PROVINCE OF BRITISH COLUMBIA

ANNUAL REPORT

OF THE

LANDS AND SURVEY BRANCHES

OF THE

DEPARTMENT OF LANDS

FOR THE

YEAR ENDED DECEMBER 31ST, 1937

HON. A. WELLS GRAY, MINISTER OF LANDS

PRINTED BY
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VICTORIA, B.C.:
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1938.

VICTORIA, B.C., September 29th, 1938.

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, 1937.

A. WELLS GRAY,
Minister of Lands.

VICTORIA, B.C., September 29th, 1938.

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, 1937.

I have the honour to be,
Sir,
Your obedient servant,

H. CATHCART,
Deputy Minister of Lands.

PART I.

DEPARTMENT OF LANDS.

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DEPARTMENT OF LANDS.

VICTORIA, B.C., September 26th, 1938.

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, 1937.

Comparing 1937 figures submitted with those of the previous year, two features attract attention—namely, the increase in general business and drop in revenue.

These features, seemingly illogical, can be accounted for as effects of recent legislation authorizing lower deposits, lower interest rates, and provision for third-class land, lowering the minimum price of agricultural land from $2.50 to $1 per acre.

The effect on revenue of reserving large areas under the "Coal and Petroleum Act" is also becoming noticeable.

It is again noted that during the past year only settlers in the Peace River Block have taken advantage of the statutory provision for exchanging pre-emptions or homesteads for more suitable locations.

An interesting tabulation is added this year, showing the number of home-site leases (less than 20 acres) issued, covering a period of the past ten years, with resulting cumulative revenue year by year.

I have the honour to be,
Sir,
Your obedient servant,

NEWMAN TAYLOR,
Superintendent of Lands.

STATEMENT OF REVENUE, YEAR ENDED DECEMBER 31ST, 1937.

LAND-SALES.

		Victoria.	Agencies.	Total.
Under "Coal and Petroleum Act"		.....	.....	.....
Under "Taxation Act"—				
General	$39,272.47			
Special Regulations	6,869.35			
		$46,141.82	.....	$46,141.82
Under "Land Act"—				
Townsites		312.02	$14,192.72	14,504.74
Country lands		4,650.85	15,327.54	19,978.39
Pre-empted lands		.....	962.18	962.18
Former Dominion Railway Belt lands		.....	8,000.98	8,000.98
Surface rights of mineral claims		.....	2,222.70	2,222.70
Totals		$51,104.69	$40,706.12	$91,810.81

SUNDRY REVENUE.

Under "Land Act"—				
Sundry lease rentals		$76,343.97	.....	$76,343.97
Grazing rentals		4,972.92	.....	4,972.92
Survey fees—				
Under "Land Act"	$1,574.90			
Former Dominion Railway Belt lands	114.25			
		728.85	$960.30	1,689.15
Sundry fees		13,902.30	789.00	14,691.30
Royalty		641.17	.....	641.17
Improvements		302.00	612.46	914.46
Rent of property		22.50	120.00	142.50
Under "Taxation Act"—				
Mineral claims		.....	3,596.15	3,596.15
Totals		$96,913.71	$6,077.91	$102,991.62

Revenue under "Coal and Petroleum Act."

	Victoria.	Agencies.	Total.
Coal licences	$4,300.00	.....	$4,300.00
Coal rentals	9,420.75	.....	9,420.75
Sundry fees	1,238.90	.....	1,238.90
Lieu of work	200.00	.....	200.00
Totals	$15,159.65	.....	$15,159.65

Sundry Receipts.

Maps, blue-prints, etc.	$8,882.83	.....	$8,882.83
Miscellaneous	271.76	.....	271.76
Interest, Southern Okanagan Land Project	6,667.32	.....	6,667.32
Revenue from lands transferred from the Dominion	13,912.92	$4,044.17	17,957.09
Totals	$29,734.83	$4,044.17	$33,779.00

Summary of Revenue.

Land sales	$51,104.69	$40,706.12	$91,810.81
Land revenue	96,913.71	6,077.91	102,991.62
"Coal and Petroleum Act"	15,159.65	.....	15,159.65
Sundry receipts	29,734.83	4,044.17	33,779.00
Totals	$192,912.88	$50,828.20	$243,741.08

Summary of Cash Received.

Revenue	$192,912.88	$50,828.20	$243,741.08
"Soldiers' Land Act"—			
Southern Okanagan Project	32,093.70	.....	32,093.70
Houses, South Vancouver	689.78	.....	689.78
"Better Housing Act"—			
Principal	60,700.00	.....	60,700.00
Interest	38,930.69	.....	38,930.69
Land Settlement Board—			
Land Sales	44,277.90	.....	44,277.90
Loans	28,766.41	.....	28,766.41
Refund of advances and refund to votes, etc.	6,649.53	.....	6,649.53
Totals	$405,020.89	$50,828.20	$455,849.09

SALE OF TOWN LOTS DURING 1937.

Disposal of 141 lots placed on the market at previous auction sales:—

22 lots at Oliver	$3,875.00
13 lots at Creston	2,845.00
1 lot at Vancouver	2,500.00
37 lots at Trail	1,750.00
9 lots at Osoyoos	1,200.00
10 lots at Kimberley	745.00
7 lots at Castlegar	575.00
9 lots at Natal	460.00
3 lots at Clinton	300.00
And 30 lots in fourteen other townsites	1,530.00
Total	$15,780.00

During the year auctions were held disposing of 135 lots, as follows:—

4 lots at Castlegar	$220.00
14 lots at Kimberley	1,750.00
18 lots at Trail	1,955.00
89 lots at Zeballos	10,800.00
10 lots at Princeton	505.00
Total	$15,230.00

Southern Okanagan Project sold 29 parcels, comprising 314.31 acres, the purchase price being $18,788.25.

In the University Hill Subdivision in Lot 140, New Westminster District (Endowment Lands), 2 lots were sold and 1 leased; price, $6,965.

PRE-EMPTION RECORDS, ETC., 1937.

Agency.	Pre-emption Records allowed.	Pre-emption Records cancelled.	Certificates of Purchase issued.	Certificates of Improvements issued.
Alberni	1	3	5	.....
Atlin	.....	.....	.....	.....
Clinton	22	9	37	12
Cranbrook	5	12	44	1
Fernie	.....	.....	16	.....
Fort Fraser	16	32	2	9
Fort George	25	58	17	20
Golden	2	22	.....	4
Kamloops	19	30	29	9
Kaslo	4	2	1	2
Nanaimo	6	5	10	2
Nelson	1	5	137	.....
New Westminster	13	33	160	.....
Penticton	10	15	23	.....
Pouce Coupe	211	244	42	68
Prince Rupert	6	8	14	2
Quesnel	46	35	44	10
Revelstoke	14	20	3	1
Smithers	6	10	5	4
Telegraph Creek	.....	1	1	.....
Vancouver	1	13	54	2
Vernon	6	9	13	3
Victoria	2	3	1,282	3
Totals	416	569	1,939	152

PRE-EMPTION AND HOMESTEAD EXCHANGES.

Under 1934 Amendment to "Land Act."

	No.
1935	41
1936	21
1937	37
Total	99

LAND-SALES, 1937.

"Land Act"—	Acres.
Surveyed (first class)	1,400.64
Surveyed (second class)	3,456.45
	4,857.09
Unsurveyed	1,194.5
Total	6,051.59

1937 SALE OF REVERTED LANDS UNDER DEFERRED-PURCHASE REGULATIONS (1933) (NOW OBSOLETE).

	No.	Acreage.	Appraised Value.
Applications allowed	33	2,834.15	$12,933.10
Totals	33	2,834.15	$12,933.10

Payments, 1937 (principal, interest, and existing improvements at date of sale) $6,869.35

PROCESS SUMMARY.

	No.	Acreage.	Appraised Value.
Total allowances since inception	719	56,464.27	$245,026.30
Less total abandonments	215	17,949.60	77,044.50
Totals	504	38,514.67	$167,981.80

	No.	
Total deposits due	501	$16,280.53
Total deposits paid and partly paid	133	5,099.19
Deposits in arrear		$11,181.34

1937.—Reverted land applications statused and cleared for timber-sale under the "Forest Act," 327.

LAND INSPECTIONS, 1937.

Agency.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Alberni	2	-----	-----	-----	-----	-----	-----	-----	1	4	3	1	11
Atlin	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Clinton	18	-----	-----	-----	-----	3	25	25	6	11	86	10	184
Cranbrook	3	-----	-----	-----	2	6	8	2	1	-----	5	5	32
Fernie	-----	-----	-----	-----	3	-----	-----	-----	-----	-----	-----	-----	3
Fort Fraser	6	-----	6	1	-----	1	19	39	16	27	4	7	126
Fort George	8	2	-----	2	10	36	87	116	61	40	8	8	378
Golden	4	-----	-----	-----	-----	-----	12	50	16	1	-----	2	85
Kamloops	18	-----	-----	4	2	-----	29	90	4	51	27	7	232
Kaslo	1	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	1	3
Nanaimo	-----	-----	-----	-----	1	-----	1	17	6	-----	5	4	34
Nelson	6	-----	-----	-----	4	4	6	-----	-----	-----	5	4	29
New Westminster	17	10	4	5	5	16	17	50	16	32	14	-----	186
Penticton	4	-----	-----	1	1	2	7	25	3	7	-----	1	51
Pouce Coupe	88	59	153	5	23	103	88	170	89	103	52	74	1,007
Prince Rupert	10	-----	1	-----	-----	-----	1	-----	1	8	1	3	25
Quesnel	9	-----	-----	1	8	39	17	39	88	71	20	33	325
Revelstoke	-----	-----	-----	-----	4	-----	4	22	3	18	13	3	67
Smithers	-----	-----	-----	-----	1	9	3	19	1	5	1	1	40
Telegraph Creek	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Vancouver	7	-----	-----	1	-----	7	5	17	12	9	12	1	71
Vernon	3	-----	-----	-----	12	17	16	2	6	4	1	9	70
Victoria	5	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	6
Totals	209	71	164	20	76	243	345	683	330	393	257	174	2,965

SUMMARY.

	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.
Pre-emption records	823	1,752	1,624	1,495	969	607	664	559	447	413
Certificates of improvements	379	326	328	217	154	123	196	245	276	217
Certificates of purchase	592	747	1,067	1,152	1,735	1,739	1,452	1,379	1,850	1,831
Crown grants	1,512	1,806	1,827	1,699	1,295	1,074	1,020	1,192	1,316	1,414
Total acreage deeded	260,321	512,844	215,364	163,161	116,990	68,945	173,632	81,110	84,442	71,018
Coal-prospecting licences	72	112	275	160	236	95	98	102	118	142
Sundry leases	83	51	113	104	122	92	92	121	157	190
Coal leases	3	1	12	6	17	.....	.....	5	17	2
Revenue received	$369,392.51	$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
Letters received	22,500	53,835†	32,180	28,951	22,857	19,381	15,591	16,901	17,739	19,213
Letters sent	12,500	18,063	19,912	22,372	16,517	14,688	10,936	12,378	15,475	15,537

	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
Pre-emption records	451	524	934	2,441	1,202	485	478	343	347	416
Certificates of improvements	208	172	124	113	80	63	86	76	107	152
Certificates of purchase	1,731	1,448	1,432	1,444	1,254	1,211	1,903	1,490	1,701	1,939
Crown grants	1,407	1,636	1,213	1,027	795	758	1,123	1,211	1,028	1,226
Total acreage deeded	74,175	109,451	62,823	69,542	58,470	58,782	61,296.50	77,373.41	68,608.10	93,709.10
Coal-prospecting licences	104	160	235	203	137	33	83	41	54	47
Sundry leases	195	196	149	175	154	225	168	200	194	195
Coal leases	15	19	33	6	23	70	32	37	45	18
Revenue received	$352,165.35	$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
Letters received	19,140	18,751	21,834	26,304	26,620	25,106	26,699	22,573	21,572	21,691
Letters sent	17,806	14,839	16,581	19,153	34,402‡	22,420‡	22,217‡	18,194	19,796	19,224

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

STATEMENT OF LETTERS INWARD AND OUTWARD, 1937.

Letters inward	21,691
Letters outward	19,224

Included in the above total of letters inward are general inquiry letters as follows:—

January	176	August	139
February	255	September	149
March	198	October	106
April	158	November	94
May	134	December	124
June	103		
July	112	Total	1,748

MINING LICENCES, LEASES, ETC., 1937.

Licences under the "Coal and Petroleum Act."

Original licences issued	34;	area,	19,775.00 acres.
Renewal licences issued	13;	area,	6,598.07 acres.
Totals	47;	area,	26,373.07 acres.

Leases under the "Coal and Petroleum Act."

New leases issued	8;	area,	4,159.00 acres.
Renewal leases issued	10;	area,	4,828.70 acres.
Totals	18;	area,	8,987.70 acres.

Sundry Leases under the "Land Act."

Number of leases issued	195;	area,	43,481.69 acres.

CROWN GRANTS ISSUED, 1937.

Pre-emptions	172
Dominion homesteads	202
Purchases (other than town lots)	112
Mineral claims	244
Town lots	76
Reverted lands (other than town lots)	158
Reverted town lots	129
Reverted mineral claims	108
Supplementary timber grants	3
"Dyking Assessment Act"	11
"Public Schools Act"	5
Miscellaneous	6
Total	1,226
Applications for Crown grants	1,271
Certified copies	10
Clearances of applications for leases of reverted mineral claims given	287

Total Acreage deeded.

Pre-emptions	25,726.60
Dominion homesteads	30,094.76
Mineral claims (other than reverted)	9,302.58
Reverted mineral claims	3,822.82
Purchase of surveyed Crown lands (other than town lots)	15,124.08
Purchase of reverted lands (other than town lots)	4,667.56
Supplementary timber grants	4,970.70
Total	93,709.10

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
	—	168		
		235		
Leases cancelled during this period	32			
Leases Crown-granted	4			
	—	36		
Leases at present existing		199	$9,749.04	

PART II.

SURVEY BRANCH.

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REPORT OF THE SURVEYOR-GENERAL.

VICTORIA, B.C., January 3rd, 1938.

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, 1937.

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.

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 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 permanence 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.

During the year a series of maps showing the new mining divisions, land recording districts, assessment and collection districts, land registration districts, and county boundaries has been published. The unity and simplification effected by the changes have met with general approval and are saving much expense both to the Government and to the public. The Survey Branch is proud of its great share in initiating and carrying through this constructive work.

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 Geodetic, Hydrographic, and Geological Surveys of the Dominion. Under a rather informal cost-sharing co-operative scheme the Royal Canadian Air Force has photographed extensive areas on Vancouver Island; the Provincial Surveys Branch is doing the necessary ground survey-work and photography, and is plotting the manuscript map, and Ottawa will take care of its publication.

GENERAL REVIEW OF FIELD-WORK.

Four survey parties were engaged on aero-phototopograpical control-work on Vancouver Island, these being in charge of Messrs. McCaw, Campbell, Stewart, and Jackson, all B.C. Land Surveyors of the permanent survey staff. Mr. F. C. Swannell, B.C.L.S., was in charge of the main control triangulation assisting the above parties on Southerly Vancouver Island.

In addition to the topographical work there were the survey of a small townsite at Zeballos, a subdivision of acreage at Roberts Creek, and acreage for five pre-emptions near Quesnel. Other items of work were small and scattered and all were carried out by surveyors resident near the work.

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 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 year was a busy one in map publication, as is shown in the report of the Chief Geographer, the special reason for this being the changes in the boundaries of mining and other division systems of the Province.

It is expected that in 1938 a new map of Southerly Vancouver Island, and a degree sheet covering the Hope-Princeton area will be published, as well as a new edition of the Lillooet pre-emptors' map.

During the year the draughting staff was very unfortunate, losing by death the much-valued services of three seniors, Messrs. Stokes and Lawrie and Miss Egerton, and by superannuation, Mr. Baile. Mr. A. S. Thomson, an experienced draughtsman, was added to the permanent staff, while Messrs. L. J. Roach, J. F. Stevens, and R. F. Leighton were added as apprentice draughtsmen.

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 70 mineral reference maps, making a total of 258 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 seven 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 1937, SURVEY BRANCH.

Number of field-books received	406
" lots surveyed	424
" lots plotted	442
" lots gazetted	347
" lots cancelled	5
" mineral-claim field-books prepared	294
" reference maps compiled	7
" applications for purchase cleared	158
" applications for pre-emption cleared	504
" applications for lease cleared	433
" coal licences cleared	80
" water licences cleared	206
" timber-sales cleared	1,922
" free-use permits cleared	219
" hand-loggers' licences cleared	49
" Crown-grant applications cleared	1,168
" reverted-land clearances	972
" cancellations made	1,469
" inquiries cleared	2,207
" placer-mining leases plotted on maps	485
" letters received	5,685
" letters sent out	4,068
" Crown-grant and lease tracings made in duplicate	1,286
" miscellaneous tracings made	152
" Government Agents' tracings made	115
" blue-prints made	29,159
Revenue received from sale of blue-prints from other departments and public	$4,925.48
Value of blue-prints for Lands Department	$4,073.30
Number of documents consulted and filed in vault	28,815

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.	South of Princeton; 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.

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 3rd, 1938.

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.

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 3rd, 1938.

GEOGRAPHIC DIVISION.

MAPS.

Published.

Name.	No. of Copies.	Date of Issue.	Dept. Map No.	Scale.	Area in Sq. Miles.
1. British Columbia (small) Mining Divisions	5,000	May, 1937	M.D.	50 mi. to 1 in.	366,255
2. British Columbia—Commercial—					
Land Recording Districts	7,000	June, 1937	1JC	27 mi. to 1 in.	366,255
Mining Divisions	6,000	June, 1937	1JD	27 mi. to 1 in.	366,255
Assessment and Collection Districts	650	June, 1937	1JE	27 mi. to 1 in.	366,255
Counties	1,050	June, 1937	1JGC	27 mi. to 1 in.	366,255
Land Registration	750	June, 1937	1JGL	27 mi. to 1 in.	366,255
3. Highway and Travel Map of British Columbia	3,500	July, 1937	P.W.D.	20 mi. to 1 in.	.....
4. British Columbia (small) Land Recording Districts	10,000	Sept., 1937	1CX	50 mi. to 1 in.	366,255
5. Bulkley Pre-emptors' Map	5,000	Nov., 1937	3D	3 mi. to 1 in.	11,000

In Course of Preparation.

1. Southerly Vancouver Island, standard edition	.....	.....	2A	4 mi. to 1 in.	16,000
2. Lillooet Pre-emptors' Map	.....	.....	3K	3 mi. to 1 in.	11,700
3. Hope-Princeton Degree Sheet, topographic	.....	.....	4Q	2 mi. to 1 in.	3,100

GEOGRAPHIC BOARD OF CANADA, NAMING AND RECORDING.

	1937.
Map-sheets, namings reviewed	13
Recommendations to Geographic Board	512
New names recorded	325

GEOGRAPHICAL WORK FOR OTHER DEPARTMENTS.

48 items, receipts and value of work	$1,169.07

MAP STOCK AND DISTRIBUTION.

Maps and Gazetteers issued to departments and public	16,846
Maps received into Geographic stock	44,761
Total value of printed maps and Gazetteers issued	$5,822.53
Revenue from printed maps and Gazetteers	$3,184.33

PHOTOSTAT.

Total number of photostats made	2,821
Revenue from departments and public	$822.72
Value of photostats for Lands Department, etc.	$1,628.10

LETTERS.

Letters received and attended to	2,190

STANDARD BASE MAP.

Bulkley Pre-emptors' sheet, sheets compiled	1
Southerly Vancouver Island sheet, sheets compiled	3
Hope-Princeton Degree sheet, sheets compiled	2
Department of the Interior sheets, Fraser Valley, compiled	3
School districts, plotted from description	24
Control nets supplied	45

TRIANGULATION.

Main, by least-square adjustment, triangles adjusted	16
Secondary, by rectangular co-ordinates, stations	597
Index cards, records	660
Triangulation index maps	11
Plan of triangulation, vicinity Big Bend, J. Elliott, 1930 season, sheet drawn	1

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
1EM	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
1J	1937	British Columbia. In one sheet. Showing rivers, railways, main roads, trails, parks, distance charts, etc.	27 m. to 1 in.	.50	4.00
1JCA	1923	Ditto ditto 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 "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
4F	1913	Duncan 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	1938	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 Canadian Geological Survey, or the Dominion Department of the Interior, 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, 1938.

TOPOGRAPHICAL SURVEYS, VANCOUVER ISLAND.

By R. D. McCaw.

Victoria, B.C., December 31st, 1937.

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

Sir,—Under date of June 25th you issued instructions to me to carry out control surveys for the purpose of mapping from air-photographs that area on the west coast of Vancouver Island extending between existing National Defence Sheets near Jordan River and the neighbourhood of Port San Juan. I herewith present my report upon this work, as carried out during the past season. Special stress was to be laid on the area west of the E. & N. Boundary, but as it was intended later to extend map-work eastward, areas there within reach should be included where expense could be ultimately saved. Only a small portion of the area had been flown by the R.C.A.F., but it was expected the remaining area would be covered during the summer.

Before going into the field all possible information on file with the Government bearing on the area was examined, including triangulation data of the Hydrographic Survey, traverses of the National Defence Department near Jordan River, and land and timber surveys. Some information was also obtained from the B.C. Electric Railway Company relative to their power surveys on the Jordan River and Loss Creek.

Actual field-work was commenced on July 2nd, near Jordan River. Much of the area to be covered was on an easy undulating slope falling to the strait. This feature, together with the heavy forest cover, made it impossible near the coast to connect with the triangulation system to the east. In this portion, therefore, the National Defence traverses and stations of the Hydrographic Survey triangulation were used for control, and as the datum for these surveys was identical with that used for the triangulation net being projected by Mr. F. C. Swannell, B.C.L.S., from the east, no doubt was held as to the ultimate fit between these two systems. In the vicinity of Jordan River, ground photographic stations were occupied where feasible and some control traverse run. Signals were also placed on Valentine and Muir Mountains. The former was connected with the triangulation net by Mr. Swannell.

We left the Jordan River area for the time being and went to Port Renfrew on July 21st, and for the six weeks following were working in the San Juan River Valley, as far east as the E. & N. Boundary. A main camp was located by the river about 5 miles up from Port Renfrew and from this point fly-camps were run in all directions—by back-pack, boat, and logging-railway—to reach necessary photographic stations. Mr. A. J. Campbell, B.C.L.S., who was working to the north had agreed with me on a tentative boundary between our areas north of the San Juan River. This limit followed the ridge between the Gordon River and Renfrew and Harris Creeks.

Early in September we moved back to Jordan River, locating a base camp at the Diversion Dam of the B.C. Electric Railway Company. Fly-camps were back-packed from here to reach stations between the head of Loss Creek and the San Juan River. An extended trip was made over the trail to Jordan Meadows, then to the Koksilah trail and westerly to the San Juan River. From fly-camps along this route the following stations were occupied for ground photography: Muir, Valentine, Baldy, and Todd. Considerable difficulty was experienced owing to fog, and smoke from slash being burnt to the south, and in the case of Valentine and Muir some of the information is poor.

The last base camp of the season was at the end of the existing grade of the West Coast Road, about 6 miles west of Jordan River. A camp was back-packed to Loss Creek, and about a week spent there getting information for vertical control of air views. Connections were made between B.C. Electric surveys at Loss Creek and the West Coast Road location done this year, which in turn was connected with Hydrographic Survey stations along the coast-line. Much barometric information was obtained for vertical control from Jordan River west.

The field season was concluded about the middle of October and the party paid off. Later on it was found necessary to make two trips to the Jordan River area for the purpose of making further connection between National Defence monuments, Hydrographic Survey stations, and stations of the International Boundary Commission.

The San Juan River is the main stream in the area done. The valley is a comparatively deep one and quite wide in the lower stretches. The fall is very gradual, the elevation at the E. & N. Boundary some 12 miles up being about 125 feet above mean sea-level. A little farming is being done near Port Renfrew. Much of the bottom-land is of good agricultural quality, but heavy clearing and difficulty of transportation to the outside have probably helped to keep it from development. At Port Renfrew there is an hotel, a store, and shingle-mill. Regular call is made by the C.P.R. west coast steamship. A local road system connects with near-by points in the lower valley. The one desire of all residents in the locality is to have highway connection with Victoria. Two logging companies are working in the valley. Messrs. Hemmingsen and Cameron were this summer operating in the vicinity of Harris Creek on the north side of the river, and were projecting their logging-railway still farther up Harris Creek. The Malahat Logging Company is building a railway on the south side of the river from salt water to their holdings in the E. & N. Block. Both of these companies allowed us the help of their railways for moving camp, for which we were very thankful.

The Jordan River, next in size, is more familiar to us as being the site of the power plant of the B.C. Electric Railway Company, and reached by road from Victoria. The West Coast Road as at present constructed, extends about 6 miles beyond the Jordan River. The power-house of the B.C. Electric Railway is situated east of the river and not far from its mouth. The main reservoir is about 7 miles up the river and a huge concrete dam (Diversion Dam) directs the water into a large wooden flume which carries it down about 5 miles to the Forebay Reservoir. From here huge pipe-lines, one above ground and others buried, carry the water down to the power-house. A narrow-gauge railway extends from the Forebay to Diversion Dam, and we are much indebted to the Company for the privilege of using this railway for transportation when required. The Island Logging Company was in operation all summer and was extending new logging-roads farther back. Other companies were working to the east. From Jordan River east and adjacent to the salt water, the timber is logged off.

There are two main streams between the Jordan and San Juan Rivers—namely, Loss Creek and the Sombrio River. The former is being investigated for power by the B.C. Electric. The Sombrio (a Spanish name) was the scene of hydraulic operations by the Spaniards over a century ago, who, it is alleged, washed out considerable placer gold. Placer operations in late years fail to find much value, however.

A horse-packing trail was constructed from the present end of the West Coast Road to Port Renfrew some years ago. In its present state it is not passable for horses for the whole distance. This is the only land transportation route to Port Renfrew. The distance by trail from the end of the road is about 19 miles.

Except for a few prospects no mining was being done within the area. Two copper properties, the Sunloch Mines and the Gabbro Copper Company's mine, are located on the Jordan River, but they have been quiet for some time.

The first air views from this season's flying were received early in September. Others were added later in the season. Unfortunately, the fliers were unable to complete entirely the flights this season, so that there is a portion of the area that cannot be mapped at present. Just what this area will amount to in square miles cannot be given at this stage of the work. The entire coverage contemplated for the season from ground work in the field was about 350 square miles.

Atmospheric conditions were often very poor. As is usual in this west-coast area, fog is the cause of much delay, and this year was no exception. The weather was not unduly wet. July was dry; with the exception of a few showers there was no rain. August made up for this with some heavy rainfall. Early September was fine and the latter part wet, this weather running into October. Smoke from forest fires became a nuisance early in September, and later slash fires sent volumes of smoke into our area, causing much trouble.

Black bears are common throughout the district, and wolves are said to exist, although none were seen. There are a few deer and indications of elk were observed. Trout abound in the streams. Blue grouse were seen near Jordan River and a few willow grouse here and there throughout the area.

The map-work is now being proceeded with on a scale of 2 inches to 1 mile, intended for ultimate reproduction on a scale of 1 mile to 1 inch.

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., December 31st, 1937.

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

Sir,—I herewith present my report on the topographical control surveys carried out during the past season. Your instructions, dated June 25th, described the area to be covered as lying north of Port San Juan toward Nitinat Lake and Barkley Sound, on the westerly coast of Vancouver Island, and extending easterly to the westerly boundary of the E. & N. Railway Land Grant, and beyond, if conditions were favourable.

With the exception of a strip along the coast the area had not been photographed from the air, but during the season the remaining portion was covered by the R.C.A.F. with vertical aerial views. The object of the survey was to secure sufficient control to permit the use of these photographs for the preparation of a map to be published on the scale of 1 mile to 1 inch with contour lines at 100-foot intervals.

All possible information on file with the Government was examined before going into the field and anything essential to the carrying-out of the work was noted. This included triangulation data of the International Boundary Survey and other triangulation surveys along the coast, data of the timber limit surveys, which practically covered the area, and certain information of the triangulation stations established by the Geodetic and Geological Survey of Canada, east of the E. & N. Railway Land Grant Boundary.

For triangulation control Mr. F. C. Swannell, B.C.L.S., produced a system from the Geological Stations Whymper and Towincut, and these were tied with two main stations established and occupied by us. Our other stations were all tied in with these. The triangulation was also cut in with Tatoosh Lighthouse, off Cape Flattery, on the American side, as a further check on the triangulation, as the position of this lighthouse is known.

The field party consisted of Mr. R. D. Fraser and Mr. H. E. Whyte, B.C. Land Surveyor, as assistants, and five men. Work was commenced in the field on July 2nd and the party was disbanded on October 8th. Three expeditions out from Victoria were made later to reach camera stations considered as vital to the work. Two of them were unsuccessful on account of weather conditions, and it was not until December 1st the stations were occupied.

It had been arranged with R. D. McCaw, B.C.L.S., who was to carry on similar work southerly from San Juan Bay, that the boundary between our areas, easterly from the bay, would be the divide between the waters of the San Juan and Gordon Rivers. Hence our first operations were confined to the vicinity of San Juan Bay and the Gordon River Valley. The old trail to the iron claims up the Gordon River and Bugaboo Creek, which fifteen or twenty years ago was a wide-open graded horse-trail, has been almost completely obliterated, particularly in the lower 4 miles. So it was necessary to open out a new trail, in part, and clean out the old to make a passable route. Due to the heavy brush and numerous windfalls, on several climbs we had to open out a trail for some distance up the slopes, otherwise there would not have been sufficient time on the summits for our work. This is very aptly expressed in a report of the Geological Survey which says: "The heavy rainfall for seven or eight months in the year, accompanied by prevailing high winds, has given rise to a very dense barricade of underbrush and an abundance of fallen timber, which makes geological investigation wholly secondary to the problem of progression." This had been expected, as also that great difficulty in finding points from which photographs covering the country could be

taken on account of the low altitude of the mountains and the timber-covered tops. Fortunately, this is not the case, and it was possible to locate stations that did not require a prohibitive amount of clearing. The same condition held for the mountains around Nitinat Lake and, with the exception of Carmanah Mountain, which had been chosen as a main triangulation station and required a large amount of clearing to make it one, stations were occupied that covered the area in a satisfactory manner. The coast-line from San Juan Bay to the Nitinat was travelled for the purpose of locating certain established triangulation points and other points on the aerial pictures for horizontal control. Extra points, where considered necessary for this purpose, were established in position by triangulation, using Tatoosh Light and one or other of the fixed points along the coast-line. For the purpose of establishing definite horizontal control on Nitinat Lake a skeleton triangulation was laid out and tied to the main system.

The main triangulation stations—Edinburgh and Carmanah—and also several other stations were marked with brass bolts fixed in solid rock. Other stations, where it was considered they would be of future use, were marked with the ½-inch B.C.L.S. bars.

PHYSICAL FEATURES.

The area is mountainous, the highest having an average altitude of 3,500 feet. The mountains are all timbered and very few rock knolls or bluffs can be seen from the summits. The valleys of the streams are generally narrow, and often the streams run through rocky canyons. This is especially true of the Gordon River. The coast-line from San Juan Harbour, as far north as Walbran Creek, is rocky with bluffs rising to about 100 feet. Below these cliffs, uncovered at low tide, is a flat rocky beach which, for the most part, can be readily travelled. From Walbran Creek to Clo-oose there are several long stretches of sand and gravel beaches and the shore-line is less precipitous. The streams along this part reach the shore through deep narrow valleys which break the long slopes running back to the first range of mountains. The only flat stretches noted lie at the deltas of the main streams, the Gordon and San Juan Rivers, the Nitinat River above the lake, and for some miles up the Nitinat Valley. There is also an area of low land, or rather land covered only with small hills, lying between the lower part of Nitinat Lake and the Chee-what Lake and River, and for some distance farther along the coast. A section of this along the coast adjoining the Clo-oose Indian Reserve was subdivided into small lots about twenty-five years ago, and a number were sold, some of which are still occupied.

FOREST.

With the exception of small areas in the more rugged parts the whole area is covered by timber limits. The forest growth is very heavy and the main species found are cedar, fir, hemlock, spruce, and balsam. There are no burnt-over areas except for a small section on the slopes of Edinburgh Mountain, which was burnt approximately forty years ago and is now covered with thick, small second-growth, of hemlock generally. Only very small parts have been logged, except in areas adjacent to Cowichan Lake. The logging near Cowichan Lake extends only slightly outside the E. & N. Railway Grant. Other logging is being carried on around the San Juan River Valley and at the head of Nitinat Lake. It is necessary here to make the logs into rafts and tow them down the coast to the mills. In Nitinat Lake the mile-long river at its mouth has a reversible current, flowing in with a rising tide and out with a falling. It is a very tricky business taking rafts out to the open sea through this narrow channel and must be done at the correct stage of the tide. This particular piece of water received the attention of the Hydrographic Survey this year, possibly with the idea of widening and straightening it.

MINERALS.

A complete summary and description of the known iron-ore deposits on the west coast of Vancouver Island is contained in a book published by the Geological Survey of Canada in 1926, under the title "The Iron Ores of Canada, Volume 1, British Columbia and Yukon." Included in this are the claims on Bugaboo Creek and the Gordon River. There has been no further development on these claims since this report was issued and, in the words of one geologist in a recent newspaper, the possibility of any development in iron deposits is very

remote. The geology of the central part of the area has not been thoroughly explored and further investigation is likely, due to the increased interest in the Island.

CLIMATE.

The annual rainfall is heavy but most of it falls during the winter months. It is believed that the latter part of July and the month of August are generally foggy, but this year July was quite favourable for our work as, also, were parts of August. Some very heavy rains fell around the middle of that month. The weather in September was generally good, but our work was hindered by the smoke from slash-burning in the logged areas. From the weather standpoint it would appear that this sort of work on Vancouver Island could be commenced earlier in the season to great advantage, except, of course, in the higher areas, where the late-lying snow makes this inadvisable.

FISHING.

Fishing is the mainstay of the majority of the settlers and, during the season, many seine-boats are operating along the coast and inlets. As many as twenty-five were noted at one time in Nitinat Lake, which is a comparatively small body of water. It is reported that the salmon-run was not heavy this year. Trout are understood to be plentiful in some of the streams.

GAME.

It cannot be described as a good game country. No deer were seen and, from this and other years' experience on the island, it would appear that the deer congregate in and around the old logged areas. The only deer tracks seen this season were on logged ground in Nixon Creek. Black bear are reported to be common and their tracks were noted on several occasions, but few were seen. Grouse are present and to be found everywhere, but are not plentiful.

ACCESSIBILITY.

On the west coast entry may be made into this area at Port Renfrew and Clo-oose. From Port Renfrew the Gordon and San Juan Valleys can be reached, while Clo-oose is the point from which Nitinat Lake is reached if travelling by the regular steamer. At Clo-oose a boat-landing is necessary. Nitinat Lake is also accessible from Cowichan Lake by using a trail around 15 miles long, which has been kept open by the Forest Branch. Logging-railways up Nixon Creek from Cowichan Lake, and also up Sutton Creek to near the head of the Gordon River, provide access into or close to the area on the easterly side. The Government telegraph, from Port Renfrew, follows the coast-line northerly to Clo-oose and on to Port Alberni, and for the maintenance of this line a trail is kept open by the lineman. With the exception of some short trails, or rather sidewalks around Clo-oose, these are the only trails in the district. The trails cut out by the party and the trappers' trails can only be classed as temporary as, due to the extremely rapid growth of underbrush and the windfalls, such trails will be obliterated in a few years' time. Any one coming into the country and intending to follow these trails must be prepared to open them out, as otherwise it will be almost an impossibility to get through, especially with packs.

An hotel, store, and post-office at Port Renfrew serve the needs of the loggers, fishermen, and settlers around San Juan Bay, while Brown's Bay, on Nitinat Lake, is the site of a store and gas-float serving that section. The post-office is at Clo-oose.

All of which is respectfully submitted.

I have, etc.,

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

TOPOGRAPHICAL SURVEYS, VANCOUVER ISLAND.

BY N. C. STEWART.

VICTORIA, B.C., December 31st, 1937.

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 under your instructions of June 25th, 1937:—

The area controlled is situated in Strathcona Park, south of latitude 49° 45′, extending westerly from Buttle Lake to the summit of its watershed and southerly to the south boundary of Strathcona Park, in the vicinity of Great Central Lake. This has an area of approximately 320 square miles, and will be mapped at a scale of 1 mile to 1 inch, with a contour interval of 100 feet.

The field party consisted of W. J. Moffatt, B.C.L.S., assistant; A. G. Slocomb, instrumentman; and six men. Mr. J. R. C. Hewett, B.C.L.S., joined the party during August, while Mr. Moffatt was in hospital for an operation for appendicitis. The field-work was commenced on June 25th and ended October 15th.

We were supplied with air-photographs of a portion of the area, these were taken by the Royal Canadian Air Force in 1931. It was intended to photograph the remainder of the area during the summer, but owing to unfavourable weather conditions this work was not completed.

On account of the mountainous nature of the country, the control was obtained solely by triangulation and ground photography.

Access to the area was by trail from Upper Campbell Lake to Buttle Lake (8 miles) and also by trail from Great Central Lake up Drinkwater Creek to Della Falls (10 miles). Main camps were established on Buttle Lake at the mouths of Phillips and Price Creeks, and afterwards on Great Central Lake near the mouth of Drinkwater Creek. We blazed a route up Phillips Creek, crossing the ridge to the headwaters of the Wolf River, establishing an advance camp on the slopes of the Rooster's Comb, the highest mountain on Vancouver Island, the first recorded ascent being made on July 21st. Similarly a route was blazed up the Thelwood Valley, camp being established on Upper Thelwood Lake; Mo-ye-ho Mountain and Taylor Glacier and several other peaks being reached from this camp. We also followed an old trail up Price Creek a short distance, then continued up Price Creek to the creek out of Cream Lake, ascending the cliffs to Cream Lake; thence down into the upper reaches of Drinkwater Creek, following down its rocky bed about 2 miles to connect with the Drinkwater trail near the bottom of Della Falls. This route between Buttle and Great Central Lakes is very difficult; hence the main camp was moved around via Upper Campbell Lake and road. From the foot of Della Falls we climbed the trail up to Della Lake, this bit of trail being almost vertical for about one-half mile. Fortunately, in the dangerous spots ropes and wire cables have been placed—but even so, when one is heavily loaded considerable difficulty is encountered. From Della Lake, Big Interior and "Nine Peaks" Mountains were climbed. During the season, angles were read at Mount Albert Edward, Mount McBride, Mount Big Interior, and Mount Joan; these are main triangulation stations.

PHYSICAL FEATURES.

The area is entirely mountainous. In the northerly portion the mountains rise sheer from the north and south trench containing Buttle Lake (altitude 710 feet) to mountain ridges attaining a height of 6,868 feet at Mount Albert Edward to the east and to 7,220 feet in the Rooster's Comb to the west. South of these mountains the crests are a little lower, culminating in an east and west range that connects Big Interior Mountain (altitude 6,107 feet) with the mountains in vicinity of Comox Glacier; thence there is a decided drop to Great Central Lake (altitude 270 feet). Other outstanding peaks in the area are Mounts McBride (6,829 feet), Myra (5,932 feet), "Nine Peaks," and "Seven Peaks." Prominent snow- and ice-fields are located on the slopes of Mount McBride, Rooster's Comb, Mount Myra, Taylor Glacier, Moyeha, Big Interior, "Nine Peaks," and "Seven Peaks."

The greater portion of the area mapped drains into Buttle Lake, and thence into the Campbell River system, the largest streams being the Wolf River, Phillips, Myra, Thelwood, Price, and Henshaw Creeks. Rising in this section and flowing into the west coast we find the headwaters of the Ucona, Burman, Moyeha, and Bedwell Rivers, while in the southern portion there is a southerly and easterly drainage into Great Central Lake and the Ash River. All streams are very rapid, their waters swirling over huge boulders, cascading over waterfalls, and boiling through innumerable canyons. Besides the large lakes—Buttle and Great Central—there are a great many others, mostly alpine lakes, whose waters are of different colours, such as Cream Lake, the cream colour being due to the silt of a glacier working through limestone-beds on the north-west face of "Seven Peaks." Della Lake has the usual water colour, while a beautiful lake about 1 mile south-east is blue-green, deriving its water from the glacier on Nine Peaks Mountain. A plateau country between the headwaters of Wolf and Burman Rivers contains a great number of lakes, providing a very attractive scene from the peaks which we climbed there during the course of our work. As already mentioned, there are numerous waterfalls on every stream, but those outstanding in beauty are Myra Falls, which are quite near Buttle Lake; Della Falls with its almost clear drop of over 1,500 feet; another falls from the blue-green lake already mentioned; and a beautiful fan-shaped falls on the tributary of the Ash River that flows out of the Cliffe snow-field and Tzela Lake.

FOREST.

There is a considerable quantity of merchantable timber, some of which has now reached maturity. The fan-shaped alluvial points along Buttle Lake and all the valley-bottoms of the larger streams running into it are heavily timbered, with Douglas fir, hemlock, and red cedar predominating. Likewise the lower valleys of the Ash and Drinkwater contain much timber. Other varieties found include balsam, white pine, yellow cedar, cottonwood, alder, maple, and yew trees. The merchantable timber grows to an approximate altitude of 3,000 feet, the forest-growth above that altitude becomes stunted, timber-line being reached about 4,500 feet above sea-level. In the forests there is the usual undergrowth of huckleberry, devil's-club, and salal. Wild flowers are abundant and very beautiful, especially at timber-line. Along Buttle Lake dogwoods and arbutus add to the beauty of its shores.

MINERALS.

A mineralized zone extends from the southerly slopes of Phillips Creek, across Myra, Price, and Thelwood Valleys to the Big Interior Basin and Della Lake country. The geology of this section is given by Dr. H. C. Gunning in his 1930 report, and in the reports of the Minister of Mines in 1906 and 1916. In addition to the areas covered in these reports, mineralization was noted on a ridge between Margaret Lake and the headwaters of the Ash River, copper and iron stains being seen in several places.

Many remarkable outcrops of limestone and marble occur throughout the area west of Buttle Lake and south of the north branch of Wolf River, the largest being on Marble Creek, and along the south branch of Wolf River. These limestone-beds contain countless fossils, which, according to Dr. Gunning's report, date back to the Permian age. Similar fossils were found in the marble and limestones on the slopes of "Seven Peaks" near Cream Lake.

Samples of talc and magnetite were taken from the ridge between Phillips Creek and the Burman River.

CLIMATE.

The weather during July was very favourable, but during August there was an abnormal quantity of rain, so little progress was made during that month. September was about average, the first fall of snow appearing on the mountain tops on September 28th. There was very fine weather in October, but smoke from forest fires hindered our work during the last two weeks of the field season. We noted that the small yellow violets bloomed a second time in October.

During the winter of 1936–37 there was an unusually large snowfall, a great quantity persisting on the northerly slopes of the mountains during the summer; thus, looking southerly in July, one saw a wintry-looking terrain.

GAME.

The best sport in this area is the trout-fishing in Buttle Lake and its tributaries. The fish are plentiful and full of fight, some large ones are caught. Quite a number of black bear were seen, but not many deer. There are fresh signs of elk, but these animals are very elusive, for none were seen. Eleven cougar were bagged by one trapper on Buttle Lake, and several others were taken north of Great Central Lake during the past winter. Wolves are reported in this vicinity. Signs of beaver, mink, marten, and other fur-bearing animals proved their presence, but these animals are not plentiful. Blue grouse and ptarmigan are almost the only game birds found, but a few ducks and geese were seen on alpine lakes. Many eagles, hawks, and owls frequent timber-line, and in Buttle Lake there are loons.

ACCESSIBILITY.

The present means of access have already been mentioned, and are very inadequate, considering the many resources and scenic attractions of the area. Shortly after this section was set aside for park purposes, a start at development was made. A road was surveyed from Forbes Landing to Buttle Lake, trails were built to Buttle Lake and up the Elk River, buildings being erected at each end of Buttle Lake and at Lady Falls in the Elk Valley. The construction of a trail to join Buttle with Great Central Lake was commenced from each end but never completed. The route chosen for this trail was up Price Creek to its head; thence to Margaret Lake, following down the creek out of that lake to meet the Drinkwater trail about 2 miles from Great Central Lake, the distance is over 19 miles. The route up Price Creek is very difficult, owing to brushy snowslide paths. I believe an alternate route was considered by using the top of the ridge between Price and Henshaw Creeks, for stakes of the old survey were found there. After exploring both routes we considered the ridge route much the better of the two, for a comparatively easy ascent from Buttle Lake to timber-line is followed by a wonderfully scenic route along the ridge for several miles, to a point only a few hundred feet above the pass to Margaret Lake.

In our endeavours to get to the Drinkwater trail we tried to find a way from the Thelwood Valley to the headwaters of the Drinkwater, but found the going very tough and almost as long as the other route. As neither of these routes was convenient for our work, we took a middle course via Cream Lake, as already mentioned, but wish to warn inexperienced climbers that our trail is very arduous and dangerous in places. It has the advantage, however, of being probably the shortest way between the existing trails.

There are man-pack trails up Wolf River, Phillips and Thelwood Creeks, the latter trail I believe leads to the west coast. A good trail suitable for horses goes up Myra Creek to the mines, about 2½ miles from Buttle Lake. There is also a route occasionally travelled from the Forbidden Plateau, over the shoulders of Mount Albert Edward, down the Ralph River to Buttle Lake.

DEVELOPMENT AND RESOURCES.

There is no active development-work being performed in this portion of Strathcona Park. The remnants of the former mining activity are not extensive, probably indicating that these mines did not prove to be of sufficiently high grade to warrant further development up to the present time. The forest in the Buttle Lake area of the park is being preserved as a tourist attraction, but the whistles of the high-lead engines can now be heard within a short distance of the lower end of Buttle Lake, and it may be presumed that that end of the lake will be logged off before long as the timber there is privately owned. I consider that the mineral and timber wealth in the park are very great, but these will be surpassed by the tourist possibilities, when the scenic and sport attractions are developed and made easily accessible.

I have, etc.,

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

TOPOGRAPHICAL SURVEYS, VANCOUVER ISLAND.

By G. J. Jackson.

Victoria, B.C., December 31st, 1937.

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, and consists of all the Island, lying west of the 128° meridian, that has not already been mapped.

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 British Columbia triangulation system. Elevations were obtained from sea-level.

The party of seven was organized at Victoria, and arrived at Holberg on July 1st, where work was commenced. The main camp was moved along the Holberg–San Josef Road and trail, the first 8 miles by car, the remainder by horse and sled and back-packing to the San Josef River; then by rowboat, for the last 2 miles, to the mouth of the river. The hills on each side of the road were reached by fly-camps. From San Josef we were able to use a launch to reach Sea Otter Cove, Raft Cove, and Leeson Harbour, and also to move the main camp to the head of Goose Harbour. From here we moved to Fisherman's Bay by horse and wagon; there, again, we used a launch to reach stations along the north coast and to move down to Shushartie at the end of the season, where we caught the boat for Victoria on September 26th.

There are only two bare hills in the area. The rest are heavily timbered; these, when possible at all for stations, required a lot of clearing, and even then a number of stations had to be located high up in trees. Horizontal control by our views was supplemented by points obtained by traverse and along the coast by ship's triangulation stations of the Hydrographic Survey. Vertical control in some sections was obtained by barometer readings, where it could not be covered by views.

During the season twenty-one camera stations and three triangulation stations were occupied, 33 miles of traverse run, eighteen land-ties made, and many barometer readings were taken. A large percentage of days were lost on account of rain and fog.

There are five main river valleys in the area. Spruce River flows into the head of Holberg Inlet from the north. Cache Creek flows north into Queen Charlotte Sound; while Fisherman's, San Josef, and the Macjack Rivers flow westward into the Pacific Ocean. There are several small lakes in each of the watersheds of the Macjack and the San Josef Rivers. Lake William and Lake Brink, at the head of Fisherman's River, are about 3 miles in their combined length. Lake Erie, just north of San Josef Bay is over 1 mile long.

The whole country is comparatively low, only a few hills south of the San Josef River reaching 2,000 feet, while north of it the hills are less than 1,500 feet high, and around Cape Scott less than 1,000 feet. Much of the country is swampy and very wet, even in summer. It is all timbered, mostly with hemlock, balsam, black pine, and yellow cedar, with red cedar and spruce in some places. On the swampy ground the timber is mostly scrubby, but on the hillsides and drier ground the original timber was better. But large areas of this were blown down in 1907 and are now covered with a dense growth of reproduction 20 to 30 feet high. These areas are now nearly impassable, as the fallen logs are still solid and interlaced with brush and second-growth. There is a dense growth of salal and salmon-berry throughout the whole area.

There has been little settlement in the Macjack Valley, but the San Josef Valley and the country north of it has, for the most part, been taken up by pre-emption and Crown-granted. Cabins and small clearings were made on each pre-emption and about 1912 there were several hundred settlers in the country. With the exception of a very few, these settlers have left, the clearings have grown up with brush and the cabins, in many cases, have fallen down.

Good crops can be grown where the soil is suitable, as proved by the growth in the few fields and garden-patches now in existence. Clearing and draining is expensive and the land requires constant care to keep down the encroachment of the brush. Markets are limited

and it is not easy to get produce to them. Most of the settlers help out their living by fishing, trapping, and any work they can pick up.

There are now no schools or churches in the area and only one small store at Holberg and another at San Josef. There are three post-offices, one at Holberg with a weekly mail, one at Cape Scott with a bi-monthly mail, and one at San Josef with a monthly mail.

A road has been surveyed from Holberg to Fisherman's Bay. Of this, the first 8 miles from Holberg have been constructed and kept in good shape, so that it can be used by car. The last few miles from Fisherman's River to Fisherman's Bay can be used by team and wagon, as can also a branch road into the head of Goose Harbour. The remainder is only a trail. There is a connecting trail to San Josef Bay, also one from San Josef to Lake Erie. Between Fisherman's Bay and Cache Creek there is a trail which is partly cleared road in places, narrow trail in others, and only the beach at other spots. At one time there were many trails leading into the different cabins, but these are now badly filled in with brush and logs and most of the bridges have fallen down. The Macjack and San Josef Rivers can be used by small boats, at high tide, for a couple of miles from the mouth. The Government telephone-line to Shushartie follows the road and trail from Holberg to Cache Creek, with telephones at Holberg, San Josef, Cape Scott, and Cache Creek.

Few signs of minerals have, as yet, been found in the area. The only active property is the Millington group of claims, situated about 3½ miles up the valley from Holberg, and owned by Spooner Brothers, of Holberg, and associates. This is a copper property, the ore being bornite, on which considerable tunnelling has been done and some diamond-drilling.

At present it is a poor game country. There are a number of black bears throughout the area, but deer have practically disappeared, although they were very plentiful a few years ago. Grouse are scarce, but a few geese nest in the area, and both geese and ducks are plentiful in the fall and winter.

The chief fur-bearing animals are mink, coon, beaver, and marten, with occasional otters. Most of the fur is trapped on the beaches and fair catches are made most years.

Salmon run up all the rivers to spawn and are caught in great numbers by trollers and purse-seiners off the coast. Trout are in all the rivers and lakes.

The climate is very even, never getting very cold or very hot. The rainfall is heavy, averaging over 100 inches a year. There is little snowfall on the lower levels.

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.

TOPOGRAPHICAL SURVEYS, VANCOUVER ISLAND.

BY FRANK SWANNELL.

VICTORIA, B.C., January 14th, 1938.

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

SIR,—The season's work for 1937, as outlined in your instructions to me of June 25th, was an extension southerly of the Geodetic and Geological Survey triangulation net up the east coast of Vancouver Island across the Island into the triangular-shaped west-coast area bounded on the north by Nitinat Lake, to the north-east by the E. & N. Land Grant Boundary, and to the south by the Strait of San Juan de Fuca. Control surveys were made over this area by Messrs. McCaw and Campbell, of the Photo-topographic Survey, and each of us read the other stations. The establishment of a main station by Mr. Campbell on Edinburgh Mountain and his occupation of a station set by me on Rossander Mountain, near Nitinat Lake, enabled me to extend the triangulation well into their territory. The whole triangulation was based on the geodetic positions supplied for "Whymper" and "Waterloo"—the former on a prominent peak (5,056 feet) 7 miles north of Cowichan Lake; the latter a

Geological Survey Station on a low, burnt mountain north of the Koksilah River. Trigonometrical levels were carried across the Island and down to Port Renfrew by occupying, and including in the main triangulation, the Geological Survey Station on Mount Prevost; the altitude of which was obtained by vertical angulation from the geodetic bench-marks at Somenos and Tyee on the E. & N. Railway.

Field operations were commenced at the end of June at Cowichan Lake, and terminated about the middle of October on the San Juan River. Much time was unavoidably expended in the heavy clearing needed at the triangulation stations; while at the latter end of the season fog and rain on the San Juan slope and dense smoke from slash-burning in the Cowichan Lake area combined to make angle reading impossible for several weeks.

The whole region embraced in the triangulation is very heavily timbered, except an old burn around Waterloo Mountain and the logged-off areas on Cowichan Lake and the streams feeding it. From Mount Whymper the view southward disclosed an uninterrupted and chaotic welter of high, steep, heavily-wooded hills and ridges, with never an open summit visible except the burnt top of Edinburgh Mountain and a rock-topped hill or two near Nitinat Lake. The two west coast rivers—the San Juan and Gordon—the latter heading almost against Cowichan Lake, are in such deep narrow valleys that their course was difficult to trace. The only gap through the high hill ranges lay to the west where the deep depression in which Cowichan Lake lies continues as a wide heavily-timbered valley to Nitinat Lake.

The Nitinat River Valley referred to above is by far the easiest route through to the west coast. An excellent trail runs from Camp 3, 1 mile west of Cowichan Lake, following for miles the old railway grade and the Wilson and Brady logging-road. The distance across to Sorenson's logging camp at the head of Nitinat Lake is 15 miles and the valley is heavily timbered throughout, spruce commencing to displace the fir about half-way across.

Two other routes across the Island exist, both ending at Port San Juan. From Rounds, the Lake Logging Company's camp on Gordon River, about 10 miles by logging-railway from Cowichan Lake an old trail runs down the Gordon River, but it is now almost impassable on account of fallen timber, especially at the lower end.

The other route is by way of the San Juan River. From Shawnigan Lake a car may be taken to Chisholm's suspension bridge on the Koksilah River. From here a good graded pack-trail starts. The trail forks 6½ miles out, the left-hand branch running to Jordan Meadows. The right fork reaches the San Juan River at the mouth of Clapp Creek, 12 miles in all from the end of the Koksilah Road. No trace of a trail could be found below here, so we cut a back-pack trail 8 miles down the San Juan Valley to the mouth of Bear Creek, which shortly will be reached by the Malahat Logging Company's railway from Port Renfrew. This route from Shawnigan Lake could easily be made into a wagon-road, the divide being very low.

At the present there is no mining development in this portion of Vancouver Island. Search was vainly made for Todd's Crevice, on the Upper San Juan, from which, rumor has it, a fabulous amount of placer gold was taken by Chas. Todd, leader of an exploring party in 1865. Old mining-tools and location-posts were found about 2 miles above Floodwood Creek, and search in departmental records later showed than twelve claims were staked here in 1878. The old Silver Mine trail, branching off from the end of the Koksilah Road, leads off to an old cabin and tunnel. According to the Minister of Mines' Report for 1880, assays of as high as $100 per ton in gold, silver, and lead were obtained at this prospect. The showing was first discovered in the sixties by a Mr. Robertson, who prospected the Koksilah for gold in 1865, and whose party, incidentally, climbed and named Mount Waterloo.

The great and indeed only natural resource of the area under report is the wonderful stand of timber. Around Cowichan Lake fir is the predominant species, and the stand is, or rather was (for it is being rapidly logged off), magnificent. The various logging concerns, by putting in logging-railways, are now operating far back of the lake; in the case of the Lake Logging Company across the Sutton Creek divide on to the Upper Gordon River. The total logged-off area surrounding Cowichan Lake is about 35,000 acres. The cut of last year was 4,300 acres, probably yielding 200,000,000 F.B.M. One company alone, the Industrial Timber Mills, in their sawmill at Youbou cut 90,000,000 feet in 1937. From Port Renfrew the Malahat Logging Company are building a railway up the San Juan to tap their large holdings of fir inside the E. & N. Land Grant.

The maze of steep ridges and deep narrow valleys between the E. & N. Boundary and the west coast is also heavily timbered. Even on summit ridges of 4,000 feet elevation the hemlock attained 4 feet in diameter and was of great age and extremely slow growth, as evidenced by the closeness together of the annual growth rings.

Except for a burnt area on Edinburgh Mountain and another on Waterloo and the Upper Koksilah, which had spread across the San Juan, the entire region has escaped fire. It is interesting, however, to note that William Ralph, who ran the E. & N. Boundary in 1891, states that in the 50 miles of line between the San Juan and Alberni Canal he everywhere found charcoal and charred trees, mute evidence of a fire of some 100 years previous. None of this interior hill country has agricultural possibilities. What little bench land there is on the San Juan above Bear Creek is heavily timbered and the soil light. There are no meadows.

June was a very wet month, July quite dry, but during most of August and the latter half of September there was much heavy rain and sea fog which drove up from the Pacific with a westerly wind.

We saw very little game of any kind, except a few deer and occasional elk-tracks. Bear are not uncommon. The Upper San Juan River was quite devoid of fish, although the water is crystal clear. Grouse were very scarce, although a few coveys of blue grouse were seen on the high ridges.

All of which is respectfully submitted.

I have, etc.,

FRANK SWANNELL, B.C.L.S.

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