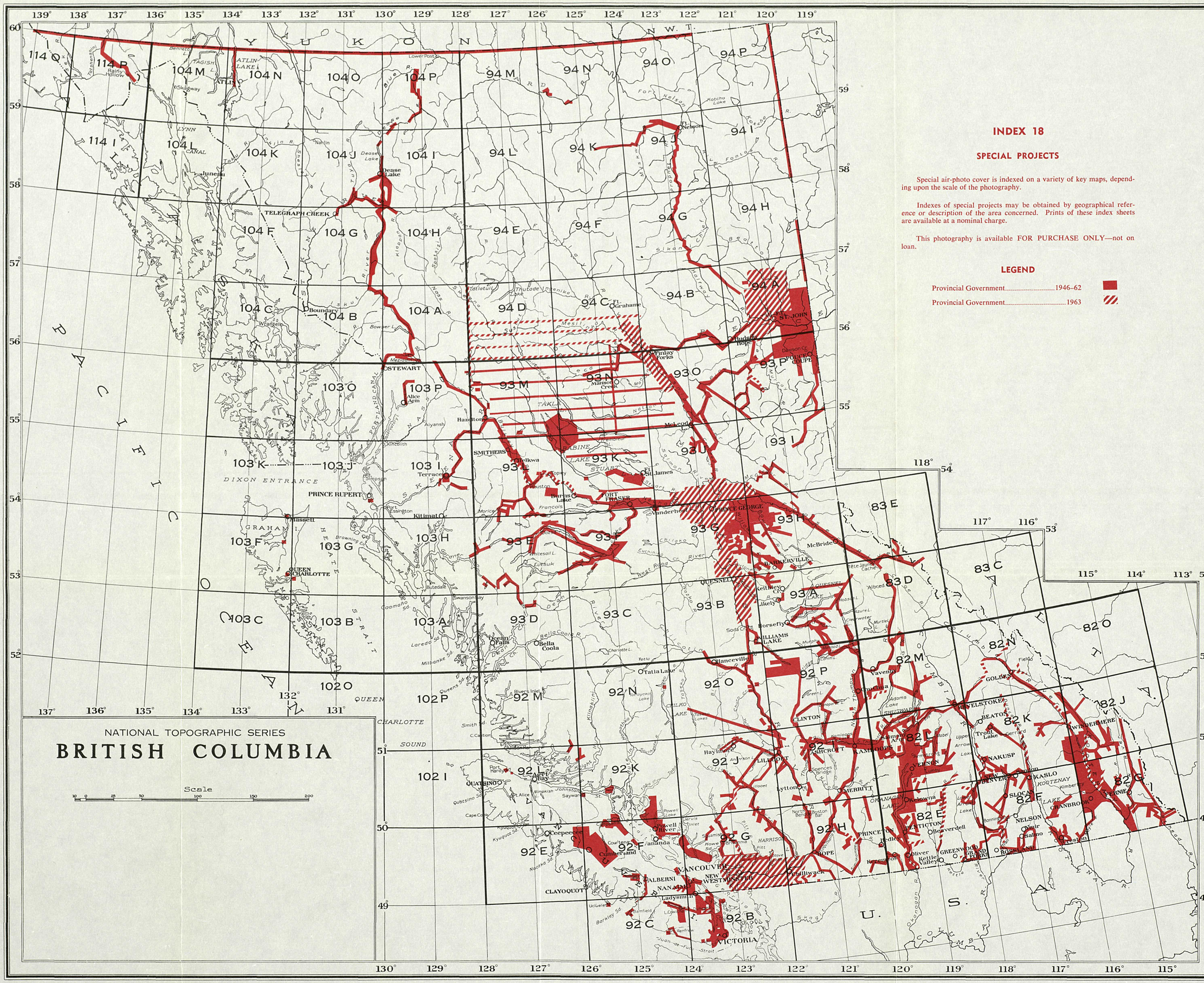
Further information regarding Federal Government photographs and prices may be obtained by writing direct to:—

National Air Photo Library,
Department of Mines and Technical Surveys,
Ottawa, Ont.








INDEX 18
SPECIAL PROJECTS
Special air-photo cover is indexed on a variety of key maps, depending upon the scale of the photography.
Indexes of special projects may be obtained by geographical reference or description of the area concerned. Prints of these index sheets are available at a nominal charge.
This photography is available FOR PURCHASE ONLY—not on loan.
LEGEND
Provincial Government 1946–62
Provincial Government 1963
NATIONAL TOPOGRAPHIC SERIES
BRITISH COLUMBIA
Scale
YUKON
N.W.T.
ALBERTA
PACIFIC OCEAN
U.S.
QUEEN CHARLOTTE SOUND
DIXON ENTRANCE
HECATE STRAIT
Juan de Fuca Strait
114 O
114 P
104 M
104 N
104 O
104 P
94 M
94 N
94 O
94 P
114 I
104 L
104 K
104 J
104 I
94 L
94 K
94 J
94 I
104 F
104 G
104 H
94 E
94 F
94 G
94 H
104 C
104 B
104 A
94 D
94 C
94 B
94 A
103 O
103 P
93 M
93 N
93 O
93 P
103 K
103 J
103 I
93 L
93 K
93 J
93 I
103 F
103 G
103 H
93 E
93 F
93 G
93 H
103 C
103 B
103 A
93 D
93 C
93 B
93 A
102 O
102 P
92 M
92 N
92 O
92 P
102 I
92 I
92 K
92 J
92 E
92 F
92 G
92 H
92 C
92 B
83 E
83 D
83 C
82 O
82 N
82 M
82 L
82 K
82 J
82 I
82 G
82 F
82 E
Whitehorse
Dawson
Mayo
Carmacks
Faro
Watson Lake
Teslin
Atlin
Lower Post
Fort Nelson
Kotcho Lake
Ft. Nelson
Kechika R.
Liard R.
Fontas R.
Muskwa R.
Prophet R.
Sikanni Chief R.
Beatton R.
Halfway R.
Pine R.
Peace R.
Ft. St. John
Hudson Hope
Dawson Cr.
Pouce Coupe
Finlay Forks
Mesilinka R.
Omineca R.
Manson Creek
Germansen Landing
Takla Lake
Nation R.
Mackenzie
McLeod L.
Parsnip R.
Pack R.
Crooked R.
Ingenika
Thutade Lake
Tatlatui L.
Ft. Grahame
Bowser L.
Bell-Irving R.
Iskut R.
Stikine R.
Spatsizi R.
Klappan R.
Dease R.
Dease Lake
Telegraph Creek
Boundary
Wrangell
Stewart
Mezidon Mt.
Alice Arm
Hazelton
Aiyansh
Kitwanga
Kispiox
Skeena R.
Nass R.
Nass Camp
Meziadin Lake
Bowser L.
Port Edward
Prince Rupert
Port Essington
Kitimat
Terrace
Kitsumkalum
Usk
Lakelse L.
Kitsumgallum L.
Copper R.
Zymoetz R.
Kitseguecla
Hazelton
Moricetown
Smithers
Telkwa
Houston
Burns Lake
Francois L.
Whitesail L.
Fulton R.
Morice R.
Morice L.
Babine L.
Babine Lake
Stuart L.
Fraser R.
Fort Fraser
Ft. St. James
Ft. George
Prince George
Vanderhoof
Nechako R.
Stuart R.
Salmon R.
Bulkley R.
Bulkley Valley
Telkwa
Houston
Burns Lake
Francois L.
Whitesail L.
Fulton R.
Morice R.
Morice L.
Babine L.
Babine Lake
Stuart L.
Fraser R.
Fort Fraser
Ft. St. James
Ft. George
Prince George
Vanderhoof
Nechako R.
Stuart R.
Salmon R.
Bulkley R.
Bulkley Valley
Massett
Graham I.
Queen Charlotte
Queen Charlotte Is.
Skidegate
Skidegate Inlet
Masset Sd.
Juskatla
Tasu
Sandspit
Moresby I.
Rose Spit
Cape Ball
Cape Fife
Cape Knox
Cape Lyell
Cape Ball
Cape Fife
Cape Knox
Cape Lyell
Swanson Bay
Ocean Falls
Bella Coola
Bella Coola R.
Dean R.
Dean Channel
Kwatna R.
Kwatna Bay
Rivers Inlet
Smith Sd.
Caution
Fitz Hugh Sd.
Laredo Sd.
Milbanke Sd.
Queens Sd.
Burke Channel
Tatla Lake
Tatlayoko Lake
Chilko R.
Chilko Lake
Chilcotin R.
Chilanko R.
Chilanko Forks
Alexis Creek
Anahim Lake
Nazko
Quesnel
Quesnel L.
Quesnel R.
Cariboo R.
Cariboo Mts.
Cariboo Lake
Williams Lake
Horsefly
Soda Creek
Likely
Alkali Lake
Dog Creek
Big Bar L.
Big Bar Creek
Bridge R.
Bridge River
Lillooet
Lytton
Spences Bridge
Thompson R.
Nicola R.
Nicola L.
Merritt
Nicola
Princeton
Hope
Fraser R.
Fraser Canyon
Yale
Chilliwack
Vancouver
New Westminster
Victoria
Saanich
Sooke
Duncan
Cowichan L.
Cowichan Lake
Nanaimo
Ladysmith
Chemainus
Crofton
Duncan
Cowichan L.
Cowichan Lake
Nanaimo
Ladysmith
Chemainus
Crofton
Courtenay
Cumberland
Comox
Campbell River
Quadra I.
Sayward
Port Alice
Port Hardy
Quatsino
Quatsino Sd.
Cape Scott
Cape Cook
Wimpkish
Johnstone Str.
Knight Inlet
Kyuquot Sd.
Nootka Sd.
Clayoquot
Ucluelet
Barkley Sd.
Alberni
Port Alberni
Cameron L.
Great Central L.
Sproat L.
Somass R.
Stamp R.
Ash R.
Kennedy L.
Alberni Canal
Toba R.
Toba Inlet
Powell River
Powell Lake
Jervis Inlet
Sechelt
Pender Harbour
Howe Sd.
Squamish
Pemberton
Lillooet L.
Harrison L.
Harrison R.
Harrison Hot Springs
Agassiz
Chilliwack
Sumas
Abbotsford
Mission
Matsqui
Langley
Surrey
White Rock
Blaine
Boundary Bay
Fraser R.
Fraser Delta
Fraser Canyon
Yale
Chilliwack
Vancouver
New Westminster
Victoria
Saanich
Sooke
Duncan
Cowichan L.
Cowichan Lake
Nanaimo
Ladysmith
Chemainus
Crofton
Courtenay
Cumberland
Comox
Campbell River
Quadra I.
Sayward
Port Alice
Port Hardy
Quatsino
Quatsino Sd.
Cape Scott
Cape Cook
Wimpkish
Johnstone Str.
Knight Inlet
Kyuquot Sd.
Nootka Sd.
Clayoquot
Ucluelet
Barkley Sd.
Alberni
Port Alberni
Cameron L.
Great Central L.
Sproat L.
Somass R.
Stamp R.
Ash R.
Kennedy L.
Alberni Canal
Toba R.
Toba Inlet
Powell River
Powell Lake
Jervis Inlet
Sechelt
Pender Harbour
Howe Sd.
Squamish
Pemberton
Lillooet L.
Harrison L.
Harrison R.
Harrison Hot Springs
Agassiz
Chilliwack
Sumas
Abbotsford
Mission
Matsqui
Langley
Surrey
White Rock
Blaine
Boundary Bay
Fraser R.
Fraser Delta
Hudson's Hope
Finlay Forks
Dawson Cr.
Pouce Coupe
Peace R.
Ft. St. John
Beatton R.
Halfway R.
Pine R.
Prophet R.
Muskwa R.
Fontas R.
Kechika R.
Liard R.
Kotcho R.
Kotcho Lake
Fort Nelson
Ft. Nelson
Sikanni Chief R.
Sikanni Chief
Fort Ware
Finlay R.
Omineca R.
Germansen Landing
Manson Creek
Takla Lake
Nation R.
Mackenzie
McLeod L.
Parsnip R.
Pack R.
Crooked R.
Ingenika
Thutade Lake
Tatlatui L.
Ft. Grahame
Bowser L.
Bell-Irving R.
Iskut R.
Stikine R.
Spatsizi R.
Klappan R.
Dease R.
Dease Lake
Telegraph Creek
Boundary
Wrangell
Stewart
Mezidon Mt.
Alice Arm
Hazelton
Aiyansh
Kitwanga
Kispiox
Skeena R.
Nass R.
Nass Camp
Meziadin Lake
Bowser L.
Port Edward
Prince Rupert
Port Essington
Kitimat
Terrace
Kitsumkalum
Usk
Lakelse L.
Kitsumgallum L.
Copper R.
Zymoetz R.
Kitseguecla
Hazelton
Moricetown
Smithers
Telkwa
Houston
Burns Lake
Francois L.
Whitesail L.
Fulton R.
Morice R.
Morice L.
Babine L.
Babine Lake
Stuart L.
Fraser R.
Fort Fraser
Ft. St. James
Ft. George
Prince George
Vanderhoof
Nechako R.
Stuart R.
Salmon R.
Bulkley R.
Bulkley Valley
Massett
Graham I.
Queen Charlotte
Queen Charlotte Is.
Skidegate
Skidegate Inlet
Masset Sd.
Juskatla
Tasu
Sandspit
Moresby I.
Rose Spit
Cape Ball
Cape Fife
Cape Knox
Cape Lyell
Cape Ball
Cape Fife
Cape Knox
Cape Lyell
Swanson Bay
Ocean Falls
Bella Coola
Bella Coola R.
Dean R.
Dean Channel
Kwatna R.
Kwatna Bay
Rivers Inlet
Smith Sd.
Caution
Fitz Hugh Sd.
Laredo Sd.
Milbanke Sd.
Queens Sd.
Burke Channel
Tatla Lake
Tatlayoko Lake
Chilko R.
Chilko Lake
Chilcotin R.
Chilanko R.
Chilanko Forks
Alexis Creek
Anahim Lake
Nazko
Quesnel
Quesnel L.
Quesnel R.
Cariboo R.
Cariboo Mts.
Cariboo Lake
Williams Lake
Horsefly
Soda Creek
Likely
Alkali Lake
Dog Creek
Big Bar L.
Big Bar Creek
Bridge R.
Bridge River
Lillooet
Lytton
Spences Bridge
Thompson R.
Nicola R.
Nicola L.
Merritt
Nicola
Princeton
Hope
Fraser R.
Fraser Canyon
Yale
Chilliwack
Vancouver
New Westminster
Victoria
Saanich
Sooke
Duncan
Cowichan L.
Cowichan Lake
Nanaimo
Ladysmith
Chemainus
Crofton
Courtenay
Cumberland
Comox
Campbell River
Quadra I.
Sayward
Port Alice
Port Hardy
Quatsino
Quatsino Sd.
Cape Scott
Cape Cook
Wimpkish
Johnstone Str.
Knight Inlet
Kyuquot Sd.
Nootka Sd.
Clayoquot
Ucluelet
Barkley Sd.
Alberni
Port Alberni
Cameron L.
Great Central L.
Sproat L.
Somass R.
Stamp R.
Ash R.
Kennedy L.
Alberni Canal
Toba R.
Toba Inlet
Powell River
Powell Lake
Jervis Inlet
Sechelt
Pender Harbour
Howe Sd.
Squamish
Pemberton
Lillooet L.
Harrison L.
Harrison R.
Harrison Hot Springs
Agassiz
Chilliwack
Sumas
Abbotsford
Mission
Matsqui
Langley
Surrey
White Rock
Blaine
Boundary Bay
Fraser R.
Fraser Delta
Revelstoke
Beaton
Trout Lake
Arrow Lakes
Nakusp
New Denver
Slocan
Kaslo
Kootenay Lake
Kootenay R.
Kimberley
Cranbrook
Fernie
Golden
Field
Yoho
Glacier
Mt. Revelstoke
Mt. Sir Donald
Mt. Cheops
Mt. Dawson
Mt. Selkirk
Mt. Sir Sandford
Mt. Bastion
Mt. Odin
Mt. Tupper
Mt. Begbie
Mt. Ida
Mt. Fidelity
Mt. Grand
Mt. Moloch
Mt. Goodsir
Mt. Vaux
Mt. Stanley
Mt. Assiniboine
Mt. Joffre
Mt. Robson
Mt. Hooker
Mt. Brown
Mt. Edith Cavell
Mt. Columbia
Mt. Alberta
Mt. Forbes
Mt. Lyell
Mt. Wilcox
Mt. Athabasca
Mt. Saskatchewan
Mt. Wilson
Mt. Chephren
Mt. Lefroy
Mt. Victoria
Mt. Temple
Mt. Hungabee
Mt. Deltaform
Mt. Goodsir
Mt. Vaux
Mt. Stanley
Mt. Assiniboine
Mt. Joffre
Mt. Robson
Mt. Hooker
Mt. Brown
Mt. Edith Cavell
Mt. Columbia
Mt. Alberta
Mt. Forbes
Mt. Lyell
Mt. Wilcox
Mt. Athabasca
Mt. Saskatchewan
Mt. Wilson
Mt. Chephren
Mt. Lefroy
Mt. Victoria
Mt. Temple
Mt. Hungabee
Mt. Deltaform