PROVINCE OF BRITISH COLUMBIA

ANNUAL REPORT

OF THE

LANDS AND SURVEY BRANCHES

OF THE

DEPARTMENT OF LANDS

FOR THE

YEAR ENDED DECEMBER 31ST, 1938

HON. A. WELLS GRAY, MINISTER OF LANDS

PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C.:
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1939.

VICTORIA, B.C., September 23rd, 1939.

To His Honour E. W. HAMBER,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

Herewith I beg respectfully to submit the Annual Report of the Lands and Survey Branches of the Department of Lands for the year ended December 31st, 1938.

A. WELLS GRAY,
Minister of Lands.

VICTORIA, B.C., September 23rd, 1939.

The Honourable A. W. Gray,
Minister of Lands, Victoria, B.C.

SIR,—I have the honour to submit the Annual Report of the Lands and Survey Branches of the Department of Lands for the twelve months ended December 31st, 1938.

I have the honour to be,

Sir,

Your obedient servant,

H. CATHCART,
Deputy Minister of Lands.

PART I.

DEPARTMENT OF LANDS.

TABLE OF CONTENTS.

	PAGE.
Report of Superintendent of Lands	5
Revenue	5
Sale of Town Lots	6
Pre-emption Records	7
Pre-emption and Homestead Exchanges	7
Land-sales	8
Land Inspections	9
Summary	10
Letters inward and outward	11
Coal Licences, Leases, etc.	11
Crown Grants issued	11
Total Acreage deeded	11
Home-site Leases	12

DEPARTMENT OF LANDS.

VICTORIA, B.C., September 23rd, 1939.

H. Cathcart, Esq.,
Deputy Minister of Lands, Victoria, B.C.

SIR,—I have the honour to submit herewith statements containing details of land administration by the Lands Branch of the Department of Lands during the year ended December 31st, 1938.

From an analysis of the figures presented it will be noted that there is practically no difference in the volume of business transacted during the previous year.

I have the honour to be,
Sir,
Your obedient servant,
NEWMAN TAYLOR,
Superintendent of Lands.

STATEMENT OF REVENUE, YEAR ENDED DECEMBER 31ST, 1938.

LAND-SALES.

	Victoria.	Agencies.	Total.
Under "Coal and Petroleum Act"	.....	.....	.....
Under "Taxation Act"—			
Special Regulations	$5,412.39	.....	$5,412.39
Under "Land Act"—			
Townsites	1,700.95	$17,065.36	18,766.31
Country lands	7,275.42	11,592.27	18,867.69
Reverted lands	30,353.38	4,735.98	35,089.36
Pre-empted lands	.....	433.88	433.88
Former Dominion Railway Belt lands	.....	7,110.93	7,110.93
Surface rights of mineral claims	.....	225.55	225.55
Totals	$44,742.14	$41,163.97	$85,906.11

SUNDRY REVENUE.

		Victoria.	Agencies.	Total.
Under "Land Act"—				
Sundry lease rentals		$80,294.92	.....	$80,294.92
Grazing rentals		5,987.08	.....	5,987.08
Survey fees—				
Under "Land Act"	$856.35			
Under former Dominion Railway Belt lands	194.12			
		356.35	$694.12	1,050.47
Sundry fees		14,200.33	987.00	15,187.33
Royalty		687.14	.....	687.14
Improvements		970.00	932.47	1,902.47
Rent of property		86.50	120.00	206.50
Mineral claims		279.91	2,468.87	2,748.78
Totals		$102,862.23	$5,202.46	$108,064.69

Revenue under "Coal and Petroleum Act."

	Victoria.	Agencies.	Total.
Coal licences	$2,700.00		$2,700.00
Coal rentals	7,147.71		7,147.71
Sundry fees	1,130.00		1,130.00
Lieu of work	200.00		200.00
Totals	$11,177.71		$11,177.71

Sundry Receipts.

Maps, blue-prints, etc.	$9,377.82		$9,377.82
Miscellaneous	122.72		122.72
Interest, Southern Okanagan Land Project	12,231.62		12,231.62
Revenue from lands transferred from the Dominion	12,139.57	$3,055.76	15,195.33
Totals	$33,871.73	$3,055.76	$36,927.49

Summary of Revenue.

Land sales	$44,742.14	$41,163.97	$85,906.11
Land revenue	102,862.23	5,202.46	108,064.69
"Coal and Petroleum Act"	11,177.71		11,177.71
Sundry receipts	33,871.73	3,055.76	36,927.49
Totals	$192,653.81	$49,422.19	$242,076.00

Summary of Cash received.

Revenue	$192,653.81	$49,422.19	$242,076.00
"Soldiers' Land Act"—			
Southern Okanagan Project	39,357.80		39,357.80
Houses, South Vancouver	388.52		388.52
"Better Housing Act"—			
Principal	55,550.00		55,550.00
Interest	37,057.86		37,057.86
Land Settlement Board—			
Land sales	53,341.25		53,341.25
Loans	25,711.68		25,711.68
Refund of advances and refund to votes, etc.	1,057.70		1,057.70
Totals	$405,118.62	$49,422.19	$454,540.81

SALE OF TOWN LOTS DURING 1938.

Disposal of 123 lots placed on the market at previous auction sales:—

24 lots at Oliver	$3,525.00
15 lots at Osoyoos	2,050.00
4 lots at Trail	775.00
15 lots at West Quesnel	760.00
12 lots at Zeballos	650.00
6 lots at Princeton	310.00
4 lots at Trout Lake	285.00
2 lots at Prince George	250.00
3 lots at Blue River	215.00
3 lots at Kimberley	175.00
And 35 lots in twenty-three other townsites	3,047.00
Total	$12,042.00

During the year an auction was held disposing of quite a number of lots in an addition to Zeballos; and chiefly for the purpose of making lots available as required, rather than from any immediate demand, seven other auctions were arranged and a total of 111 lots sold as follows:—

29 lots at Zeballos	$2,045.00
8 lots at Trail	1,830.00
15 lots at Hope	1,400.00
14 lots at Hedley	585.00
6 lots at West Quesnel	410.00
1 lot at Vancouver	400.00
2 lots at Willow River	235.00
36 lots at Smithers	180.00
Total	$7,085.00

Southern Okanagan Project sold 20 parcels, comprising 172.8 acres, the purchase price being $9,455.50.

In the University Hill Subdivision in Lot 140, New Westminster District (Endowment Lands), one lot was sold, price $1,305; one parcel leased to the City of Vancouver for school purposes for a rental of $100 per annum; and seven improved repossessed properties were disposed of for $38,436; while two leaseholders were allowed to convert their leases to agreements to purchase, the price of the two lots being $1,473.75 and $1,856.25 respectively.

PRE-EMPTION RECORDS, ETC., 1938.

Agency.	Pre-emption Records allowed.	Pre-emption Records cancelled.	Certificates of Purchase issued.	Certificates of Improvements issued.
Alberni	1	2	28	.....
Atlin	.....	5	1	.....
Clinton	40	27	19	21
Cranbrook	.....	1	14	1
Fernie	.....	2	8	.....
Fort Fraser	19	23	11	13
Golden	6	18	3	.....
Kamloops	27	36	42	17
Kaslo	.....	.....	4	.....
Nanaimo	4	8	29	.....
Nelson	5	5	98	.....
New Westminster	19	39	174	1
Penticton	9	19	36	3
Pouce Coupe	194	340	42	76
Prince George	44	42	29	28
Prince Rupert	8	12	10	.....
Quesnel	50	50	60	20
Revelstoke	7	5	9	2
Smithers	11	11	10	6
Telegraph Creek	.....	1	2	.....
Vancouver	5	6	59	.....
Vernon	6	12	15	.....
Victoria	1	3	1,114	.....
Totals	456	667	1,817	188

PRE-EMPTION AND HOMESTEAD EXCHANGES.

Under 1934 Amendment to "Land Act."

	No.
1935	41
1936	21
1937	37
1938	10
Total	109

LAND-SALES, 1938.

"Land Act"—	Acres.
Surveyed (first class)	786.49
Surveyed (second class)	2,518.61
Surveyed (third class)	572.66
	3,877.76
Unsurveyed	480.25
Total	4,278.01

LAND INSPECTIONS, 1938.

Agency.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Alberni	6	2	-----	-----	-----	-----	2	-----	4	-----	-----	-----	14
Atlin	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Clinton	30	-----	-----	-----	-----	10	-----	-----	21	5	37	89	192
Cranbrook	-----	-----	-----	-----	6	7	6	5	-----	-----	-----	-----	24
Fernie	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	1
Fort Fraser	8	1	1	4	5	-----	6	55	28	2	8	20	138
Golden	-----	-----	-----	-----	12	36	17	-----	5	-----	-----	-----	70
Kamloops	11	1	-----	3	11	11	27	12	56	43	24	9	208
Kaslo	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2
Nanaimo	5	2	-----	-----	-----	-----	1	-----	-----	1	-----	20	29
Nelson	2	-----	3	-----	6	-----	-----	-----	-----	1	21	2	35
New Westminster	6	9	-----	3	7	10	17	1	11	41	5	28	138
Penticton	-----	-----	-----	-----	6	12	9	2	3	5	4	1	42
Pouce Coupe	46	191	10	5	80	96	118	100	20	155	201	100	1,122
Prince George	4	1	1	1	3	7	2	158	35	99	4	-----	315
Prince Rupert	4	-----	-----	-----	-----	-----	-----	4	7	-----	10	4	29
Quesnel	1	-----	-----	1	1	1	8	30	100	72	31	22	267
Revelstoke	9	-----	-----	-----	-----	-----	-----	-----	12	25	-----	54	100
Smithers	-----	-----	1	-----	3	6	2	5	2	3	14	1	37
Telegraph Creek	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Vancouver	13	2	-----	-----	6	-----	1	5	2	20	7	12	68
Vernon	12	-----	-----	-----	6	5	17	2	-----	5	22	10	79
Victoria	-----	-----	-----	-----	3	-----	-----	-----	1	2	-----	4	10
Totals	159	209	16	17	156	201	233	379	307	479	388	376	2,920

SUMMARY.

	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
Pre-emption records	1,752	1,624	1,495	969	607	664	559	447	413	451
Certificates of improvements	326	328	217	154	123	196	245	276	217	208
Certificates of purchase	747	1,067	1,152	1,735	1,739	1,452	1,379	1,850	1,831	1,731
Crown grants	1,806	1,827	1,699	1,295	1,074	1,020	1,192	1,316	1,414	1,407
Total acreage deeded	512,844	215,364	163,161	116,990	68,945	173,632	81,110	84,442	71,018	74,175
Coal-prospecting licences	112	275	160	236	95	98	102	118	142	104
Sundry leases	51	113	104	122	92	92	121	157	190	195
Coal leases	1	12	6	17	.....	.....	5	17	2	15
Revenue received	$251,471.25*	$428,431.64	$381,860.60	$394,454.43	$346,299.34	$322,440.16	$339,053.79	$404,534.49	$434,213.55	$352,165.35
Letters received	53,835†	32,180	28,951	22,857	19,381	15,591	16,901	17,739	19,213	19,140
Letters sent	18,063	19,912	22,372	16,517	14,688	10,936	12,378	15,475	15,537	17,806

	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	1938.
Pre-emption records	524	934	2,441	1,202	485	478	343	347	416	456
Certificates of improvements	172	124	113	80	63	86	76	107	152	188
Certificates of purchase	1,448	1,432	1,444	1,254	1,211	1,903	1,490	1,701	1,939	1,817
Crown grants	1,636	1,213	1,027	795	758	1,123	1,211	1,028	1,226	1,063
Total acreage deeded	109,451	62,823	69,542	58,470	58,782	61,296.50	77,373.41	68,608.10	93,709.10	66,344.29
Coal-prospecting licences	160	235	203	137	33	83	41	54	47	21
Sundry leases	196	149	175	154	225	168	200	194	195	229
Coal leases	19	33	6	23	70	32	37	45	18	17
Revenue received	$618,435.93	$367,115.72	$346,339.89	$218,814.68	$201,213.80	$238,286.77	$217,822.38	$275,415.45	$243,741.08	$242,076.00
Letters received	18,751	21,834	26,304	26,620	25,106	26,699	22,573	21,572	21,691	22,263
Letters sent	14,839	16,581	19,153	34,402‡	22,420‡	22,217‡	18,194	19,796	19,224	19,662

* Cash received at Victoria only. † This included letters received by entire Department. ‡ Including circulars, statements, etc.

STATEMENT OF LETTERS INWARD AND OUTWARD, 1938.

Lands Branch.

Letters inward	22,263
Letters outward	19,662

Letters of Inquiry, 1938.

January	265	August	94
February	256	September	123
March	175	October	94
April	110	November	100
May	110	December	116
June	123		
July	104	Total	1,660

MINING LICENCES, LEASES, ETC., 1938.

Licences under "Coal and Petroleum Act."

	No.	Area (Acres).
Original licences issued	14	7,382.20
Renewal licences issued	7	3,414.00
Totals	21	10,796.20

Leases under "Coal and Petroleum Act."

New leases issued	6	3,229.00
Renewal leases issued	11	5,437.50
Totals	17	8,666.50

Sundry Leases under the "Land Act."

Leases issued	229	24,535.59

CROWN GRANTS ISSUED, 1938.

Pre-emptions	180
Dominion homesteads	121
Purchases (other than town lots)	161
Mineral claims	220
Town lots	188
Reverted lands (other than town lots)	54
Reverted town lots	37
Reverted mineral claims	73
Supplementary timber grants	14
"Dyking Assessment Act"	3
"Public Schools Act"	3
Miscellaneous	9
Total	1,063
Applications for Crown grants	1,162
Certified copies	6
Clearances of applications for leases of reverted mineral claims given	128

Total Acreage deeded.

Pre-emptions	25,810.67
Dominion homesteads	19,478.19
Mineral claims (other than reverted)	8,589.26
Reverted mineral claims	2,281.00
Purchase of survey Crown lands (other than town lots)	6,835.25
Purchase of reverted lands (other than town lots)	2,054.38
Supplementary timber grants	1,295.54
Total	66,344.29

HOME-SITE LEASES (NOT EXCEEDING 20 ACRES).

	No.		Total Annual Revenue.	Fiscal Year ended.
Leases existing on April 1st, 1929		67	.....	.....
Leases issued, April 1st, 1929, to March 31st, 1930	8		$522.55	March 31st, 1930
Leases issued, April 1st, 1930, to March 31st, 1931	12		636.45	March 31st, 1931
Leases issued, April 1st, 1931, to March 31st, 1932	11		759.95	March 31st, 1932
Leases issued, April 1st, 1932, to March 31st, 1933	31		980.05	March 31st, 1933
Leases issued, April 1st, 1933, to March 31st, 1934	23		1,246.65	March 31st, 1934
Leases issued, April 1st, 1934, to March 31st, 1935	24		1,302.52	March 31st, 1935
Leases issued, April 1st, 1935, to March 31st, 1936	18		1,391.72	March 31st, 1936
Leases issued, April 1st, 1936, to March 31st, 1937	26		1,440.25	March 31st, 1937
Leases issued, April 1st, 1937, to March 31st, 1938	15		1,468.90	March 31st, 1938
Leases issued, April 1st, 1938, to March 31st, 1939	29		1,557.40	March 31st, 1939
	—	197		
		264		
Leases cancelled during this period	49			
Leases Crown-granted	6			
	—	55		
Leases at present existing		209		
Total revenue received from April 1st, 1929, to March 31st, 1939			$11,306.44	

PART II.

SURVEY BRANCH.

TABLE OF CONTENTS.

	PAGE.
Report of the Surveyor-General	15
General Review of Field-work	16
Office-work	16
Report of Survey Branch	17
Table A—Summary of Office-work	17
Table B—List of Departmental Mineral Reference Maps	18
Table C—List of Departmental Reference Maps	19
Report of Geographic Division	22
Table D—List of Lithographed Maps	24
Reports of Surveyors—	
Topographical Surveys, Vancouver Island (R. D. McCaw)	26
Topographical Surveys, Vancouver Island (A. J. Campbell)	27
Topographical Surveys, Vancouver Island (N. C. Stewart)	29
Topographical Surveys, Vancouver Island (G. J. Jackson)	31
Triangulation Survey, Vancouver Island (F. C. Swannell)	33
Land Survey, Peace River District (D. Cran)	35

REPORT OF THE SURVEYOR-GENERAL.

VICTORIA, B.C., January 3rd, 1939.

H. Cathcart, Esq.,
Deputy Minister of Lands, Victoria, B.C.

SIR,—I have the honour to submit the following report on the operations of the Survey Branch for the year ended December 31st, 1938.

The field-work of the Survey Branch may be divided into three main classes: (1) Triangulation, this being the best and cheapest means of determining the true position of main features and of placing a rigid foundation under all other surveys; (2) topographical surveys, now mostly carried on with the aid of aerial photography, with ground control supplied by minor triangulation and the surveying camera; (3) cadastral surveys, in preparation for settlement.

The appropriation voted for surveys, though about one-third of the average of the past twenty years, took care of all urgent needs in connection with settlement and permitted a full season in the field for our topographical survey staff. It did not, however, permit any extension of our triangulation nets in the northern half of the Province—foundation-work needed there to guard against mistakes in planning transportation and development. The project of a highway to Alaska is steadily coming to the fore and for the intelligent consideration of routes much more topographical information than we now possess is required. There is an old and proven railway-construction maxim, " The cheapest tool with which to do grading is the transit."

In British Columbia, with its high relief, immense areas do not require the costly detailed subdivision necessary elsewhere. The blanket of protecting water-vapour in the atmosphere decreases rapidly with altitude, so radiation of heat becomes excessive and the consequent night frosts confine agriculture to the lower levels. Twenty-seven hundred to three thousand feet is, for example, the upper dependable limit for mixed farming in Cariboo. The Province has immense resources in grazing lands, timber, mineral, and water-power at levels above 3,000 feet. Altitude affects every activity, and in this country maps without contour-lines lose half their value. With our great area and small population low-cost mapping methods are essential if the work is to be done at all, and a finished job in one season over the area dealt with is necessary—mountain transportation being costly. A combination of triangulation, ground photography, and aerial photography, experimented with and worked out here, has solved this problem of permanent mapping with low cost for us, with the result that large areas of the Province abundantly justify such mapping. At this date we have satisfactory topographical maps covering one-seventh of the Province, and at the present rate of progress it will take 150 years to cover the entire area. That a speeding-up of this work would be justified may be indicated by the fact that 1 mile of mountain highway thereby saved would pay for 1,000 square miles of topographic mapping.

A list of maps published and those now in course of preparation is appended under the heading " Geographic Division " and this service is meeting the most urgent needs.

As usual the closest co-operative contact was maintained with the Dominion Government survey operations in the Province so that there should be no duplication of effort. In the belief that accurate mapping, no matter by which Government carried out, is of great value to the Province, we give all possible assistance in the way of information, land-ties, etc., to all, and in turn we have had much help from the photographic units of the Royal Canadian Air Force, as well as from the Surveyor-General and heads of the Geodetic, Hydrographic, and Geological Surveys of the Dominion. Under a rather informal but mutually beneficial arrangement much aerial photography on Vancouver Island and in Cariboo has been carried out by the Royal Canadian Air Force, the necessary ground work has been done by the topographers of the Provincial Surveys Branch, which also plotted the maps from the aerial and ground work; these maps were then sent to the Surveyor-General at Ottawa and were published in their well-equipped lithographic plant as sheets of the National Topographic Series; the Province bore only the cost of the ground work and plotting—a fair division of costs as the resulting published maps serve the purposes of the Department of National Defence, the

Geological Survey, and of the Province. It is hoped that this arrangement can continue as each service is performing the work it can do most efficiently and the benefits are about proportional to the respective costs.

GENERAL REVIEW OF FIELD-WORK.

Four survey parties were engaged on photo-topographical control-work on the west coast of Vancouver Island, these parties being in charge of Messrs. McCaw, Campbell, Stewart, and Jackson, all British Columbia Land Surveyors of the permanent staff. Mr. F. C. Swannell, B.C.L.S., was in charge of the main control triangulation assisting the above parties, and in all about 1,500 square miles was covered in sufficient detail to permit of the publication of maps on the 1-mile scale with 100-foot contours.

In addition to the topographical work above described, a survey party under Mr. Duncan Cran, B.C.L.S., of Fort St. John, laid out 140 quarter-sections for settlement in the former Dominion Peace River Block, and some minor surveys throughout the Province were carried out by surveyors resident near them.

OFFICE-WORK.

The office staff is divided into three main sections—namely, the Survey Division, the Geographic Division, and the Topographic Division. Reports compiled by F. O. Morris and G. G. Aitken for the Survey and Geographic Divisions, respectively, and reports by the surveyors heading the field parties of the Topographic Division, and by Messrs. Swannell and Cran are attached hereto.

The tables show little change in the volume of office-work from last year. About 90 per cent. of the land surveyors of the Province are in private practice, and these surveyors are responsible for the surveys of mineral claims and other classes of Crown lands. The field-notes and plans of such surveys are filed in this office and a considerable proportion of the staff is engaged in checking and replotting these surveys.

The draughting staff is mostly composed of men of long experience and, though the average age is high, we were fortunate in retaining the efficient services of all throughout the year. Several apprentice draughtsmen are being trained to carry on the work as age gradually forces the older men into retirement. There is a steady increase in the use of the Surveys Branch by other departments in the preparation of descriptions and other services for which our men are well fitted.

I have the honour to be,

Sir,

Your obedient servant,

F. C. GREEN,

Surveyor-General.

APPENDIX TO REPORT OF SURVEYOR-GENERAL.

SURVEY BRANCH.

This Branch deals with the general correspondence, the supply of survey information to land surveyors and the general public, preparation of instructions for surveying, checking survey field-notes and plotting official plans therefrom, clearing all applications, and many minor activities. In the average day's work it is found necessary to secure and consult 100 documents from the vault. An efficient blue and ozalid printing plant is maintained.

Departmental Reference Maps.—In order to keep a proper graphic record of alienations and inquiries, reference maps, generally on the scale of 1 mile to 1 inch, and mineral reference maps on the scale of 1,500 feet to 1 inch, drawn on tracing-linen, are maintained by the Survey Branch. There are now 188 reference maps and 72 mineral reference maps, making a total of 260 maps. The work of keeping these up to date—(1) by adding new survey information as it becomes available, and (2) by renewing same when worn out with constant use and handling in the blue-print machines—forms a considerable portion of the work of the Branch. During the year eleven reference maps were recompiled. Tables B and C, attached hereto, give a list of these reference maps.

Table A, which follows, summarizes the main items of work.

TABLE A.—SUMMARY OF OFFICE-WORK FOR THE YEAR 1938, SURVEY BRANCH.

Number of field-books received	608
" lots surveyed	633
" lots plotted	620
" lots gazetted	451
" lots cancelled	9
" mineral-claim field-books prepared	593
" reference maps compiled	11
" applications for purchase cleared	138
" applications for pre-emption cleared	581
" applications for lease cleared	377
" coal licences cleared	31
" water licences cleared	197
" timber-sales cleared	1,778
" free-use permits cleared	412
" hand-loggers' licences cleared	25
" Crown-grant applications cleared	1,108
" reverted-land clearances	559
" cancellations made	1,348
" inquiries cleared	2,360
" placer-mining leases plotted on maps	421
" letters received	5,689
" letters sent out	4,154
" Crown-grant and lease tracings made in duplicate	1,299
" miscellaneous tracings made	215
" Government Agents' tracings made	150
" blue-prints made	26,310
Revenue received from sale of blue-prints from other departments and public	$5,334.65
Value of blue-prints for Lands Department	$3,852.20
Number of documents consulted and filed in vault	29,746

Table B.—List of Departmental Mineral Reference Maps.

No.	Title of Reference Map.
8T280.	Taku Arm of Tagish Lake; Engineer Mine.
2T294.	Atlin and Pine Creek.
3T269.	Portland Canal; Stewart; Marmot River to Bitter Creek.
4T269.	Premier Mine; Big Missouri; Rufus Argenta.
5T269.	Salmon and Dilworth Glaciers.
8T294.	Upper Bear Valley; George Copper Mine to Meziadin Lake.
7T269.	Upper Kitsault River; Dolly Varden Mine.
8T269.	Lower Kitsault River and Alice Arm.
11T286.	Smithers; Hudson Bay Mountain; Duthie Mine.
19T269.	Owen Lake.
20T269.	Topley-Richfield Mine.
5T280.	Phillips Arm; Fanny Bay; Thurlow and Sonora Islands.
4T294.	Coast Copper Mine; Elk River and Kathleen Lake.
17T269.	Northerly Portion of Texada Island.
12T286.	Britannia Mine, westerly portion; Howe Sound.
1T294.	Britannia Mine, easterly portion.
13T269.	Princeton and Copper Mountain.
16T269.	Hedley Camp.
5T294.	Keremeos; Olalla; Hedley Lake.
1T280.	South Okanagan and Fairview Camp.
18T269.	Camp McKinney; Rock Creek.
15T269.	Wallace Mountain, Beaverdell, and Carmi.
4T300.	Horseshoe Mountain; Canyon Creek; Kettle River.
12T269.	Franklin and Burrell Creeks.
10T269.	Greenwood; Ingram Creek to Eholt.
9T269.	Grand Forks and Granby River.
3T294.	Christina Lake to Big Sheep Creek.
3T280.	Rossland; Big Sheep Creek to Columbia River.
9T300.	Reeves-McDonald Mine; Pend d'Oreille River.
7T300.	South Fork of Salmo River and Priest River.
10T286.	Summit Creek, Headwaters of Sheep Creek, and John Bull Mountain.
7T280.	Sheep Creek and Salmo.
6T286.	Beaver Creek; Erie to Fruitvale.
6T280.	Trail; Part of Rossland; Murphy Creek.
10T300.	Poupore Creek, Castlegar, and West to Shields.
10T280.	Castlegar and East to Erie Creek.
2T280.	Ymir and Porcupine Creeks.
8T300.	Kootenay Landing and Cultus Creek.
5T300.	Kootenay Lake, Midge Creek, and Headwaters of Ymir Creek.
1T300.	Nelson and South to Hall Creek.
6T300.	Kootenay River; Beasley to Thrums.
2T300.	Ainsworth, Kokanee Park, and Slocan. (40 chains=1 inch.)
3T300.	Kaslo, Sandon, and Silverton. (40 chains=1 inch.)
4T286.	Lardeau River, Poplar to Bosworth.
1T286.	Lardeau River, Poplar to Gerrard.
3T286.	Trout Lake and Lardeau Creek.
8T286.	Duncan River to Headwaters of Healy Creek.
5T286.	Ferguson to Westfall River.
7T286.	Camborne, Incomappleux River, and Poole Creek.
2T286.	Sullivan Mine and Kimberley Area.
9T280.	Fort Steele and Wild Horse Creek.
12T280.	Moyie Lake.
21T269.	Bridge River; Pioneer, Bralorne, and Minto Mines.
8T332.	Bridge River; Tyaughton Creek to Rexmount.
24T269.	McGillivray Creek and Headwaters of Cadwallader Creek.
25T269.	Gun and Tyaughton Creeks.
22T269.	Anyox; Hastings Arm to Portland Canal.
11T269.	McRae Creek; Coryell and Paulson to Porcupine.
11T300.	Headwaters of Big Sheep Creek.
14T269.	Headwaters of Boundary and Pass Creeks.
23T269.	Windfall (Lost) Creek to Kettle River.
9T294.	Williams Creek; vicinity of Barkerville.
13T280.	Osoyoos and Vicinity.
1T332.	Monashee Creek; Cherry Creek (contoured).
2T332.	Lightning Peak and Headwaters of Granby River (contoured).
3T332.	Lightning Creek, Cottonwood and Swift Rivers.
4T332.	Upper Antler Creek, Cunningham Creek, and Swamp River (contoured).
5T332.	Cariboo Mountain, Swift River, and Little Swift River (contoured).
6T332.	Swift River and Fountain Creek (contoured).
7T332.	Rock Creek, Westbridge, and Kettle River.
10T332.	Zeballos and Tasis Rivers.
10T215.	Stump Lake; Nicola Valley.

Note.—These mineral reference maps show surveyed mineral claims. They are compiled from all available data and are constantly being amended, and their accuracy is therefore not guaranteed. They were prepared originally for departmental use, and, having proved of value to the public, prints of same are now on sale.

The above maps are on the scale of 1,500 feet to 1 inch, except where otherwise noted. Blue prints and Ozalid prints can be obtained for $1 each. (Ozalid prints have deep brown lines on a white background.)

Orders, or inquiries, should quote the map number, and be addressed to:—

Surveyor-General, Lands Department, Victoria, B.C.

Victoria, B.C., January 2nd, 1939.

Table C.—List of Departmental Reference Maps.

No.	Title of Reference Map.
1.	West Coast, V.I. (Barkley Sound, Southerly).
1A.	West Coast, V.I. (Toquart Harbour and Great Central Lake).
1B.	West Coast, V.I. (Kennedy Lake and Clayoquot Sound).
2.	West Coast, V.I. (Nootka District).
3.	Belize and Seymour Inlets and Smith Sound.
3A.	Quatsino Sound and West Portion of Rupert District.
3B.	Gilford, Cracroft, and Broughton Islands.
3C.	Nimpkish River Valley and Lake.
3D.	West Coast, V.I. (Quatsino Sound and Kyuquot).
4.	Knight and Loughborough Inlets.
4A.	Sayward District, Thurlow and Quadra Islands.
4B.	Bute Inlet.
5.	Texada Island and West Portion, New Westminster District.
5A.	Lower Fraser River; New Westminster City to Fort Langley, Pitt Lake, and Indian Arm.
5B.	Sechelt Inlet and Howe Sound.
5C.	Harrison Lake, Pitt River, and Lillooet River Valley.
5D.	Sumas, Alouette, and Stave Lakes.
6.	Redonda Islands, Powell Lake, and Toba Inlet.
6A.	Nicola Valley.
6B.	Aspen Grove and Tulameen.
6C.	Princeton, Ashnola, and South Similkameen River Valleys.
7.	North Okanagan and Vernon.
7A.	Penticton, Kelowna, and Okanagan Lake.
7B.	Oliver and South Okanagan.
8.	Greenwood, Rock Creek, and Beaverdell.
9.	Mission Creek and Kettle River Headwaters.
10.	Mabel Lake, Lumby, and Sugar Lake.
11.	Clearwater and Murtle River Valleys.
11A.	Bonaparte River, North Thompson River Valley (Railway Belt to Mt. Olie).
12.	Dean and Burke Channels and Bella Coola Valley.
12A.	Dean (Salmon) River Valley.
12B.	Kimsquit and West Side of Dean Channel.
13.	Rivers Inlet and Fitzhugh Sound.
14.	Banks and McCauley and Porcher Islands.
14A.	Graham Reach, Gardner Canal, and Kitimat Arm.
14B.	Kitlobe River and West End of Eutsuk and Whitesail Lakes.
14C.	Grenville, Squally, and Douglas Channels.
15.	Moresby Island, Northern Portion.
15A.	Moresby Island, Southern Portion.
16.	Graham Island, North-east Portion.
16A.	Graham Island, South Portion.
16B.	Graham Island, North-west Portion.
17.	Portland Canal and Observatory Inlet.
17A.	Upper Skeena and Babine River Valleys.
17B.	Nass and Kitwancool River Valleys.
18.	Upper Fraser and Morkill River Valleys.
18A.	Upper Fraser River Valley and Robson Park.
18B.	Tête Jaune, Swift Creek, and Albreda.
19.	Skeena and Zymoetz River Valleys.
19A.	Skeena and Kitimat River Valleys.
19B.	Prince Rupert, Mouth of Skeena River.
20.	Skeena and Bulkley Valleys, vicinity of Hazelton.
21.	Barkerville, Willow and Bowron River Headwaters.
21A.	Fraser Lake, Endako River, and South End of Stuart Lake.
21B.	Endako River and South End of Babine Lake.
22.	Bowron and Upper Fraser River Valley (vicinity of Hutton).
22A.	Fraser River, Fort George, South.
22B.	Portion of Nechako, Stuart, and Salmon River Valleys.
22C.	Blackwater and Chilako River Valleys.
22D.	Fraser and Cottonwood River Valleys.
22E.	McBride, Goat, and Upper Fraser River Valleys.
23.	Quesnel Lake (North and East Arm) and Headwaters of North Thompson River.
23A.	Quesnel Forks and Swamp River.
23B.	Fraser River, Quesnel, South.
23C.	Nazko River Valley.
24.	150-Mile House and Harpers Camp.
24A.	Bridge River, Anderson and Seton Lakes, Lillooet District.
24B.	Lillooet District (Clinton and Green Lakes).
25.	Mainland Coast, Princess Royal and adjacent Islands.
25A.	Bella Bella and Milbanke Sound.
26.	Dundas and adjacent Islands.
27.	Fraser River Valley (Williams Lake and Soda Creek).
27A.	Lac la Hache and Lone Butte.
27B.	Fraser River Valley, Gang Ranch, North.
27C.	Fraser River, vicinity of Big Bar Creek.
28.	North Part of Babine and Takla Lakes.
28A.	Stuart, Pinchi, and Trembleur Lakes and Middle River.
28B.	Nation River and Lakes.
29.	Chilcotin and Chilanko Rivers, West of 124th Meridian.
29A.	Charlotte Lake and Bella Coola River Headwaters.
29B.	Chilcotin River Valley, vicinity of Alexis Creek.
29C.	Hanceville, Big Creek, and Taseko River.
30.	Canim Lake and North Thompson River, vicinity of Vavenby.
31.	Bulkley Valley.
31A.	Central Part, Babine Lake.
32.	Crooked River, McLeod Lake, and Upper Parsnip River.
32A.	Tatla, Tatlayoko, and North End of Chilko Lakes.

TABLE C—LIST OF DEPARTMENTAL REFERENCE MAPS—*Continued.*

No.	Title of Reference Map.
32B.	Homathko and Klinaklini River Valleys.
33.	Fraser River Valley, Fort George, North.
34.	Lot 4593, Kootenay District, Flathead River.
35.	North Saltspring, Ladysmith, and adjacent Islands. (2 in.=1 mile.)
36.	Upper Fraser River (vicinity of Hansard and McGregor River Valley).
36A.	Headwaters of Wapiti and Herrick Rivers.
37.	Nechako River, Cluculz and Bednesti Lakes.
38A.	Finlay River Valley. (½ in.=1 mile.)
38B.	Groundhog Coal Area and Upper Stikine River Valley. (½ in.=1 mile.)
38C.	Groundhog Coal Area and Upper Skeena and Nass Rivers. (½ in.=1 mile.)
39.	West End of Ootsa Lake.
39A.	Eutsuk Lake.
40.	Euchiniko and Tetachuck Lakes.
41.	Upper Nechako River and Tachick Lake.
42.	Big Bend, Kootenay District.
42A.	Adams Lake and River.
42B.	Canoe and North Thompson River Valleys (Blue River).
42C.	Columbia River Valley (vicinity of Bush River).
43.	Pouce Coupé, Rolla, Dawson Creek, and Arras.
43A.	Blueberry River and Rose Prairie.
43B.	Peace River, Hudson Hope, and Fort St. John.
43C.	Moberly Lake, Pine River, and Cowie Creek.
44.	Kiskatinaw, Murray, and Sukunka Rivers.
44A.	Wapiti, Murray, and Head of Parsnip Rivers.
45.	Nanaimo, Alberni, and adjacent Districts.
46.	Sooke, Malahat, and Metchosin Districts. (2 in.=1 mile.)
47.	Peace River, West of Dominion Block.
48.	Parsnip and Nation Rivers.
49.	Misinchinka River and Pine River Pass.
50.	Halfway, Peace, and Graham River Valleys.
51.	Fort Grahame and Finlay River.
52.	Atlin Lake and vicinity. (½ in.=1 mile.)
53.	Telegraph Creek and Stikine River Valley. (½ in.=1 mile.)
54.	Upper Nass River Valley and Meziadin Lake.
55.	Salmon River Headwaters and McLeod River.
56.	Driftwood River and North End of Tatla Lake.
57.	Headwaters of Omineca River.
58.	Finlay Forks and Parsnip River.
59.	Ingenika and Mesilinka Rivers. (½ in.=1 mile.)
60.	Taseko Lake and Head of Bridge River.
61.	South Fork of Bridge River and Head of Lillooet River.
62.	Head of Jervis Inlet and Squamish River.
63.	Lillooet Lake and Green River.
64.	Shawnigan and Sooke Lakes, and parts of Malahat, Shawnigan, and Helmcken Districts. (2 in.=1 mile.)
65.	Fraser River Mouth, Burrard Inlet, and Southern Part of Howe Sound.
66.	Fortress Lake and Bush River, East Kootenay.
67.	Dean River and Anahim Lake.
68.	Baezaeko and Chilcotin River Headwaters.
69.	Comox, Buttle Lake, and Strathcona Park.
70.	Cowichan Lake, Port Renfrew, and Jordan River.
71.	Klinaklini River Headwaters.
72.	Head of Knight Inlet.
73.	Dease Lake. (½ in.=1 mile.)
74.	Taku River, Cassiar District. (½ in.=1 mile.)
75.	Iskut River and Lower Stikine River. (½ in.=1 mile.)
76.	Klehini River and Rainy Hollow. (½ in.=1 mile.)
77.	Houston and Morice River.
78.	Teslin Lake. (½ in.=1 mile.)
79.	Dease River and McDame Creek. (½ in.=1 mile.)
80.	Burns Lake and West End of Francois Lake.
81.	Seymour Inlet and Wakeman River.
82.	Head of Rivers Inlet and Owikeno Lake.
83.	Bella Coola Valley.
84.	Work Channel and Nass Bay.
85.	Francois Lake and East End of Ootsa Lake.
86.	Lower Fraser Valley, Chilliwack to Hope.
87.	Yale to North Bend.
88.	Lytton, Spences Bridge.
89.	Ashcroft and Thompson River Valley.
90.	Kamloops and North Thompson River.
91.	South Thompson River, Salmon Arm, and Shuswap Lake.
92.	Sicamous, Shuswap Lake, and Mabel Lake.
93.	Adams Lake, Seymour Arm, and Shuswap Lake.
94.	Seymour River and Columbia River Valley North of Revelstoke.
95.	Illecillewaet River, Glacier Park, and Donald.
96.	Golden, Columbia River, and Kicking Horse River.
97.	Muskwa, Prophet, and Sikanni Chief Rivers. (½ in.=1 mile.)
98.	Nig Creek, Sikanni Chief, and Beatton Rivers. (½ in.=1 mile.)
99.	Headwaters of Moberley River and parts of Peace and Pine Rivers.
100.	Skeena and Kitsumgallum River Valleys.
101.	Skeena River Valley, Vanarsdol, and Dorreen.
102.	Manson Creek and Omineca River.
103.	Victoria and vicinity. (2 in.=1 mile.)
104.	Saanich Peninsula and adjacent Islands. (2 in.=1 mile.)
105.	Galiano and Saturna Islands. (2 in.=1 mile.)
106.	Nanaimo, Gabriola Island, Roberts Creek, and Trail Bay.

No.	Title of Reference Map.
15–0.	Upper Elk and White River Valleys.
15–9N.	Fernie and Crowsnest vicinity.
15–9S.	Elko and vicinity.
16–9N.	Kootenay River Valley and Cranbrook.
16–9S.	Moyie River Valley.
17–0N.	Duncan River and Gerrard.
17–0S.	Duncan Lake and North End of Kootenay Lake.
17–9N.	Kootenay Lake, vicinity of Kaslo.
17–9S.	Nelson, Salmon River Valley, and South End of Kootenay Lake.
18–9N.	Edgewood and Slocan River Valley.
18–9S.	Rossland and South End of Lower Arrow Lake.
18–20.	Nakusp and Upper Arrow Lake.
21–23.	Columbia and Windermere Lakes.
27–29.	Columbia River Valley, Wilmer and Spillimacheen.
30–32.	Trout and Upper Arrow Lakes.

NOTE.—These reference maps show lands alienated and applied for, "Timber Limits," "Coal Licences," etc., surveyed and unsurveyed. They are compiled from all available data and are constantly being amended, and their accuracy is therefore not guaranteed. They were prepared originally for departmental use, and, having proved of value to the public, prints of same are now on sale.

The above maps are on the scale of 1 mile to 1 inch, except where otherwise noted. BLUE prints and OZALID prints can be obtained for the sum of $1 each. (OZALID prints have deep brown lines on a white background.)

Orders, or inquiries, should quote the map number, and be addressed to:—

SURVEYOR-GENERAL, LANDS DEPARTMENT, VICTORIA, B.C.

Victoria, B.C., January 2nd, 1939.

GEOGRAPHIC DIVISION.

MAPS.

Published.

Name.	No. of Copies.	Date of Issue.	Dept. Map No.	Scale.	Area in Sq. Miles.
Lillooet Pre-emptors' Map	4,000	July, 1938	3K	3 mi. to 1 in.	11,700

In Course of Printing.

Southerly Vancouver Island, standard edition	10,000	May, 1938	2A	4 mi. to 1 in.	16,000

In Course of Preparation.

1. Hope-Princeton degree sheet, contoured	.....	.....	4Q	2 mi. to 1 in.	3,100
2. Highway and Travel Map of British Columbia	.....	.....	P.W.D.	20 mi. to 1 in.	.....
3. Big Bend Pre-emptors' Map	.....	.....	3R	3 mi. to 1 in.	11,000
4. Windermere Degree Sheet	.....	.....	4G	2 mi. to 1 in.	3,100
5. Stuart Lake Pre-emptors' Map	.....	.....	3C	3 mi. to 1 in.	9,000
6. Geological Map—P.G.E. Rly. Resources Survey of 1929 and 1930	.....	.....	Special	10 mi. to 1 in.	30,500

GEOGRAPHIC BOARD OF CANADA, NAMING AND RECORDING.

	1938.
Map-sheets, namings reviewed	17
Recommendations to Geographic Board	701
New names recorded	355

GEOGRAPHICAL WORK FOR OTHER DEPARTMENTS.

48 items, receipts and value of work	$2,095.01

MAP STOCK AND DISTRIBUTION.

Maps and Gazetteers issued to departments and public	12,325
Maps received into Geographic stock	7,770
Total value of printed maps and Gazetteers issued	$4,002.50
Revenue from printed maps and Gazetteers	$3,629.47

PHOTOSTAT.

Total number of photostats made	2,182
Revenue from departments and public	$413.70
Value of photostats for Lands Department, etc.	$1,306.80

LETTERS.

Letters received and attended to	1,769

STANDARD BASE MAP.

Hope-Princeton Degree sheet, sheet compiled	1
Lillooet Pre-emptors' sheet, sheet revision	1
Big Bend Pre-emptors' sheet, sheets compiled, complete	2
Big Bend Pre-emptors' sheet, sheets compiled, not complete	6
School districts, plotted from description	30
Control nets supplied	42

TRIANGULATION.

Main, by least-square adjustment, triangles adjusted	44
Secondary, by rectangular co-ordinates, stations	675
Index-cards, records	1,090
Triangulation index-maps	5
Plan of hydrographic survey triangulation, west coast Vancouver Island, sheets drawn	2

TABLE D.—LIST OF LITHOGRAPHED MAPS.

Map No.	Year of Issue.	Title of Map.	Scale, Miles, etc.	Per Copy.	Per Dozen.
		GEOGRAPHIC SERIES—			
1A	1933	Wall Map of British Columbia. In four sheets. Roads, trails, railways, etc.	1 : 1,000,000 15.78 m. to 1 in.	$1.50	$14.00
1A	1933	Wall Map of British Columbia. In four sheets. Roads, trails, railways, etc. Special edition showing Electoral Districts, Redistribution 1932, with 1934 Amendment	1 : 1,000,000 15.78 m. to 1 in.	2.00	20.00
1CX	1937	British Columbia. In one sheet. Showing Land Recording Districts	50 m. to 1 in.	Free	1.50
1E	1930	Kootenay, Osoyoos, and Similkameen	7.89 m. to 1 in.	.50	4.00
1G	1916	Cariboo and adjacent Districts	7.89 m. to 1 in.	.50	4.00
1H	1933	Northern British Columbia, Special Mineralogical Data	1 : 1,000,000 15.78 m. to 1 in.	.50	4.00
1JCA	1923	British Columbia. In one sheet. Showing rivers, railways, main roads, trails, parks, distance charts, etc., and precipitation	31.56 m. to 1 in.	.50	4.00
1JC	1937	Ditto ditto and Land Recording Districts	27 m. to 1 in.	.50	4.00
1JD	1937	Ditto ditto and Mining Divisions	27 m. to 1 in.	.50	4.00
1JE	1937	Ditto ditto and Assessment and Collection Districts	27 m. to 1 in.	.75	6.00
1JGL	1937	Ditto ditto and Land Registration Districts	27 m. to 1 in.	.75	6.00
1JGC	1937	Ditto ditto and Counties	27 m. to 1 in.	.75	6.00
1K	1925	South Western Districts of B.C., Commercial and Visitors. (Economic Tables, etc., 1929.)	7.89 m. to 1 in.	.50	4.00
1L	1929	Central Districts of B.C., Commercial and Visitors	15.78 m. to 1 in.	.50	4.00
		LAND SERIES—			
†2A	1938	Southerly Vancouver Island	4 m. to 1 in.	.50	4.00
2B	1914	New Westminster and Yale Districts	4 m. to 1 in.	.50	4.00
2C	1929	Northerly Vancouver Island	4 m. to 1 in.	.50	4.00
2D	1923	Powell Lake	4 m. to 1 in.	.50	4.00
2E	1924	Bella Coola (preliminary)	4 m. to 1 in.	.50	4.00
2F	1927	Queen Charlotte Islands, Economic Geography (preliminary)	4 m. to 1 in.	.50	4.00
		PRE-EMPTORS' SERIES—			
3A	1930	Fort George	3 m. to 1 in.	One single sheet of "series" free. Each sheet additional 25 cents, or	2.00
3B	1926	Nechako	3 m. to 1 in.		2.00
3C	1923	Stuart Lake	3 m. to 1 in.		2.00
3D	1937	Bulkley Valley	3 m. to 1 in.		2.00
3E	1928	Peace River (reissue 1930)	4 m. to 1 in.		2.00
3F	1934	Chilcotin	3 m. to 1 in.		2.00
3G	1935	Quesnel (contoured)	3 m. to 1 in.		2.00
3H	1931	Tete Jaune	3 m. to 1 in.		2.00
3J	1932	North Thompson	3 m. to 1 in.		2.00
3K	1938	Lillooet	3 m. to 1 in.		2.00
3M	1929	Prince Rupert	3 m. to 1 in.		2.00
3P	1924	Grenville Channel (preliminary)	3 m. to 1 in.		2.00
3Q	1936	Peace River Block	4 m. to 1 in.		2.00
		DEGREE SERIES—			
4A	1927	Rossland Sheet (contoured)	2 m. to 1 in.	.50	4.00
4C	1936	Cranbrook Sheet	2 m. to 1 in.	.25	2.00
4D	1913	Fernie Sheet	2 m. to 1 in.	.25	2.00
4E	1925	Upper Elk River Sheet	2 m. to 1 in.	.25	2.00
4G	1914	Windermere Sheet	2 m. to 1 in.	.25	2.00
4H	1926	Arrowhead Sheet	2 m. to 1 in.	.25	2.00
4J	1921	Vernon Sheet (contoured)	2 m. to 1 in.	.50	4.00
4K	1923	Kettle Valley (contoured)	2 m. to 1 in.	.50	4.00
4L	1926	East Lillooet, Economic Geography (contoured)	2 m. to 1 in.	.50	4.00
4M	1927	Nicola Lake (contoured)	2 m. to 1 in.	.50	4.00
4N	1930	Penticton (contoured)	2 m. to 1 in.	.50	4.00
4P	1931	Lower Fraser Valley (preliminary)	2 m. to 1 in.	.50	4.00
†4Q	1939	Hope-Princeton (contoured)	2 m. to 1 in.	.50	4.00
		TOPOGRAPHICAL SERIES—			
5A	1916	Omineca and Finlay River Basins, Sketch-map of	5 m. to 1 in.	.25	2.00
5B	1929	Howe Sound–Burrard Inlet (contoured), South sheet (special)	½ m. to 1 in.	.50	4.00
	1929	Howe Sound–Burrard Inlet (contoured), North sheet (special)	½ m. to 1 in.	.50	4.00
5C	1929	Stikine River (contoured)	5 m. to 1 in.	.50	4.00
	1930	**GEOGRAPHICAL GAZETTEER OF BRITISH COLUMBIA**		2.00	18.00
		MINERAL REFERENCE MAPS—PRINTED.			
MRM1	1927	Slocan and Ainsworth	1 m. to 1 in.	.50	4.00
MRM2	1928	Trout Lake	1 m. to 1 in.	.50	4.00
MRM3	1928	Lardeau River	1 m. to 1 in.	.50	4.00
MRM4	1929	Nelson–Ymir	1 m. to 1 in.	.50	4.00
MRM5	1929	Rossland–Ymir	1 m. to 1 in.	.50	4.00
MRM6	1932	Grand Forks–Greenwood	1 m. to 1 in.	.50	4.00
MRM7	1934	Greenwood and Osoyoos	1 m. to 1 in.	.50	4.00
MRM8	1935	Barkerville and Lightning Creek	1 m. to 1 in.	.50	4.00
		MISCELLANEOUS—			
PWD	1937	Highway and Travel Map of B.C.	20 m. to 1 in.	.35	2.50
MD	1937	B.C. Mining Divisions and Mineral Survey Districts	50 m. to 1 in.	Free	On ap.
9	1907	Northern Interior. (A. G. Morice)	10 m. to 1 in.	.10	.50
5	1898	Kootenay District, East, Triangulation Survey of	6,000 ft. to 1 in.	.10	.50
2	1896	Kootenay District, West, Portion of	1 m. to 1 in.	.10	.50

† In course of compilation.

NOTE.—To avoid misunderstanding, applicants for maps are requested to state the "Map Number" of map desired.

We can supply information concerning maps of British Columbia printed and published at Ottawa by the Department of Mines and Resources, etc., etc.

Unless otherwise requested, maps will be sent folded.

Inquiries for printed maps—Address:—

CHIEF GEOGRAPHER, DEPARTMENT OF LANDS, VICTORIA, B.C. 3rd January, 1939.

TOPOGRAPHICAL SURVEYS, VANCOUVER ISLAND.

BY R. D. MCCAW.

VICTORIA, B.C., January 20th, 1939.

F. C. Green, Esq.,
Surveyor-General, Victoria, B.C.

SIR,—I have the honour to submit my report on the control surveys for topographic mapping from air views carried on by me during the field season of 1938.

The area under control comprises parts of National Topographic Sheets 92 B/5, 92 B/12, and 92 C/9. The north boundary is latitude 48° 45′ and the east boundary is longitude 123° 45′, connection being made with the Shawnigan, Malahat, and Goldstream sheets of the Department of National Defence. At the south end we join up at latitude 48° 25′ with the Sooke Bay sheet of the National Defence. The westerly boundary is our work of the previous year. Aerial photography had been done by the R.C.A.F. previously and we were supplied with views covering the entire area. The triangulation control was done by Mr. F. C. Swannell, B.C.L.S., in 1937, and formed a base for our triangulation. The total area controlled is about 360 square miles, which is being mapped at the usual scale of 2 inches to the mile, with contours at 100-foot vertical interval.

Before proceeding to do the field-work, information regarding existing surveys was examined. Some preliminary signal and photographic work was also done before the whole party took the field on June 15th.

The usual photo-topographic control methods were followed by extending the main triangulation and taking the necessary ground photographs. Owing to the rolling nature of the country in parts, vertical control was augmented by chain-and-compass surveys on trails, aneroids being used for elevations. These traverses were connected with points identified on the air views.

In order to do the work as advantageously as possible, the main camp locations were selected so as to be near the ends of main transportation routes. The outlying portions were reached from small camps man-packed from the main camps. The first main camp was located near Logging Camp 10 of the Victoria Lumber and Manufacturing Company in the flat valley near the source of the Robertson River and Lens Creek. Transportation to this camp was by the Company's speeder from Cowichan Lake. The next base of operations was from a camp on the Cowichan River 5 miles west of Duncan. Smoke from forest fires became very bad at this time and as there was every reason to believe that there might be considerable delay you instructed me, on July 23rd, to place my party at the disposal of the Forestry officials at Courtenay to give any assistance possible in fighting the forest fire burning near there. The party with light equipment went up there on the 24th and remained until July 31st, when we returned south. The third main camp was on the Koksilah River, about 6 miles west of Shawnigan Lake, located near the end of the Koksilah River Road which extends westerly from Shawnigan Lake. From this camp surveys were extended westerly to Todd Mountain and the head of the San Juan River and to Waterloo Mountain and the upper reaches of the Koksilah River. Camp number four was located at the south end of Sooke Lake and from this point we worked the various branches of the Leech River. Otter Point was the location of the last main camp, and from here fly-camps were extended up Muir Creek and up Jordan River to Jordan Meadows and various photographic stations and traverses done. Main camp was broken up on September 16th and the balance of the work done from fly-camps. Smoke from slash fires interfered with the completion of the work to such an extent that some stations in the vicinity of the Cowichan River could not be completed until the middle of October.

Climatic conditions for the season were rather unusual. It is generally anticipated that there will be considerable rainfall during the summer, but this year there was very little and the bush became so dry that the fire-hazard was with us continually during July and August, and utmost precautions were taken with camp fires and smoking. June was a very clear month with excellent photographic atmosphere, and this condition prevailed until the middle of July when smoke from forest fires began to give us trouble, and from that date on there were spells of very smoky atmosphere. The first rain of any consequence fell early in September, but it was quite inadequate to meet the general need.

The whole area is mountainous, rising to an altitude of about 3,900 feet in the highest part, with timber right to the top. The southerly portion is very much broken with many rock bluffs. The central and eastern portion is more or less of a rolling mountainous nature with a wide flat valley containing Jordan Meadows at the head of the Jordan and Leech Rivers. Timber consists mainly of fir, cedar, hemlock, some balsam, spruce, and black pine. As the area has been cruised recently by the Forest Branch I would refer to their maps for timber information.

The main industry is logging, but at present timber is being cut over very small areas, and these, with the exception of the Robertson River tract, are close to main transportation routes. The largest operation is on the Robertson River and upper Lens Creek, where logging has been carried on over a number of years by the Victoria Lumber and Manufacturing Company. The logs are hauled down by logging-railway approximately 12 miles to the east end of Cowichan Lake, and there taken over by the Canadian Pacific Railway and then to the mill at Chemainus. The Company's camp 10, near which we were camped, had about 185 men at work during the summer. At Deerholme, on the Canadian National Railway, the Wellburn Company is operating a sawmill, hauling their logs from near-by limits to the south by truck. Other logging operations were being carried on in adjacent areas west of Deerholme. Along the Sooke River the Cameron Lumber Company have a sawmill near Kapoor and were running all season. The Kapoor Company was also in full swing. These latter works are east of the area in which we were working. On the Leech River considerable development was being carried on for placer-mining, dams and flumes being constructed to work on a larger scale than heretofore. Leechtown, on the lower Leech River, was the scene of much placer-mining years ago. In the vicinity of Tugwell, Kirby, and Muir Creeks at the south, trucks are used to haul the logs to salt water from the logging operations there.

There are several good trails within the area, leading from the travelled highways. A main trail over which pack-horses could travel extends from the Koksilah River Road to Jordan Meadows, a distance of 13 miles from "Burnt Bridge." This trail continues in a southerly direction to Beer Creek, coming out at the B.C. Electric Company's dam on that creek. From here there is a good trail down to the Diversion Dam of the same Company, and there is an outlet from there by the Company's narrow gauge railway to the road system at Jordan River post-office. From Beer Creek dam this route is on the private property of the B.C. Electric Railway, and any one wishing to use it must have due permission. About 9 miles from Burnt Bridge, on the Koksilah River–Jordan Meadows trail, a branch trail forks, leading to the San Juan River. Pack-horses can be used on this trail also. A back-pack trail connects this with the Malahat Logging Company's railway at Beer Creek, on the south side of the San Juan, thus giving a foot route through to Port Renfrew. From the south end of Sooke Lake a good trail extends north-westerly across the north forks of the Leech River, over the Survey Mountain ridge to Trout Lake and Jordan Meadows. This trail is joined about 5 miles from Sooke Lake by a trail from Leechtown. Horses have been used on these trails. The original trails from the Koksilah River and Sooke Lake into Jordan Meadows were constructed many years ago as a means of transportation to and from the meadows, where a rancher named John H. Weeks had pre-empted land years ago. A great deal of work was done in the way of buildings on the Weeks' place, the remains of which are still to be seen. The doors, window-frames, and inside fittings and furniture were all hand-made, of yellow cedar generally, done in a particularly workmanlike manner and may well be compared with good cabinet-work—and the whole made on the spot miles away from a mill.

Minor back-packing trails exist, one up Muir Creek, one from the V.L.M. Railway at Camp 10, going part way down Lens Creek, and another from the same railway extending over to Harris Creek. Roads are *nil*, with the exception of the Koksilah River Road which extends about 2 miles into the area and some short truck-roads near Deerholme.

There was little game seen during the summer, a few deer were noticed in the logging slash and indications of bear. Trappers state there are wolves, but no evidence of any was seen. Some blue grouse and willow grouse were seen. Quite a bit of fishing is done in the Koksilah River and Grant Lake, and other streams and lakes are said to be good.

Our thanks are due to the Victoria Lumber and Manufacturing Company, the B.C. Electric Company, the Wellburn Company, the City of Victoria, and the Public Works Department for courtesies extended during the work.

All of which is respectfully submitted.

I have, etc.,

R. D. McCaw, B.C.L.S.

TOPOGRAPHICAL SURVEYS, VANCOUVER ISLAND.

By A. J. Campbell.

Victoria, B.C., January 8th, 1939.

F. C. Green, Esq.,
Surveyor-General, Victoria, B.C.

Sir,—I herewith present my report on the topographical control surveys carried out during the season of 1938. The area covered by these surveys is that part of Vancouver Island lying to the west of Cowichan and Nitinat Lakes and extending to the Alberni Canal. The greater part of the information obtained will be used in compiling Map-sheet 92 C/15 and the balance will cover parts of Sheets 92 C/9, 92 C/10, 92 C/16, and 92 F/2. When this winter's office-work is completed the following map-sheets should be ready for tracing: 92 C/9 (in conjunction with R. D. McCaw, B.C.L.S.), 92 C/10, that part of 92 C/16 lying outside of the Esquimalt & Nanaimo Railway Land Grant, and 92 C/15. It is to be noted, however, that we have obtained considerable data that could be used in preparing Map-sheets 92 C/16 and 92 F/2. The first-mentioned sheet includes Cowichan Lake and, for the most part, lies in the E. & N. Grant. The second includes the upper part of the Alberni Canal and the town of Alberni. About 50 per cent. lies in the E. & N. Grant. Both these sheets cover areas in which there is a good deal of activity either through logging or mining.

For triangulation control the system established last year was extended westerly and northerly to connect with Geodetic Survey stations in the vicinity of the Alberni Canal, and all camera stations occupied were tied in to this system. The establishment and occupation of these stations was in the hands of Mr. F. C. Swannell, B.C.L.S., with the exception that certain stations, contiguous to the west coast, were occupied by us and Mr. G. J. Jackson, B.C.L.S., who was working in the Barkley Sound area.

These triangulation stations, as well as a number of other points, were occupied with the camera for the purpose of providing control for the aerial pictures which covered the area. In addition, and for the same purpose, a traverse of some 31 miles was run from Cowichan Lake to the Alberni Canal, following, where possible, the old Canadian Northern Railroad grade constructed just before the war, also along the old tote-road and at times taking to the bed of adjacent stream. Although this traverse was not completed as quickly as anticipated, owing to the old grade being heavily overgrown, control was obtained in a section which was practically impossible to cover from mountain stations and will therefore be of considerable value.

PHYSICAL FEATURES.

The area is mountainous, with the mountains, over the greater part, reaching to a height of about 3,000 feet, with timber to the tops. In the vicinity of Cowichan Lake and north-westerly to the Alberni Canal, the mountains are higher, rising to 5,000 feet, with bare tops. These afforded a number of very good triangulation and camera stations which facilitated our work considerably. There are a number of lakes scattered through the area; the largest is Nitinat Lake, about 12 miles long. Contrary to the belief of a large number of people, this is a salt-water lake and has a tide of about two feet. As a rule, the streams and rivers run in narrow, steep-sided valleys.

FOREST.

The whole of this area is heavily timbered, the stand consisting of cedar, fir, hemlock, spruce, and balsam, with hemlock the most predominant. In this area—that is, from Nitinat Lake to the Alberni Canal—it would seem that there is little fir for some distance back from the coast. It was also noted, in several instances, that the timber-growth on the tops of the ridges and hills, providing the altitude was below 3,000 feet and not much rock showing, was larger than on the slopes leading up to these summits. Logging operations are being carried out at Cowichan Lake, the north end of Nitinat Lake, and at Franklin River, off the Alberni Canal. At this point I might say these operators—namely, the Industrial Timber Mills, Limited, Nitinat Lake Logging Company, and Bloedel, Stewart & Welch—gave every assistance they could in the way of transportation and otherwise, and thus saved us much in labour and time.

There are no burnt-over areas in this section, which would go to show the fire-hazard in the country contiguous to the west coast of the Island is small.

MINERALS.

There are no operating mines in this area, but evidences that prospectors had been exploring were noted in different parts. Recently a number of mineral claims were staked at the head of Corrigan Creek and work is being done this winter to prove the value of the showing discovered. As is the case on most of the Island, the underbrush and overburden make it a hard country to prospect.

CLIMATE.

The rainfall on this part of the Island is fairly heavy but is precipitated chiefly in the winter months, June to September being a comparatively dry period. To offset this during this dry season fogs are prevalent along the west coast, and, as the season of 1938 was particularly dry, there was more fog than usual. Practically every day that we were in a position to see out over the coast or Barkley Sound the fog was present. Nevertheless, as a general rule, the most propitious time for carrying on surveys on this part of the Island is during this period.

FISHING.

Fishing is carried on extensively along the west coast of Vancouver Island and provides a livelihood for Indians, local residents, and for a floating population who own their own boats and move from place to place as conditions warrant. The catch consists of salmon, herring, pilchard, halibut, and cod, and the fish are handled in local canneries or reduction plants or else packed in ice and carried by fish-packers to centres such as New Westminster and Vancouver for shipment.

Trout are reported to be plentiful in some of the lakes and streams, but we were not able to verify this as we only did a limited amount of fishing which was not very fruitful.

GAME.

During the season little game was seen and amounted to the following: One bear, one cougar, three deer, three elk, and a few grouse. Practically all of these were noted in the vicinity of Cowichan Lake. One goat is reported to have been seen several times by loggers north of Cowichan Lake, but whether the few goat who were imported and turned loose in that locality have increased or this one is a lone survivor is not known.

ACCESSIBILITY.

Clo-oose is the only post-office in the area covered by the map-sheets or the parts thereof mentioned, but Youbou, on Cowichan Lake, with Bamfield and Kildonan on Barkley Sound are not far away. Also the logging camps run what amounts to a post-office as a service to their employees.

Clo-oose is reached by C.P.R. steamers sailing from Port Alberni or Victoria and, as there is no wharf there, passengers and freight are put ashore by small boat, if the weather is favourable. There have been periods of over a month during which it has been impossible to make a landing.

Nitinat Lake may be reached by a trail a little over a mile long from Clo-oose Beach, or by a good trail, about 15 miles long, from the head of Cowichan Lake. Tugs and fishing-boats and fish-packers, at certain stages of the tide, enter the river at the outlet and up to the lake.

The Dominion Government telegraph-line follows along the coast from Port Renfrew to Alberni, and to keep this line repaired a trail is kept open. This trail is generally on the shore and back from the beach, but, where suitable, the beach itself is used. From Bamfield to Alberni the line is kept in repair from boats and no trail exists. An inferior trail, which follows the old Canadian Northern Railway grade or the old tote-road, connects the Nitinat River with the Alberni Canal, covering a distance of 19 miles. This could be made into a good trail with a comparatively small amount of work.

The office-work is well advanced and should be completed before the field season of 1939 opens.

I have, etc.,

A. J. CAMPBELL, B.C.L.S.

TOPOGRAPHICAL SURVEYS, VANCOUVER ISLAND.

BY N. C. STEWART.

VICTORIA, B.C., December 31st, 1938.

F. C. Green, Esq.,
Surveyor-General, Victoria, B.C.

SIR,—I have the honour to submit the following report on the topographical survey carried out by my party during the field season of 1938.

The area controlled is situated between latitude 49° 45′ and the south boundary of Strathcona Park and easterly from the 126° meridian to the westerly and southerly boundary of the Buttle Lake drainage system. Some additional control was obtained in the area north of Great Central Lake. Approximately 300 square miles will be mapped at a scale of ½ mile to 1 inch, with a contour interval of 100 feet.

The field party consisted of W. J. Moffat, B.C.L.S., assistant; A. G. Slocomb, instrument-man; and seven men. An advance party, under Mr. Slocomb, left Victoria on June 1st for Herbert Arm, where signals were erected on near-by mountains. The full party commenced operations at the head of Muchalat Arm on June 14th. Field-work was discontinued on September 26th.

We were supplied with air photographs taken by the Royal Canadian Air Force. On account of the very mountainous nature of the country, the control was obtained solely by triangulation and ground photography. Camera stations were established on thirty-nine peaks and ties were made to existing triangulation points along the various inlets. The main triangulation station on Big Interior Mountain was again occupied.

The survey was undertaken from the heads of those inlets of the west coast that extend within reach of the westerly and southerly portions of Strathcona Park; these were Muchalat Arm, Shelter Arm, Herbert Arm, and Bedwell Sound. We blazed a trail for man-packing purposes from Muchalat Arm up the Burman River valley, about 9 miles, and then up one of its tributaries to the mountains south of Donner Lake. Also from this trail the mountains between the Burman and Megin rivers were reached. From Shelter Arm we pulled a dug-out canoe up the Megin River to Megin Lake, establishing two stations on mountains north of that lake. Other stations were taken near the head of Shelter Arm. At Herbert Arm we used the road and trails to the Abco mine, and other trails up the Moyeha and Cotter Creeks that were blazed out by the prospectors. From Bedwell Sound we followed the old road up Bedwell River about 7 miles; this road was overgrown and all bridges out. Here again prospectors had made a trail and placed temporary bridges and logs at the old crossings. Beyond the wagon-road we cut and reblazed the old trail to the Bear Pass, and blazed a new route from the westerly end of the pass to McBride Lake, connecting with a good trail to Great Central Lake.

PHYSICAL FEATURES.

The approach to Strathcona Park from the west coast, via these long arms of the sea under such ideal weather conditions as prevailed during 1938, is one of remarkable and varied picturesqueness. Although Herbert Arm is the only one of these inlets actually to extend into Strathcona Park, the ends of the others are not far from its westerly boundary. The bare crests of mountains rising abruptly to an average height of about 5,000 feet extend in irregular masses from the end of these arms to the Buttle Lake watershed. There appears to be no general trend to the mountains, but there are several groups, causing a drainage system which is also irregular in shape. None of the mountains in this section had been named, so temporary names were given to those climbed by us. Near Muchalat Arm the outstanding mountains are Mount Matchlee (6,033 feet), Mount Splendor (5,794 feet), and Mount Donner (5,947 feet). At the head of Herbert Arm are Lone Wolf Mountain (4,853 feet), Big Boy (5,008 feet), and Mount Abco (4,989 feet); the latter two being peaks of the mountain on which are located the Big Boy and Abco mines. Along the Bedwell River are Holy Cross Mountain (5,833 feet), locally named, and Mount Ursus (4,827 feet).

The main rivers are the Ucona, out of Donner Lake; the Burman, which rises near Mount Rooster's Comb; the Moyeha, which heads in the divides to the Thelwood and flows into Herbert Arm; and the Bedwell, which starts at Big Interior Mountain and flows into Bedwell Sound. These rivers are comparatively small streams, none of them being over 20 miles in length, but they are very steep, except for a few miles from their outlets, where they have filled in the arms of the sea. Between the Burman and Moyeha is the Megin River, which drains into Megin Lake and thence into Shelter Arm. There are numerous small lakes, mostly near timber-line, in the westerly side of Strathcona Park, but no large ones. Donner Lake, about 4 miles long, is the largest. Megin Lake is outside the Park boundary.

On the higher mountains there are perpetual snow-fields and small glaciers, the most prominent crossed during the season is on Holy Cross Mountain. Picturesque waterfalls were seen on nearly every stream; an outstanding one on a creek rising on Matchlee Mountain can be viewed from Muchalat Arm.

FORESTS.

The valleys are heavily timbered. The densely timbered portion of the Ucona Valley is mostly outside the Park boundary. There are some merchantable stands up the Burman River for about 6 miles; this consists of hemlock, Douglas fir, and cedar, and some very large spruce near its mouth. Up the Moyeha River, as far as the first main forks, there is merchantable timber with considerable spruce. Some of the spruce was taken out for airplane construction during the Great War. On Cotter Creek there is a heavy stand consisting mostly of hemlock, but with some balsam, fir, and large red cedar.

Up the Bedwell River, almost to its source, there is a dense stand of hemlock and balsam, but not much fir and cedar; this stand is reputed to be suitable for pulp-wood. On McBride Creek, below McBride Lake, there is a good stand of merchantable timber, but above the lake the timber is not very good. Although hemlock, fir, and cedar predominate, other varieties are spruce, white pine, balsom, alder, maple, yew, yellow cedar, and cottonwood. The merchantable timber grows to an approximate altitude of 3,000 feet, and timber-line is about 4,500 feet above sea-level. In the forests we found an undergrowth of huckleberry, devil's-club, and salal, but the growth was not as dense as we expected to find on this westerly watershed. Berries, mostly huckleberry and blueberry, were abundant. Wild flowers grow profusely, especially along gravel bars and in the alpine areas at timber-line.

MINERALS.

Prospectors were searching for minerals of economic value in most of the area being mapped. Owing to the difficult nature of the country, nearly all of the prospecting was done within easy reach of the salt water. We noted signs of mineralization both north and south of the Burman River and in the Megin Valley. Many prospectors were at work along the Moyeha River and around the Big Boy and Abco mines at the head of Herbert Arm. Practically the whole of the Cotter Creek valley was staked and the prospecting extended over the range from Cotter Creek in to the upper reaches of Cypre Creek. Also quite a few claims were staked between Herbert and Shelter Arms. Up the Bedwell River, where many years

ago there was considerable activity in both placer and lode mining, many prospectors were again at work and according to reports some very good assays were obtained. There was no activity in the Crown-granted claims, except at Della Lake where preparations were being made to extend the old workings.

Some small areas near the mountain-tops showed fossiliferous limestone similar to that found near Buttle Lake, thus possibly extending the Permian horizon.

CLIMATE.

Our anticipation of a rigorous west coast climate with its rains, fogs, and mists was not realized, for we were favoured with the finest season experienced in these parts for three or four decades. When we took the field in the latter part of June, there was still much snow on the mountain-tops, showing that there is a very heavy snowfall in this portion of the Island. A further indication of a large rainfall is shown by the great difference between the high- and low-water marks of the rivers and lakes. During this summer the rivers were very low, a condition that greatly helped our work. Due to the dry summer the fire-hazard was great, but the prevailing westerly wind kept our area free from the smoke of the great fires on the east coast of the Island. A local fire near Nootka, situated west of us, caused us some trouble about the middle of July.

Slash-burning in September produced smoke conditions so serious that we were forced to shut down earlier than desired.

GAME.

Game is not plentiful. According to old settlers, some years ago the valleys were full of deer and bear, but now few are seen. Signs of the existence of the fur-bearing animals, mink, marten, and beaver, were noted. Game birds, blue grouse, willow grouse, ptarmigan, ducks, and wild pigeons were seen. Song-birds and the chatter of red squirrels were heard in the valleys, and in the streams and some lakes there were trout. McBride and Great Central Lake are well stocked with trout.

DEVELOPMENT AND RESOURCES.

In the whole of Strathcona Park there is but 1 mile of road—this connects the Abco mine tramway with salt water at Herbert Arm. There are few good trails, the existing trails being mostly blazed routes suitable only for man-packing. There is little evidence that the area between the Ucona and Moyeha rivers has been explored.

Except for mining at Herbert Arm and along the Bedwell River there is absolutely no development in this area. It is quite possible that mining will increase and a small amount of logging will be undertaken, but otherwise there appears to be little to attract industry. There are, however, scenic attractions which, when made accessible, will no doubt prove valuable.

I have, etc.,

N. C. Stewart, B.C.L.S.

TOPOGRAPHICAL SURVEYS, VANCOUVER ISLAND.

By G. J. Jackson.

Victoria, B.C., December 31st, 1938.

F. C. Green, Esq.,
Surveyor-General, Victoria, B.C.

Sir,—I have the honour to submit the following report on the topographical survey made by me, under your instructions, during the past summer.

The area completed is on Vancouver Island, in the vicinity of Barkley Sound, comprising all of the Island west of the 125° meridian, which lies south of the 49th parallel, being Map-sheets 92 C/11, 92 C/13, 92 C/14.

The area has all been covered by vertical aerial views, taken by the Royal Canadian Air Force. The triangulation was controlled by stations of the Geodetic Survey of Canada. Elevations were obtained from sea-level.

The party was organized at Victoria and arrived at Bamfield on June 12th, when the work was commenced. Most of the work was near the water, so a launch was required during the whole season. Fly-camps were used, when necessary, to reach the hills. The party was in the field until September 28th, when the smoke got so dense that it was useless to stay on.

The season was most unfavourable for the work in this vicinity, as there were very few days when the hills were clear of fog. This necessitated many days of waiting to complete each station. The weather, otherwise, was much better than usual on the west coast, as there was practically no rain or wind. From July 19th to 26th there was dense smoke which gradually cleared till the end of the month. Again, from September 14th until the end of the season, it was very smoky. There was only one fire in the area itself. This, a small one, was at the head of Pachena Bay.

During the season thirty-four camera stations and six triangulation stations were occupied, 30 miles of traverse were run, and many barometer readings were taken.

Barkley Sound is about 16 miles wide and 12 miles deep; reaching from it are a number of narrow inlets, the longest being the Alberni Canal, which reaches up to Alberni and is about 25 miles long. The sound is studded with hundreds of islands, varying in size from a rock to several square miles. It is surrounded by timbered hills reaching from 2,000 to 3,000 feet elevation, while a few miles north there are many bare peaks much higher.

Permanent settlement is restricted to Bamfield, Ucluelet, and Kildonan. In the fish season there are several fish-salteries and reduction plants operating.

At Bamfield, on the east side of the sound, there is a small settlement collected around the cable station, which is the terminus of the Pacific cables. Here there is a post-office, Customs office, school, several stores and fish-buyers, and also the life-saving station.

Ucluelet, on the west side of the sound, is another settlement with post-office, Customs office, schools, stores, and cannery, and there are some small farms here.

Kildonan, on Uchucklesit Inlet, is a B.C. Packers' cannery and reduction plant with a post-office and a good store.

From Alberni there is a mail service to Bamfield and Kildonan three times a week and to Ucluelet twice a week. There is a C.P.R. boat from Victoria every ten days, and for the summer months one every five days.

The coast is very rugged and shipping is protected by lighthouses placed at strategic points on the coast, and in the sound by beacons. At Pachena there is also a wireless station to give direction to ships in foggy weather.

Roads are few and most of the travelling is done by water. There is a road from Ucluelet to Long Beach which is used by cars. There is a good trail from Bamfield to Pachena lighthouse, this continues down the coast along the telephone-line. There is also a trail from Bamfield to Cape Beale lighthouse.

There is a telephone-line from Port Renfrew to Bamfield, which is connected to Alberni by a line on the east side of the sound and canal. Another line on the west side joins Alberni, Kildonan, and Ucluelet.

The whole area is heavily timbered and has a dense growth of underbrush, consisting of salal and huckleberry. The timber is hemlock, balsam, cedar, spruce, and black pine, with some yellow cedar on the higher altitudes. Fir is not found growing in any quantity until the Alberni Canal is entered, and it becomes more plentiful as the canal is ascended. No logging of any extent has been done on the sound as yet.

All industry depends on the fishing. A large number of trollers operate out of Bamfield and Ucluelet, while a lot of gill-netters work the sound and canal. Purse-seiners also operate for salmon, pilchard, and herring in the seasons. There are a number of fish-buyers, canneries, salteries, and reduction plants which take care of the various fish.

At Sechart there are the remains of a whaling station which has been closed for some years, but evidently operated long enough to practically exterminate the whales in that locality.

Little agriculture has been attempted, but everything has wonderful growth, as there is usually plenty of moisture in the growing season. This summer was an exception, as the country was badly dried out. Water was scarce everywhere and many wells dry. On the hills it was impossible to find water.

There is little mining activity in the area, although a number of prospects have been located. The only active one this summer was about 3 miles up Lucky Creek from Toquart Harbour. Here a few men were opening up a vein and getting encouraging values in gold.

The climate is very temperate at low altitudes but the precipitation is heavy, being over 100 inches and reaching, it is said, over 300 inches in some of the valleys north of the sound.

It is a very poor game country. There were few signs of deer and bear and no animals themselves were seen. We only saw an occasional grouse and a few pigeons. Ducks and geese are said to be fairly plentiful in some of the inlets in the winter. There is some trapping, the animals taken are mink, coon, marten, and beaver. The fur-seal herd passes the sound on its migration north and south, and a few are captured by the Indians with spears.

Trout are fairly plentiful in the rivers and lakes, and salmon run up all the rivers to spawn. There are also big runs of pilchard and herring. Cod are plentiful, and some halibut are still caught on the banks off the sound.

The work on the maps is now in progress and the usual plans are being prepared.

I have, etc.,

G. J. JACKSON, B.C.L.S.

TRIANGULATION SURVEYS, VANCOUVER ISLAND.

BY FRANK SWANNELL.

VICTORIA, B.C., February 8th, 1939.

F. C. Green, Esq.,
Surveyor-General, Victoria, B.C.

SIR,—I have the honour to submit herewith my report on the survey operations conducted by me during the season of 1938.

The primary object of my work last summer was to extend the triangulation made by Mr. A. J. Campbell, of the photo-topographic survey, and myself in 1937 northward and westward, so as to close on geodetic stations and provide the main control for this season's photo-topographical work. Routes were cut into and signals and cairns erected on Mount Grey, Sarita, Hankin, Woollett, and Bainbridge. All these were occupied and read; additional readings being obtained by Mr. A. J. Campbell from Grey and Sarita when he occupied these two for photographic purposes. The geodetic stations Cokely, Handy, and Klitsa were resignalled and these, as well as the geodetic station Tzartus, were occupied and read during the season. Edinburgh, Towincut, Whymper, and Prevost of the 1937 triangulation net were also reoccupied in order to obtain additional angles and a tie was made at Bonilla Point on the west coast.

In addition to the main triangulation Alberni Inlet was triangulated from Uchucklesit Harbour to Port Alberni. Some fifty stations were set, most of which are permanently marked by brass bolts or iron bars. Owing to dense smoke and fog this triangulation was not fully completed. Two or three stations in the vicinity of Franklin River will require to be set and read before a rigid connection is obtainable between the geodetic station on Copper Island and that at Port Alberni. Some 15 miles of traverse was run at Cowichan Lake and along the E. & N. Railway grade at Cameron Lake in order to tie in land surveys and various geodetic survey bench-marks.

Sproat Lake was also partially triangulated in order to obtain land ties and more particularly to fix the position of the E. & N. land grant boundary. All this work will provide control for use in the preparation for Map-sheets 92 C/16 and 92 F/2.

PHYSICAL CHARACTERISTICS OF ALBERNI AREA.

Alberni Canal, or, as it should more correctly be called, Alberni Inlet, runs northerly about 20 miles from the head of Barkley Sound. Its average width is about a mile and it is generally very deep, the mid-channel depths as far up as Nahmint Bay being over 150 fathoms. Heavily timbered mountains running up to 3,000 feet in altitude start abruptly at water-level. The shores are rocky, in places rising as sheer bluffs. The only level land is that formed at creek mouths, particularly at Nahmint River, where there are large tide-flats, and at Sproat Narrows where the Franklin River and a large creek opposite have formed deltas constricting the inlet to half its usual width. Smaller flats have formed at Coleman, China, and Cous Creeks. At the head of the canal the Somass River enters through tide-flats and a large area of flattish, once heavily-timbered, country extends around Alberni to the base of the Beaufort Range and over to Great Central Lake. Sproat Lake, 13 miles long, is, except for around its outlet, hemmed in by steep, densely timbered hills rising at its head into bare mountains, of which Klitsa Peak is the highest.

NATURAL RESOURCES.

Timber is the great natural resource of this region. The Nahmint Valley, almost up to Nahmint Lake, has been logged off and extensive logging operations are being conducted up Franklin River by Bloedel, Stewart & Welch, whose logging railroads extend for some 15 miles up Franklin River. Incidentally, this railroad was of immense service to us in reaching Mount Grey, and I am much indebted to the logging superintendent, Mr. Olsen, for his courtesy in aiding us in every way.

From Franklin River to Port Alberni large areas have been logged off, while logging is still being carried on around Alberni, notably at Great Central Lake. On the inlet below Nahmint Bay there has been nothing but a little desultory hand-logging. The timber consists of hemlock, fir, spruce, and balsam; hemlock being the predominant type.

Port Alberni, whose prosperity depends entirely on the manufacture and export of lumber, now ranks second in British Columbia for timber export, being exceeded by Vancouver. The figure for 1938 is 278,355,360 F.B.M. At and adjacent to Alberni are sawmills whose daily capacity is 1,444,000 F.B.M. Two of these, the Alberni Pacific Lumber Co. and Bloedel, Stewart & Welch, cut 800,000 feet daily, and the Great Central Sawmills 260,000.

It is interesting to note that the third sawmill to operate on Vancouver Island—Captain Stamp's mill—commenced cutting at Old Alberni in 1861. In 1862, 8,074,000 F.B.M. and seven cargoes of spars were exported; in 1863 over 12,000,000 feet, and in 1864, 11,000,000. This sawmill ceased operating at the end of 1864, the reason given being that the stand of timber was exhausted!

FISHERY.

Next to logging, fishing is the chief industry along the inlet. Alberni has a considerable floating population of fishermen. Gill-netting and trolling for salmon proceeds in the inlet itself, while, according to the season, the boats go to Barkley Sound and the open sea for cod, halibut, pilchard, and herring. There are canneries and salteries at Kildonan, and many Japanese fishermen.

MINING.

There has been considerable mining along Alberni Inlet and in the country adjacent since early days. In 1864 placer gold was found by the Dr. R. Brown Government exploring party on China Creek, and between $100,000–$200,000 taken out shortly after. This creek was worked up to about 1895, mostly by Chinamen, and is presumably completely worked out. Some mineral-claims were being worked in 1934 on a branch creek.

Thirty years ago there was considerable mining activity along the Canal at Nahmint (Haye's Landing) and farther down near Pocohontas Light and Hand Creek. At present, however, no mining beyond a little desultory prospecting is being done anywhere near tide-water. Considerable prospecting and staking of claims was done this last year on Corrigan Creek, a branch of Franklin River. Where the E. & N. boundary crosses Franklin River a Finn was taking out ore for sampling purposes from a very old adit; by whom sunk we could not learn.

ACCESSIBILITY.

Old Alberni and the new and flourishing town of Port Alberni are reached by the E. & N. Railway and connected with the east coast by road. During the summer months the C.P.R. steamers call at Alberni every five days, in the winter there is a ten-day service with Victoria. A small steamer, the "Uchuck," gives a tri-weekly service to all points down the inlet and in Barkley Sound. Alberni and Bamfield are connected by a Dominion Government telegraph-line which closely follows the shore. There is also telephone connection to Kildonan.

GAME.

There is very little game of any kind. An occasional deer was seen along the inlet, one bear up Franklin River, and we found elk sign on Mount Grey. Grouse and other small game were very scarce. There seemed to be hardly any trout in Nahmint River, and in several other streams we saw none much larger than minnows.

CLIMATE.

The summer was abnormally dry and hot and nearly all the smaller streams ran dry. Even in June we had temperatures as high as 86° F., while for a whole week in July the thermometer registered from 88° to 92°. The fire-hazard was very great, and owing to this and the lack of water to operate their donkey-engines, logging operations at Franklin River ceased early in the summer and did not recommence until September. Owing to the precautions taken no serious fires started in the Alberni area, but our surveying operations were often brought to a standstill by dense smoke from the Campbell River fire. We were in addition much handicapped by sea fogs which drove up the inlet from Barkley Sound.

The angles of the main triangulation have long since been placed in the hands of the computer, Mr. Hutchinson, who has since adjusted and computed the entire net. All points along Alberni Canal required for the map-sheet now being made were calculated by the end of the year. The notes and plans showing the traverses and connections to land surveys will be filed shortly.

I have, etc.,

FRANK SWANNELL, B.C.L.S.

LAND SURVEY, PEACE RIVER DISTRICT.

BY DUNCAN CRAN.

FORT ST. JOHN, B.C., November 30th, 1938.

LOCATION AND ACCESS.

Townships 82 and 83, Range 14, in part, and S. ½ Sec. 19-83-13; together with Central meridian through Township 84, Range 14.

The area divided into quarter-sections is cut through by the deep valley of the Moose or Alces River. All the land on the east side of this valley is easily accessible from Clayhurst Post-office, the centre of a small settlement of about seventy-five people and a mile east of the 1938 survey. Clayhurst is between 3 and 4 miles from the ferry across the Peace River. Mail is brought by truck from Dawson Creek via Rolla. The rail-head at Dawson Creek is 40 to 45 miles from Clayhurst. Although the gradient on the north side of the Peace River is steep and narrow that on the south side is easy and wide, making the Clayhurst district advantageously placed for shipping out produce. The land on the west side of the Moose valley is not yet accessible by road, only by pack-trail, from the ferry, which enters the area through Section 22, Township 82. A road would have to be graded from the ferry landing (south of Section 25). Once on top of the main bench the building of roads to any part of the country west of the Moose would not be difficult. The west half of this area is bounded on the south by the Peace River to which there is access by a rough wagon-trail in Section 8.

A control meridian was run from the N.E. corner of Sec. 33, Tp. 84, on the 22nd base-line. The N.E. ¼ S. 33 is held by a settler named Jim Good, who obtains his supplies by wagon from Cecil Lake, about 20 miles westerly. Jim Good's is about 15 miles by pack-trail from Clayhurst. This is a good pack-trail, except for the fact that a fire this year blocked some of it with fallen trees. The meridian-line just touched the Moose River 1 mile south of the base-line and crossed it for the first time at the end of the eleventh mile.

CLIMATE.

To describe the climate of this country from records taken this year would show the district to be very dry with a very hot summer. The rest of the Peace River country experienced considerable drought this year, especially in the spring. The June rains were of very short duration, and at our camp in Sec. 21-82-14 amounted to probably 2 inches or less. On August 17th the minimum temperature was 31½ degrees and on August 22nd 27 degrees. These, however, were recorded in the bottom of a coulée in Sec. 15-83-14 and there was no serious damage from frost reported in the settlement. Ice formed at the end of July at the camp in Sec. 27-84-14 in a creek-bottom, but this year Good had a fair crop of potatoes on the higher ground not far from this point. During the summer the thermometer often reached 80 degrees in the shade, with 90 degrees occasionally, and the latter temperature was recorded two days running in September. Rainfall in the Peace River District varies considerably in different parts. For example, on my place 10 miles west of Fort St. John last year there was less rainfall than in other localities, while this year I got the moisture, resulting in a good crop, better than last year. Also the climate varies considerably from year to year. This applies to snowfall. In 1931, in February, before a chinook wind came there was only about 6 inches of snow on the ground. In the early spring of one year since there was almost 4 feet lying on the ground. The last two winters the snowfall was quite moderate. At the time of writing there is a depth of snow of about 6 inches, which is being melted (November 7th) by a south-west wind. Sometimes the severest cold is before and sometimes after Christmas.

SOIL.

On the whole the soil in this area is not very rich in regard to depth of loam, and there are some quarters in the north-west part of Township 82 where there is very little covering of humus due to a great extent to repeated fires. On almost the whole area the soil is characterized by having a subsoil of gumbo or dark-coloured clay that, after the dry weather, could be taken from the pits and formed into a ball due to moisture content. Above the gumbo and sometimes reaching the surface there are streaks and patches of whitish clay which is powdery in places. The soil throughout the land to the west of Clayhurst is generally good. It was noted that after a fire there was a second growth of fireweed and grass, its green condition, after so much dry weather, indicating the moisture content of the underlying gumbo.

TIMBER.

The majority of this area is covered by poplar varying from saplings to 12 inches in diameter. There are patches of and scattered spruce-trees throughout, clumps of willow and a small amount of cottonwood, mostly small. The average size of poplar in Sections 20-24, 16, 15, W. ½ 14 and 10, Township 83-14, is 8 inches, of medium density, while the land to the east of this has a lighter and smaller growth of poplar. The poplar on the uplands of 82-14 is mostly scrub with poplar, average 4 inches along the correction-line (east part). There is a patch of dead standing poplar and green spruce on the east boundary of Section 28-82-14 which is outstanding as a landmark as seen from across the Moose. In the N.W. ¼ Section 23-82-14 there is a patch of jack-pine partly cut. In the S.W. ¼ Section 17-82-14 there is a heavy stand of poplar, average 6 inches. Sections 3, 4, and 5 have a covering of scrub poplar and willow on the uplands with a scattering of larger poplar. Spruce up to 12 inches is found on the west bank of the Moose in patches, especially Sec. 3-83-14.

The meridian through Townships 84 and 83 ran through a heavy stand of spruce up to 16 inches—96 chains in width—from the south part of Section 21 to near the south-east corner of Sec. 16-84-14. It entered a heavy stand of jack-pine up to 18 inches in Section 3-84-14 and another heavy stand of spruce in the south part of Sections 33 and 34 and north part of Sections 28 and 27-83-14. Unfortunately it would appear that a large part of this timber

has been destroyed by fire which was reported by myself early in August. Later on a high wind fanned the smouldering fire to a very large conflagration, judging by the smoke which we saw after we had moved farther south. We passed through several miles of jack-pine and spruce timber travelling from about Section 6-84-13 to a point about 3 miles from the base-line.

UNDERGROWTH.

The undergrowth in the area west of Clayhurst consists largely of fireweed, red-top grass, vetch, and some peavine, and rose-bushes are characteristic over practically all the land surveyed. West of the Moose there is a fairly good growth of grass, vetch, and peavine. Another characteristic of most of the uplands surveyed is the number of grass sloughs, varying in size from a small patch to 2 or more acres. Most of the grass in these sloughs is coarse but will make feed if cut early. There are other varieties of grass as well. In the N.E. ¼ of Section 28-82-14 there is a swamp about 25 acres in extent with a growth of buck-brush and some tamarack and spruce 3 to 4 feet tall. There are quite large patches of swamp land in the East half of Section 14 and W. ½ of Section 13-83-14 covered with low willow brush and grass. These drain into the upper reaches of the Little Moose.

WATER.

Springs were found at the following places: Centre of S.E. ¼ Section 21-82-14; just north-east of the centre of south boundary Section 20-82-14; in the N.W. ¼ Section 17-82-14; just south of the north-west corner Section 18-82-14; small spring near south-west corner Section 21-82-14; two springs in the bottom of the Little Moose valley in south-east Section 12-83-14 and south boundary Section 12; in the N.E. ¼ Section 25-82-14 and in the N.W. ¼ Section 15-83-14. At several of our camps we got water from the sloughs. In these sloughs there is 1 to 2½ feet of peat which in some cases was saturated with water even after all the dry weather. Most of the sloughs, however, were dry by August. In this month the Moose River consisted of pools of water and a trickle. Pools of water were found in the creek which runs into the Moose in Section 9-83-14. Boundary Creek which crosses the meridian about a mile and a half from the base-line consisted of pools of water early in August. A small muskeg in N.E. ¼ Section 29-82-14 appeared to contain a considerable amount of water while a fairly deep pond was found just north of north-west corner of Section 18-82-14.

CLEARING.

This varies considerably. The part that is most attractive in this respect lies immediately west of Clayhurst and the clearing becomes heavier as one goes west. The largest open patch is about 12 acres in the S.E. ¼ Section 14-83-14. The cost of clearing would vary from $5 to $50 per acre.

AGRICULTURAL POSSIBILITIES.

In my opinion the lighter soil should first be built up with grasses, alfalfa, or sweet clover, as grains need a fair amount of humus before they can be successfully grown. This would apply to quite a large part of the uplands of Township 82 west of the Moose River. The shallow depressions constituting the sloughs tend to raise the water-table of the surrounding land and the gumbo subsoil retains the moisture for deep-rooted plants. This season, due to the drought, the crops of grain in the Clayhurst settlement were light, but it would seem that quite good crops of wheat and oats are grown in years when there is more rain. The general level or gently rolling nature of the uplands adds to the possibilities for tillage. Very little of the land is gravelly or rocky. It should develop into pretty good mixed farming country and its comparatively easy access and proximity to the rail-head would be a great help. The east bank of the Moose valley and to a smaller extent that of the Little Moose provide considerable pasture, due to the fact that they are exposed to sun and wind which remove the snow.

ADJACENT INDUSTRIES.

Until recently a portable sawmill was operated at Clay's about 2 miles north-east of Clayhurst Post-office. Considerable breaking of land in the Clayhurst district was done this year. There is a fair amount of land in this settlement under cultivation, considering the time the settlers have been there, some only since 1931, and the lack of roads up till the time the ferry was put in this spring.

WILD LIFE.

Moose and bear appeared to be very plentiful, with a fair number of deer. Grouse and prairie-chickens in fair numbers. A flock of young ducks was seen on the pond in the south-east corner of Section 19-82-14. It might be of interest to tell of a bear, about a 2-year-old brown one, that hung around our camp in Section 15-83-14, becoming so bold as to stick its head in the cook-tent in an attempt to pull away something to eat. Everywhere through the woods and in the openings we saw where some moose or bear had "bedded down" and the scars on the poplar trees made by the moose were very numerous. A considerable number of fish were caught in the Moose River about a mile south of the base-line, a species resembling a trout but with black speckles and no red colouring. A man at Jim Good's has a few wild geese which have become as tame as the domestic variety. Coyotes were seen on occasions.

ELEVATION AND CONTOUR.

The height of the uplands is about 2,200 feet above sea-level. Clayhurst, about the same level as the country to the west, is about 800 feet above the Peace River. Generally speaking the land is level or gently rolling, but the Moose River cuts a coulée, which is over a half mile wide in most places, with side coulées widening it here and there. The valley of the Moose River is 75 feet deep at 1 mile south of the base-line. This increases to 345 feet at the south boundary of Township 84 to about 600 feet 5 miles farther south and to about 700 feet still farther south (at north boundary of Section 27-82-14). The Little Moose (locally named) rapidly develops into a deep wide gulch before joining the Moose River. The river-bench on the Peace River from the east part of Section 22 to near the south-west corner of Section 18 has an average width of a little more than half a mile. This bench is 130 to 170 feet above the Peace River. It is broken somewhat by banks in Section 16. Above this rises the main bank of the Peace River to a further height of about 400 feet to a narrow bench. The bank is broken by coulées which run north-westerly into Section 19.

MARKETS.

As I have stated, this area is favourably situated in regard to transportation, compared to other parts north of the Peace River. The cost at present for hauling wheat by truck from Clayhurst to Dawson Creek is 10 cents a bushel. A settler in N.W. ¼ Section 16-82-14 finds a market between there and Dawson Creek for garden produce such as cucumbers and strawberries.

SURVEY.

The party consisted of myself, Mr. Pattinson, B.C.L.S. (assistant), a packer, cook, and five to six other men. The point of organization was Fort St. John, but three men were taken on south of the Peace River. There were seven pack-horses and one saddle-horse. Transportation of these was made by one truck to the ferry. The cost works out at about the same or a little less than having them brought overland, with the advantage of having an undivided party. The small ferry-boat, with outboard-motor, through the courtesy of the ferry-men took the outfit to a landing near the south-east corner of Section 17 while the horses went overland, the pack-trail being very steep for fully loaded horses from the ferry to the top of the first bank. We were thus all on the field of operations in one day. Mr. Pattinson joined the party a little less than a month after commencement of survey. The party during a large part of the season consisted of ten men as it took two to keep up with the digging of pits, the dry ground and underlying gumbo making digging of pits to the required depth difficult. We made three camps to survey as far as the correction-line. It was then necessary to move to the base-line and, having located a crossing of the Moose, some new trail was cut. This move was made in two days. Posts were set every mile along the meridian till we commenced subdividing 2 miles inside Township 83-14. Fires in the timber were encountered and it was necessary to do some fire-control to enable the line to be run. While this was being done a line was run west to the south-east corner of Township 84, Range 15, as a check on the work to this point. The last part of the meridian was run when smoke was making it impossible to see very far, just when long sights to the north were required to check alignment, after crossing the deep coulée of the Moose. On occasions smoke, combined with fog later on, delayed running lines till noon. During the season I spent considerable time in locating trail for moving from one camp to another and in locating camp-sites most favourable for going

to work. The scarcity of water due to the drought made this difficult and sometimes long walks were unavoidable.

The third system of survey as set out in the Dominion Manual was generally adhered to, but standard posts were set at the centre of sections except in two cases.

PLAN.

For the sake of quick reference a plan drawn to a scale of 1 inch to 1 mile accompanies this report.

PHOTOGRAPHS.

This report is accompanied by twenty-four photographs.

I have, etc.,

DUNCAN CRAN, B.C.L.S.

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