

DOMINION OF CANADA

REPORT OF THE DEPARTMENT

OF

MINES AND RESOURCES

INCLUDING

REPORT OF SOLDIER SETTLEMENT OF CANADA

FOR THE

FISCAL YEAR ENDED MARCH 31, 1938



OTTAWA
J. O. PATENAUDE, I.S.O.
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1939

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Departmental Printing and Stationery Division

*To His Excellency the Right Honourable Baron Tweedsmuir of Elsfield,
G.C.M.G., C.H., Governor-General and Commander-in-Chief of the
Dominion of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

The undersigned has the honour to lay before Your Excellency the Annual Report of the Department of Mines and Resources, including a Report on Soldier and General Land Settlement, for the fiscal year ended March 31, 1938.

Respectfully submitted,

T. A. CRERAR,
Minister of Mines and Resources.

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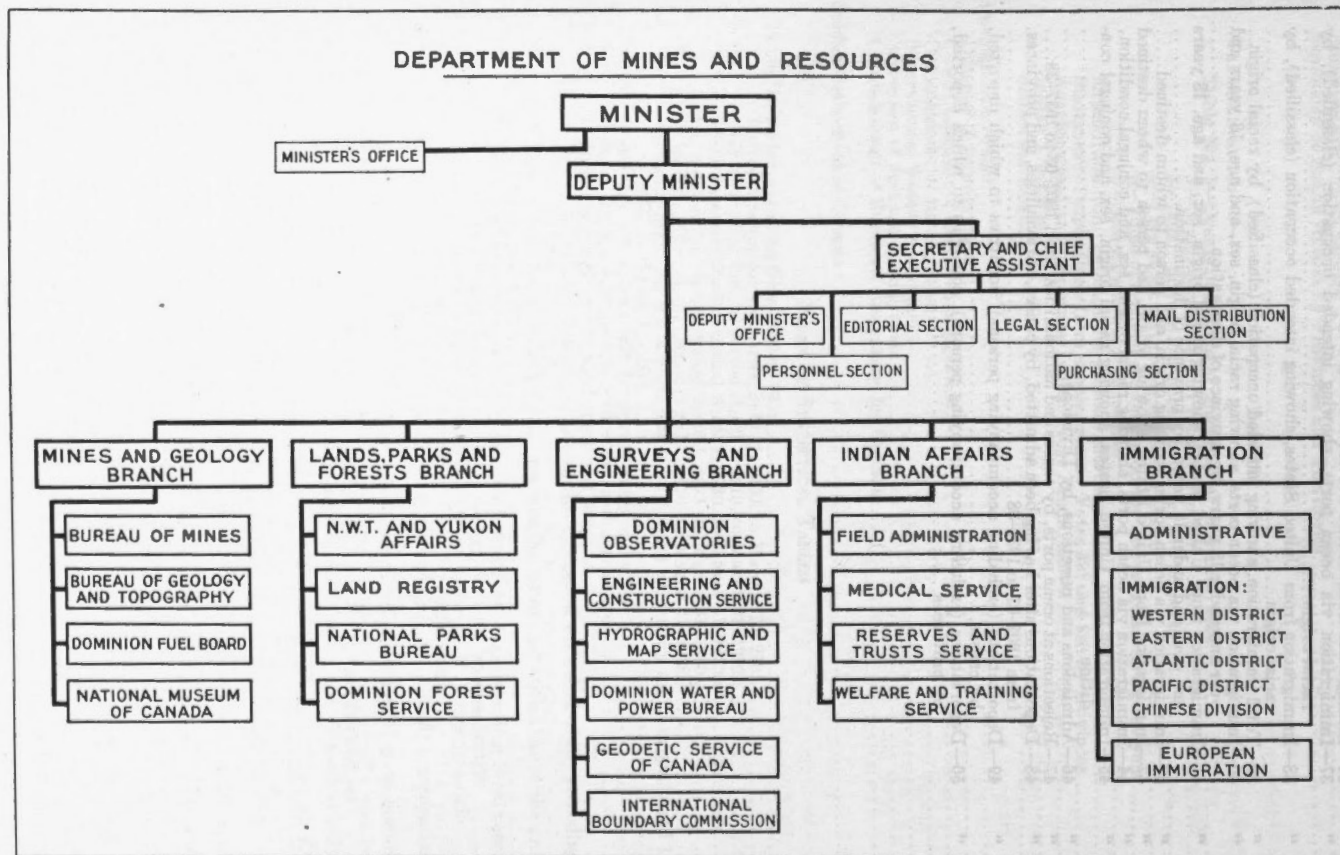
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REPORT
OF THE
DEPARTMENT OF MINES AND RESOURCES
INCLUDING
REPORT OF SOLDIER SETTLEMENT OF CANADA
FOR THE FISCAL YEAR ENDED MARCH 31, 1938

The Honourable T. A. CREEAR,
Minister of Mines and Resources,
Ottawa.

SIR,—I have the honour to submit herewith the second Annual Report of the Department of Mines and Resources.

The process of amalgamating the various services was continued during the year and good progress made. The office accommodation available to the Department at Ottawa was still so scattered that it was impossible to bring about unification as complete as is looked for ultimately. However, some improvement was effected by the provision of better space and by cross-moves within the Department.

There has been an expansion in certain services within recent years and it seems probable that in some instances they will have to continue assuming increased duties as time goes on. The growing mining industry is making increasing demands on the Mines and Geology Branch. Development in the Northwest Territories and the spreading network of national parks is adding to the work of the Lands, Parks, and Forests Branch. The Indian population is increasing at the rate of approximately 1,000 each year and this together with the special efforts now being made to advance the moral, physical, and economic standing of the Indians increases the duties of the Indian Affairs administration. The expansion of the functions of the Lands, Parks, and Forests and Indian Affairs Branches in turn adds to the duties of the Surveys and Engineering Branch. Although steps are no longer being taken to increase immigration to Canada, each year sees new tourist gateways opening up along the international border, and whenever a new port is established immigration service must be provided. Also the troubled state of affairs in Europe has resulted in more applications being made for admission to this country, all of which require most careful scrutiny.

There were no major staff changes although most of those who were retired as a result of the amalgamation of departments were separated from the Government Service during the year.

The following statement summarizes very briefly the revenues and expenditures of the different Branches during the year:

SUMMARY OF REVENUE AND EXPENDITURE FOR FISCAL YEAR 1937-38

	Revenue	Expenditure (*)	Total Expenditure
<i>General Administrative Branch</i>		179,504 82	179,504 82
<i>Mines and Geology Branch—</i>			
Branch Administration		30,085 76	
Bureau of Mines.....	4,198 93	473,090 26	
Bureau of Geology and Topography.....	8,465 75	850,269 94	
National Museum of Canada.....		74,048 15	
Dominion Fuel Board.....	1,486 47		
Administration	26,629 68		
Coal subventions	2,455,509 11		
Domestic Fuel Act payments... ..	59,731 87		
		2,541,870 66	
Assistance in improving transportation facilities into mining areas†.....			1,318,861 56
	<u>\$14,151 15</u>		<u>\$5,288,226 33</u>
<i>Lands, Parks, and Forests Branch—</i>			
Branch Administration	35 00	21,573 71	
Dominion Lands, Ordinance Lands, etc.....	38,728 44	72,255 70	
National Parks	327,403 40	1,813,554 95	
Forestry	10,536 61	374,518 48	
Northwest Territories	110,744 15	267,557 47	
Yukon Territory	76,947 15	115,012 75	
	<u>\$564,394 75</u>		<u>\$2,664,473 06</u>
<i>Surveys and Engineering Branch—</i>			
Branch Administration	1,222 14	21,890 84	
Dominion Observatories		147,181 18	
Water and Power Bureau.....	201 00	218,643 80	
Geodetic Service		172,059 28	
International Boundary Commission.....		32,510 24	
†Engineering and Construction.....		582,652 01	
Hydrographic and Map Service			
Hydrographic and Map Service. 424,085 08	5,184 28		
Legal Surveys and Map Service 169,208 22	10,387 77	593,293 30	
	<u>\$16,995 19</u>		<u>\$1,768,230 65</u>
<i>Indian Affairs Branch—</i>			
Branch Administration		131,408 41	
Field Administration		734,638 74	
Indian Education		1,877,926 75	
Medical Services		1,072,776 68	
Welfare of Indians.....		1,075,545 56	4,892,296 14
Miscellaneous Statutory items (Indian annuities)			252,649 00
Miscellaneous revenue—not including revenue accruing to Indian Band funds.....	2,815 31		
	<u>\$2,815 31</u>		<u>\$5,144,945 14</u>
<i>Immigration Branch—</i>			
Within Canada		1,196,012 01	
Outside of Canada.....		123,985 83	
Miscellaneous revenue.....	18,149 84		
	<u>\$18,149 84</u>		<u>\$1,319,997 84</u>
Totals for Department.....	<u>\$616,506 24</u>		<u>\$18,365,377 84</u>

(*) Expenditures are shown by votes.

† Including contributions to Provinces for work on roads.

Your obedient servant,

CHARLES CAMSELL,
Deputy Minister.

MINES AND GEOLOGY BRANCH

JOHN McLEISH, DIRECTOR

The value of production from Canadian mines in 1937 reached a new record of \$457,359,092, an increase of 26 per cent over the previous peak year, 1936. This production was made up as follows: metals \$334,165,243, an increase of 29 per cent, fuels \$65,828,879, an increase of 9.7 per cent, other non-metallics \$22,495,271, an increase of 34 per cent, and clay products and structural materials \$34,869,699, an increase of 34 per cent.

Among the more outstanding developments during the year the following might be listed.

In Zeballos area, on the west coast of Vancouver Island, the recent discovery of narrow, high-grade shoots of gold ore has attracted attention. Mercury deposits are being developed in the northern part of Bridge River district. Elemental sulphur was produced by Consolidated Mining and Smelting Company of Canada, Limited, at Trail, B.C., from smelter gases.

In the Northwest Territories development work has increased ore reserves at Eldorado's radium deposit at Great Bear Lake. The gold properties at Gordon Lake and the Yellowknife areas north of Great Slave Lake are meeting with encouraging results, and several are rapidly reaching the production stage.

In Alberta, extensive drilling in Turner Valley has resulted in the proving of a major oil field. At Waterways salt is being produced to supply part of the western demand.

In Saskatchewan the gold properties north of Lake Athabaska are approaching the producing stage.

Developments in the Porcupine, Kirkland Lake, and Larder Lake areas of Ontario have been most promising. Several new properties have entered production, and the ore reserves of the older ones have been greatly increased.

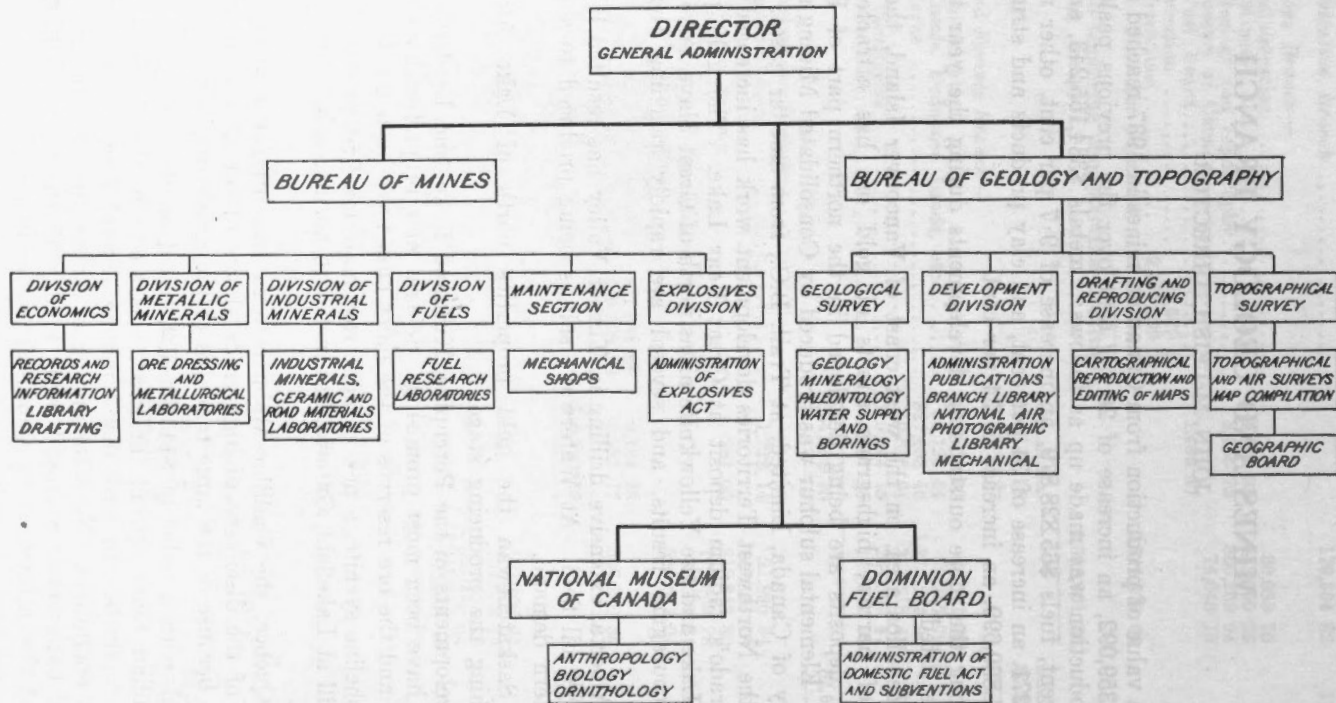
Nepheline syenite, a new ceramic raw material, first produced in 1936 in a small mill at Lakefield, Ontario, has met with an increasing demand in ceramic markets.

In Quebec, the Cadillac-Malartic area has attracted attention not only because of the discovery of high-grade shoots of ore at certain of the mines, but also because of the large tonnages of low-grade ore being developed.

Gold, with a value of \$143,326,493, based on the average price of \$34.99 in Canadian funds during the year, was again in the forefront of all other mineral products. In base metal mining several former important properties resumed operations. Notwithstanding a decline towards the end of the year, prices of base metals averaged fairly high, with the result that copper, nickel, lead, and zinc achieved new records for value of production.

In addition, new high output levels were recorded for platinum metals, selenium, tellurium, asbestos, salt, sulphur, sodium sulphate, natural gas, and crude petroleum.

**ORGANIZATION CHART
MINES AND GEOLOGY BRANCH
DEPARTMENT OF MINES AND RESOURCES**



Organization Chart, Mines and Geology Branch.

Dividends from mining companies in 1937 were 23 per cent of the value of the total mineral production, amounting to over \$105,000,000 as compared with \$81,707,100 in 1936, an increase of 30 per cent. From gold mines, they were approximately \$40,690,000; from base metal mines, \$60,255,000; from structural materials, \$973,000; from coal, \$826,000; and from oil and gas, \$2,464,000.

As a result of the rapid growth of the industry heavy demands have been made on the facilities of the Mines and Geology Branch. Some thirty-nine parties carried out geological investigations designed to produce geological maps and reports to aid the prospector and the mining engineer. During the year, thirty-two preliminary geological reports, and forty-three maps were published.

The important part played by aerial photography in the development of the natural resources of the country is shown by the steadily increasing use made of the National Air Photographic Library by engineers, prospectors, geologists, tourists, and others.

Topographical Survey parties were in the Northwest Territories, Yukon, British Columbia, Alberta, Ontario, and Nova Scotia for the purpose of preparing topographical maps, many of which serve as base maps for later geological work.

The National Museum conducted field investigations in zoology in British Columbia, the Thelon Game Sanctuary, and in western Manitoba, in botany on the north shore of Lake Superior, and in arts and handicrafts in Quebec.

The great progress in mining development has caused an increase in the demands made on the facilities of the Bureau of Mines. In 1937 there were in operation 172 milling plants and concentrators treating metallic ores, and having a daily rated capacity of 89,335 tons, of which 143 were gold milling plants of a daily rated capacity of 46,580 tons. Twenty-eight new milling plants and concentrators were brought into operation in 1937, having a daily rated capacity of 2,510 tons, of which 23 were gold milling plants of a daily rated capacity of 2,030 tons. The operators of these mills, all striving for greater efficiency in lower costs and increased recoveries, presented many problems, resulting in more research work being undertaken. Many of these problems are on refractory ores, in which the valuable minerals are present in a very fine state, or which contain minerals that interfere with extraction and recovery.

Investigative work was continued on coals, cokes, crude oils, and natural gas, for the purpose of extending the home markets for Canadian fuels. This included: the study of the physical and chemical properties of coals from the seams of the various collieries; special tests on Alberta and British Columbia bituminous coals for use in by-product ovens; high-pressure hydrogenation for the direct conversion of coal into oil; and domestic fuel tests, including an investigation in co-operation with the Forest Products Laboratories of wood-burning stoves of Canadian and European manufacture.

The expansion of the mining industry, and the increased road construction throughout the Dominion, were responsible for a notable increase in the production and use of explosives, adding to the field activities of the inspectors of explosives, and to the general office work of the Explosives Division.

The activities of the Branch are reviewed in more detail in succeeding pages.

ASSISTANCE TOWARD MINING TRANSPORTATION

The Branch administered a special supplementary vote by Parliament of \$1,400,000 to continue aid in improving transportation facilities into mining areas. A vote of \$1,500,000 had been provided in the previous year for the same purpose. In the fiscal year work was undertaken earlier and a much larger number of projects were completed. As a result, costs of transportation into many mining areas of the Dominion where such costs had been so high as to retard development have been reduced, and upwards of one hundred producing or soon to be producing gold mines have been given improved road connections. The work has also had the effect of encouraging active development in many promising mineral areas hitherto devoid of transportation facilities.

As in the previous year, agreements were entered into with the provinces concerned, whereby construction was to be carried out under the direction of the Provincial Governments, the understanding being that two-thirds of the expenditure for construction on each approved project would be borne by the Dominion Government and one-third by the province. Projects in Yukon and in the Northwest Territories were wholly financed and carried out by the Dominion Government except for certain projects in the Northwest Territories where only part assistance was given from the federal funds, the construction of these projects being carried out by mining companies which assumed the remainder of the costs. In several of the provinces, too, a number of mining companies assumed part of the costs of certain projects. The value of works executed in the fiscal year, as hereafter referred to, however, is the value of the works financed from Dominion and Provincial funds exclusive of the works paid for by mining interests.

Construction activities extended throughout the fiscal year, or from April 1937 to March 1938, and in this period work went forward on some 187 projects, employing a peak of over 3,800 persons. Although this peak of employment was somewhat lower than that of the previous year the employment was more sustained, and the total of about 334,000 man-days of work did not differ greatly from the aggregate of direct employment in the previous year. The supplying of construction and other materials, and the equipping and provisioning the camps provided additional employment. Direct employment alone distributed well over \$1,000,000 in salaries and wages, the work being given mainly to persons classifiable as needy unemployed.

Maximum expenditures provided for by the agreements with the provinces and by appropriations for work in the Northwest and Yukon Territories were as set out hereunder:

	Maximum Dominion Contribution	Maximum Provincial Contribution	Total Expendi- tures Pro- vided for
	\$	\$	\$
Nova Scotia.....	25,000	12,500	37,500
Quebec.....	335,000	167,500	502,500
Ontario.....	331,000	165,500	496,500
Manitoba.....	226,000	113,000	339,000
Saskatchewan.....	100,000	50,000	150,000
British Columbia.....	240,000	120,000	360,000
Northwest Territories.....	19,300	.....	19,300
Yukon Territory.....	63,000	.....	63,000
	1,339,300	628,500	1,967,800

Some of the funds were required, however, for settlement of 1936-37 accounts unpaid at the close of the previous fiscal year, and after provision for these accounts, approximately \$1,886,000 of the Dominion and provincial funds remained available for new construction in the 1937-38 fiscal year. It is estimated that on complete settlement of accounts \$1,851,400 of Dominion and Provincial funds will have been required for the works actually executed in 1937-38; thus, considered collectively, the appropriations made available for construction in the various provinces and territories in the year covered by this report were 98.5 per cent used. Tabulated hereunder are the value of works executed by provinces and territories in the 1936-37 fiscal year and the approximate value of works executed in the 1937-38 fiscal year, these figures being exclusive of administrative costs of the Dominion and the provinces concerned:

	¹ Value of Works Executed 1936-37	¹ Approximate Value of Works Executed 1937-38
	\$	\$
Nova Scotia.....	37,001	37,000
Quebec.....	525,000	448,000
Ontario.....	487,533	496,000
Manitoba.....	329,666	316,000
Saskatchewan.....	80,576	149,800
British Columbia.....	363,664	329,000
Northwest Territories.....	32,044	13,400
Yukon Territory.....	19,712	62,200
	1,875,196	1,851,400

¹ The values herewith reported are those of works financed from Dominion and Provincial funds exclusive of works paid for by mining interests.

MINING TRANSPORTATION PROJECTS, 1937-38

Nova Scotia

Beaver Dam Mine road
Moose River-Mooseland Mines road
Caribou Mine road
Cow Bay Mine road
Killag Mine road
Montague Mine road
Manganese Mine road
Renfrew Mine road
Mount Unisacke Mine road
Oldham Mine road
Salmon River Mine road

South Unisacke Mine road
Withrow Mine road
Seal Harbour Mine road
Wine Harbour Mine road
Goldenville Mine road
Lacey Mine road
Nugold Mine road
Lake Catcha Mine road
Forest Hill Mine road
Higgins and Lawlor Mine road

Quebec

Perron Mine road
Cournor Mine road
Fleming Mine road
Quebec-Manitou Mine road
Gale Mine road
Siscoe Mine road
Shawkey Mine road
Duverny Township road
Claverny Mine road
Moosha Mine road
Freegold Mine road
Louvre Mine road
Doreva Mine road
Waite-Amulet Mine road
Normetal Mine road

Latulipe-Gillet Township road
Malartic Goldfields Mine road
Cameron Mine road
Aldermac Mine road
Lacoma Mine winter road
Bruell Mine winter road
Beaucourt Mine road
Senator-Rouyn Mine road
Abbeville Mine road
Cadillac Station road
Matchi-Manitou Mine winter road
Cérès-Chaput Mine winter road
Payore Mine winter road
Rose Lake winter road

Ontario

Pickle Crow road
 Beardmore-Sand River road
 Hawk Junction-Murray Algoma road
 Michipicoten area roads
 Goudreau-Lochalsh-Algold road
 Goldpines-Woman Lake-Argosy road
 Gogwanda-Tyranite road
 Tyranite westerly road
 Houston Lake-Westree road
 Wendigo Mine road
 Nezah-Sturgeon River road
 Bidgood Mine road
 Little Long Lac-Bankfield road
 Geraldton-Little Long Lac-Hardrock road
 Canadian Nepheline Quarry road
 Gogama-Three Duck Lake road
 Madsen Red Lake road
 Afton (New Golden Rose) Mine road
 Geraldton-Hutcheson Lake road
 Hudson-Vermilion Lake road
 Goward-Cuniptau Mine road
 Bankfield westerly road

Naughton-Label Oro road
 Lake Geneva Mine road
 Denison Nickel Mine road
 Madsen-Faulkenham Lake road
 Straw Lake Beach Mine tramways
 Sturgeon Lake road
 Omega Gold Mine road
 Martin Bird Mine road
 Concordia Mine road
 Desantis Mine road
 Minnehaha Lake-Goldrock road
 Melba Mine road
 Nighthawk Lake road
 Coulson Mine road
 Matheson-Munro road
 Clear Lake road
 Macassa Mine road
 Pickle Landing road
 Arcadia Mine road
 Clark Mine road
 Albany River Mine road

Manitoba

Mafeking-The Pas highway
 Flin Flon-Channing road
 Herb Lake road
 Gurney Gold Mine road
 Regina Lake Airport road
 Miscellaneous portages
 Ilford-Gods Lake winter road
 Clearwater Lake road
 Rahls Island road
 Bridge over English Brook dam

Government Landing-Caribou Landing road
 Long Lake-Gunnar and Wadhope roads
 Packsack Mine road
 Portage, English Brook Landing-English Brook dam
 Manigotagan Village-English Brook dam
 Whiskey Jack portage
 Derry Mine road
 Gods Lake water route
 Pine Falls-Lac du Bonnet road

Saskatchewan

Prince Albert Airport dam
 Flin Flon-Beaver Lake road

Waskesiu-Montreal Lake road
 Flin Flon Gold Mines road

British Columbia

Whitewater Mine road
 Zeballos River road
 Zeballos road (Spud Creek Extension)
 Fort St. James-Manson Creek road
 Big Missouri Mine road
 Taseko Lake road
 Taseko Lake-Battlement Creek trail
 Dolly Varden railway
 Sheep Creek road
 Salmo-Sheep Creek road
 Wisconsin Mine road
 Ashloo Mine road
 Telegraph Creek-Dease Lake road
 McDame Creek road
 Tekla Landing-Old Hogem road
 Silver Lake trail
 A. M. Mine road
 B. C. Nickel Mine road
 Likely-Keithley road
 Williams Lake-Likely road
 Baskerville-Cunningham Creek road
 Mount Sicker road
 Upper Kitsault trail
 Phoenix-Greenwood road
 Reno Mine road
 Dewdney trail
 Sproat Lake-Kennedy Lake trail
 Porcupine Creek trail
 Driftwood Creek road
 Hall Creek trail

Tyughton Creek road
 Lac La Hache-Eagle Lake road
 Gun Creek road
 Tatla-Blackhorn Mountain road
 Springer Creek road
 Kaslo-New Denver road
 Sandon-Reco Mine road
 Enterprise Creek road
 Ferguson-Eight Mile road
 Cowichan Lake-Chemainus trail
 Cowichan Lake-Arrowsmith trail
 Unuk River trail
 Dome Mountain road
 Quesnel-Barkerville road
 Sugar Lake branch road
 Sugar Creek road extension
 Bowron Lake road
 Princeton-Copper Mountain road
 Meacham Creek-Goat River trail
 St. Marys River trail
 Hixon Creek road
 Bayonne Mine road
 Mud Creek Mine road
 Aiken Lake-Croydon Mine road
 Beaton-Ferguson-Five Mile road
 Reeves MacDonald Mine road
 Durango Mine road
 Alexis Creek-Tatla Lake road
 Tommy Creek trail
 Zeballos wharf

Northwest Territories

Great Bear River Portage road
 Fort Franklin wharf
 Labine Point wharf
 Yellowknife wharf

Yellowknife-Gordon Lake road
 Fort Smith Waterfront road
 Fitzgerald Winter landing field

Yukon

Silver King road
 Dawson to Boundary road
 Hunker-Dominion, Sulphur Creek, Quartz
 Creek, and Klondike roads

Landing fields at Whitehorse, Dawson, and
 Mayo

BUREAU OF GEOLOGY AND TOPOGRAPHY

The Bureau of Geology and Topography has four main divisions, namely: the Geological Survey, Development, Topographical Survey, and Drafting and Reproducing Divisions, the duties of which, as well as their activities during the year, are dealt with on subsequent pages.

A total of thirty-nine geological parties were in the field in 1937, nine of which were in British Columbia; five in Alberta; two in Saskatchewan; three in Manitoba; six in Ontario; seven in Quebec; two in New Brunswick; two in Nova Scotia; one in Yukon; and two in the Northwest Territories. These parties were engaged chiefly in examining areas that appear promising for prospecting, and in obtaining information that will be of aid in the development of mineral deposits. The Bureau continued to issue reports on the results of its geological field work as soon as possible after the completion of the work. During the year seven memoirs, thirty-two preliminary geological reports, and forty-three maps were published.

The Topographical Survey had parties working in British Columbia, Yukon, Northwest Territories, Alberta, Ontario, and Nova Scotia.

GEOLOGICAL SURVEY**FIELD WORK**

The Geological Survey, as in former years, carried out field work in many parts of Canada. The field officers in addition to preparing maps and reports for publication, have dealt with many requests for information and advice regarding mineral occurrences and allied subjects.

YUKON

H. S. Bostock completed the study and mapping of the geology of Ogilvie map-area (latitudes 63° to 64° , longitudes 138° to 140°), and also collected information for an annual report on the mineral industry of Yukon.

NORTHWEST TERRITORIES

J. F. Henderson commenced the study and mapping of the geology of Beaulieu map-area (latitudes 62° to 63° , longitudes 112° to 114°).

A. W. Jolliffe commenced the study and mapping of the geology in the vicinity of Yellowknife Bay (latitudes $62^{\circ}15'$ to 63° , longitudes 114° to $114^{\circ}15'$).

BRITISH COLUMBIA

J. E. Armstrong completed the mapping of the geology of the west half of Fort Fraser map-area (latitudes 54° to 55° , longitudes 125° to 126°).

J. G. Gray completed the mapping of the geology of the east half of Fort Fraser map-area (latitudes 54° to 55° , longitudes 124° to 125°).

E. D. Kindle examined mineral properties tributary to the Canadian National Railways in the vicinity of Hazelton.

F. H. McLearn resumed stratigraphical and faunal studies in Peace River district.

A. H. Lang completed the study and mapping of the geology of Swift River map-area (latitudes $52^{\circ}45'$ to 53° , longitudes $121^{\circ}30'$ to 122°).

C. E. Cairnes commenced the study and mapping of the geology of Tyaughton area, Bridge River district.

W. E. Snow, under the supervision of W. E. Cockfield, continued the study and mapping of the geology of the west half of Hope map-area (latitudes 49° to 50° , longitudes 121° to 122°).

D. A. McNaughton studied and mapped the geology of Hedley map-area (latitudes $49^{\circ}15'$ to $49^{\circ}30'$, longitudes 120° to $120^{\circ}30'$).

H. M. A. Rice continued the study and mapping of the geology of the east half of Nelson map-area (latitudes 49° to 50° , longitudes 116° to 117°).

ALBERTA

G. S. Hume continued the study and mapping of the geology of Turner Valley, and of Fish Creek map-area (latitudes $50^{\circ}45'$ to 51° , longitudes 114° to $114^{\circ}30'$).

B. R. MacKay studied and mapped the geology of Fallentimber map-area (latitudes $51^{\circ}30'$ to $51^{\circ}45'$, longitudes $114^{\circ}30'$ to 115°).

L. S. Russell completed the study and mapping of the geology of a part of southern Alberta bounded by latitudes 49° and 50° , and longitudes 110° and 113° .

C. M. Sternberg collected vertebrate fossils in southeastern Alberta.

R. T. D. Wickenden made an examination of the Milk River artesian basin.

SASKATCHEWAN

F. J. Alcock studied and mapped the geology of South Reindeer Lake map-area (latitudes 56° to 57° , longitudes 102° to 104°).

J. C. Sproule commenced the study and mapping of the geology of Cree Lake map-area (latitudes 57° to 58° , longitudes 106° to 108°) and Mudjatik map-area (latitudes 56° to 57° , longitudes 106° to 108°).

MANITOBA

R. W. Landes completed the study and mapping of the geology of an area bounded by latitudes 52° and 53° , and longitudes 101° and 103° .

R. C. McMurchy completed the mapping of the geology of Oxford House map-area (latitudes 55° to 56° , longitudes 94° to 96°).

C. H. Stockwell completed the study and mapping of the geology in the vicinity of Central Manitoba and Beresford mines.

ONTARIO

J. F. Caley studied and mapped the geology of the Toronto-Hamilton area (latitudes 43° to 44° , longitudes 79° to 80°).

H. N. Hainstock studied the ground water resources of the Toronto-Hamilton area.

J. S. Stewart continued investigations on the oil and gas resources of Ontario.

T. L. Tanton completed the study and mapping of the geology of the west half of Quetico map-area (International Boundary to latitude 49° , longitudes 91° to 92°) and commenced geological work in the west half of Ignace map-area (latitudes 49° to 50° , longitudes 91° to 92°).

A. E. Wilson studied and mapped the geology of Ottawa map-area (latitudes 45° to $45^{\circ}30'$, longitudes 75° to 76°).

M. E. Wilson completed the study and mapping of the geology of Madoc and Marmora map-areas.

QUEBEC

J. W. Ambrose studied and mapped the geology of the east half of Clericy map-area (latitudes $48^{\circ}15'$ to $48^{\circ}30'$, longitudes $78^{\circ}30'$ to $78^{\circ}45'$).

H. H. Beach studied and mapped the geology of the east half of Lamarck map-area (latitudes $49^{\circ}45'$ to 50° , longitudes 75° to $75^{\circ}15'$).

H. C. Gunning studied and mapped the geology of Bousquet and Joanne townships.

G. W. H. Norman studied and mapped the geology of Opemisca map-area (latitudes $49^{\circ}45'$ to 50° , longitudes $74^{\circ}30'$ to 75°).

G. Shaw completed the study and mapping of the geology of Opawica Lake map-area (latitudes $49^{\circ}30'$ to $49^{\circ}45'$, longitudes $75^{\circ}30'$ to 76°).

L. J. Weeks studied and mapped the geology of Montgay map-area (latitudes $48^{\circ}30'$ to $48^{\circ}45'$, longitudes $77^{\circ}15'$ to $77^{\circ}30'$).

J. T. Wilson studied and mapped the geology of Mistawak map-area (latitudes 49° to $49^{\circ}30'$, longitudes 78° to 79°).

NEW BRUNSWICK

C. S. Evans studied and mapped the geology of the west half of Waterford map-area (latitudes $45^{\circ}30'$ to $45^{\circ}45'$, longitudes $65^{\circ}15'$ to $65^{\circ}30'$) and of the east half of Salisbury map-area (latitudes 46° to $46^{\circ}15'$, longitudes 65° to $65^{\circ}15'$).

B. Rose continued geological mapping in Nipisiguit and Tobique map-areas.

NOVA SCOTIA

W. A. Bell continued the study and mapping of the geology of the Sydney coal field.

H. C. Cooke investigated the geology of the gold deposits of Nova Scotia.

PALÆONTOLOGICAL SECTION

The following presentations were made to the Geological Survey, and have been added to the palæontological collections:

Fenley Hunter, Flushing, Long Island, N.Y.: Oligocene mammals from Saskatchewan.

Herbert Smith, Ottawa: two caudal vertebrae of a porpoise from Pleistocene of Pontiac County, P.Q.

Dr. A. Lawson, Berkeley, California: small collection of freshwater post-Pleistocene molluscs from Rideau Ferry, Ont.

C. F. Cooper, Cambridge, England: 11 specimens of Devonian fish from Achenarras, Caithness, Scotland.

Kyancutta Museum, South Australia: 26 specimens Lower Cambrian sponges; by exchange.

British Museum: 21 specimens Triassic fossils; by exchange.

United States National Museum: 49 Devonian (Tully limestone) brachiopods; by exchange.

O. O. Nylander, Cariboo, Maine: a collection of concretions from Rocky Point, Madawaska Lake, Maine; by exchange.

Museum of Comparative Zoology, Cambridge, Mass.: a skull and mandible of *Eryops* from Carboniferous of Texas; by exchange.

B. L. Bowling, Iowa State Highway Commission, Mason City, Iowa: specimen of Devonian fossil rills and mud-cracks; by exchange.

MINERALOGICAL SECTION

Much of the time of the staff was given to the routine work involved in the examination of specimens, etc., but in addition various mineralogical and chemical investigations were made. About 7,250 specimens of minerals and rocks from various parts of Canada were examined and reported upon and, in addition, verbal reports to visitors were made upon more than 2,350 specimens.

E. Poitevin supervised the preparation of an exhibit for the International Exhibition held during the summer of 1937 in Paris, France, and directed the installation of the exhibit in the Canadian Pavilion. He also continued to cooperate in the research work on silicosis being carried on by the Ontario Department of Health.

During the year 1,695 educational collections of minerals and rocks, consisting in all of 63,536 specimens, were furnished to prospectors and to schools and other institutions. This marks an increase of almost 50 per cent over last year's figures.

Educational collections were distributed as follows:

Province	Standard	Grade 2	Grade 3	Grade 4	Miscel- laneous	Prospector's	
						Miner- als	Rocks
Yukon.....							
British Columbia.....					5	15	9
Alberta.....		1	1		5	21	6
Saskatchewan.....		2	4		2	58	54
Manitoba.....			1		2	1	1
Ontario.....	2	2	5		21	98	70
Quebec.....	3		2	1,200	17	43	31
Maritimes.....							
Foreign.....					5	5	3
	5	5	13	1,200	57	241	174

The following presentations were made to the Geological Survey, and have been added to the mineralogical collections:

R. A. Logan: gold in quartz, from claims of Prasac, Limited, 40 miles northeast of Halifax, N.S.

J. W. Burton, Ottawa: 30 pounds of chalcopyrite (for use in school collections).

C. W. Allen, Hamilton, Bermuda: calcite from Bermuda.

B. S. Hyde, Toronto: dendritic growth (unknown composition) on feldspar from Bathurst feldspar mine, about 11 miles from Perth, Ont.

International Nickel Company, per A. J. Wadhams, Vice-President: 2 nickel coins (Canada, 5 cents, Roumania 100 lei); 2 nickel coins (1 peseta and 2 peseta) struck for Euzcadi (Basque or Biscayan Republic).

M. J. Orcel, Professor of Mineralogy, Musée d'Histoire Naturelle, Paris, France: 20 mineral specimens from France and French possessions; by exchange.

WATER SUPPLY AND BORINGS SECTION

Owing chiefly to the rapid development of the Turner Valley oil field in southwestern Alberta, a much larger number of samples of rock cuttings from oil, gas, and water wells were received than in former years; the samples numbered nearly 55,000. Samples from 237 wells drilled in Alberta numbered 39,469, and were received through the courtesy of the Petroleum and Natural Gas Division, Department of Mines, Alberta. Samples from 27 wells in Saskatchewan numbered 705, and were received through the courtesy of E. Swain, Supervisor of Mines, Department of Natural Resources, Saskatchewan. Samples from 83 wells in Ontario numbered 13,725, and were received through the courtesy of R. B. Harkness, Natural Gas Commissioner, Department of Mines, Ontario. Representative core samples from a diamond drill hole, known as the Mallet Test Hole No. 1, put down in search of oil or gas at Ste. Therese, Quebec, were received from H. E. Parkes, Montreal, Quebec. The well is 3,035 feet deep, and the cores form an exceptionally good record of the character and thickness of the Palæozoic rocks in this area. The cores were sent in and examined in co-operation with the Bureau of Mines, Quebec. Through the courtesy of A. Creighton, Manager, New Brunswick Gas and Oilfields, Limited, Moncton, 1,023 samples from seven wells in the Stony Creek field were received.

Samples of diamond drill cores from the Columbia Oils No. 1 well at Sage Creek, B.C., which has reached a depth of slightly over 8,000 feet, were received, and a few other samples were sent in by well drillers.

Partial mineral analyses were made of 586 samples of underground water. Of these analyses 264 were made in connection with ground water surveys in the Prairie Provinces, and 273 in connection with ground water surveys in Ontario.

Information was supplied to many inquirers as to the possibilities of underground water supplies at various places. In this connection, acknowledgments are made to F. H. Edmunds, University of Saskatchewan, for the records of 210 water wells drilled in Saskatchewan during the fiscal year.

BRITISH COLUMBIA OFFICE

The use made by the public of the services offered by the British Columbia office was maintained at a high level. A total of 3,935 visitors seeking information registered at the office, and a large number of inquiries were handled by mail and by telephone. A total of 3,254 reports and 695 separate maps were distributed.

During the year the office was moved to more spacious quarters at 305 Federal Building, Vancouver.

DEVELOPMENT DIVISION

The Development Division is organized to carry out the general executive and administrative work of the Bureau; to make investigations designed to assist development relating to mineral resources; to maintain the centralized aerial photographic services; and to administer the general services required by the Bureau as a whole, and the National Museum.

NATIONAL AIR PHOTOGRAPHIC LIBRARY

The application of aerial photography to the investigation and development of the natural resources of the country showed rapid progress during the

year, and the important part being played by the photograph is evidenced by the steadily increasing correspondence, and by the number of visits to the library of engineers, prospectors, geologists, tourists, and others.

Some 39,000 new aerial photographs were added to the Library, bringing the total to approximately 730,000.

The following is a list of the principal areas in which these photographs were taken:

	Square Miles
Prince Rupert and southern Vancouver Island..	4,000
Yellowknife and Gordon Lake areas, N.W.T..	2,000
Drought area Saskatchewan and Alberta..	29,000
Airways—Ontario..	12,000
Spirit Lake district, Ontario..	10,000
Lake Evans area, Quebec..	13,000
Mistawak, Quebec..	1,800

A large number of photographs were loaned for mapping and other purposes, and some 37,800 prints were purchased through the Library.

Some 18,112,000 acres of land in the drought areas of western Canada were photographed to assist in the study and the solution of the problems of water development and land classification. Some 12,800 photographs were taken, and these were indexed, and are being assembled into municipality folders accompanied by soil and geological notes, drainage lines, and data as to cultivated lands, etc. One hundred and thirty-four such folders are involved, which will form a permanent record of information respecting these lands for the use of the municipalities, as well as the Governments affected.

This work is being directed and supervised for the Department of Agriculture in close co-operation with their officials, as well as with officers of the Universities of Alberta and Saskatchewan, and the Provincial authorities.

Road locations and water power, and storage projects were studied from air photographs at the request of various Departments and Provincial Governments. These include:

- Highway 114 miles near Hearst
- Highway 21 miles near Fort Smith
- Highway 25 miles north of Ottawa in connection with the proposed new Federal Park
- Flood lines of five areas in Yellowknife district
- Power possibilities on Snare River
- Storage possibilities on Upper Vermilion River
- Preliminary storage study of an area north of Port Arthur

During the season technical instructions were issued on behalf of the Interdepartmental Committee on Air Surveys and Base Maps for the taking of aerial photography by the Royal Canadian Air Force, and research work was carried on in connection with film and paper for photographic use.

PHOTOGRAPHIC SECTION

The following summarizes the work done during the year:

Contact prints..	4 by 5 to 36 by 48.. . . .	13,103
Bromide enlargements..	4 by 5 to 40 by 72.. . . .	3,560
Exposures developed..	1 by 1½ to 5 by 7.. . . .	5,450
Dry plate negatives..	4 by 5 to 20 by 24.. . . .	483
Wet plate negatives..	8 by 10 to 24 by 30.. . . .	129
Zinc plates etched..	11 by 14 to 24 by 30.. . . .	9
Lantern slides..	3¼ by 4..	876
Photos and maps mounted..		2,481
Total..		26,091

LIBRARY

Accessions to the Library include:

Books (by purchase)	182
“ (complete unbound volumes by purchase)	180
“ (by gift)	125
“ (complete unbound volumes by gift or exchange)	583
Total	1,070
Pamphlets and reprints	121
Maps	339
Canadian Government documents	693
British and Foreign Government documents	1,246
Scientific institutions, bulletins, proceedings, and transactions (by exchange)	2,042
Subscriptions to periodicals and continuations	274

The recorded loans were 7,570, an increase of 1,123 over the preceding year. Inter-library loans amounted to 431, and 205 books were borrowed from other libraries. Cards added to the catalogue numbered 3,838, of which 90 were bibliographical entries, and 29 biographical. The analysing of important monographs and other significant material in serial publications added 801 new titles to the catalogue. Pamphlets catalogued amounted to 73, maps 339, lantern slides 264; the number of cards filed in the respective indexes totalling 758. The library collections of maps, photographs, and lantern slides are in increasing demand for consultation in the library and as loans to students and to scientific and educational institutions. Photographs classified and filed, 720, and indexes were made for the Albums of Physiographic Forms.

The work of the Library involved some 1,800 items of correspondence. Eighty-three new exchanges were established, 13 of which represented geological societies, 3 palæontological, 3 mineralogical, 5 new geological survey series, 12 biological, 18 anthropological, 4 botanical, 7 zoological, 7 in the field of geography and history, and 11 general science. Exchange was resumed with the Royal Geographical Society of Antwerp, the Royal Academy of Amsterdam, the Societa Cientifica Argentina, and the Norwegian Geographical Society.

Among notable gifts to the library may be mentioned: 13 volumes from the Carnegie Institution of Washington, 17 volumes from the Catholic University of America, 5 volumes of Michigan University Studies, scientific series, 5 volumes of the Flora of U.S.S.R. from the Russian Academy of Sciences, and books presented by the Fairchild Aerial Corporation, A. LaRocque, E. M. Kindle, F. C. C. Lynch, and D. Jenness.

GEOLOGICAL INFORMATION AND DISTRIBUTION

During the year 91,200 publications of the Geological Survey and National Museum, exclusive of French editions, were distributed. Of these 6,129 were sent to addresses on the regular mailing lists, and 85,071 were distributed in compliance with written and personal requests for named publications, or requests for general or specific information. The French publications, which are distributed by the Editorial Division, numbered 8,946.

TOPOGRAPHICAL SURVEY

The duties of the Topographical Survey are: to carry out original surveys for ground and air mapping, and to prepare maps therefrom; and to compile and prepare base maps for development of the mineral industry and other resources. Physical geography and relief map models are included as a part of the work of the organization. The Secretary of the Geographic Board is a member of the staff of the Topographical Survey, and a brief account of the work of the Board is included as a part of this report.

To perform its duties the Topographical Survey has three main sections. The Topographical Mapping Section undertakes field surveys and office computations and compilations from *ground* methods. The Air Survey Section undertakes control surveys and office computations and compilations from *air* photographs. Maps compiled in the Topographical Mapping and the Air Survey Sections are cleared to the Map Compilation Section, where they are prepared with all necessary data for transmittal to the Draughting and Reproducing Division. The Map Compilation Section also carries out the preparation from assembled material of preliminary geological and advance topographical maps for transmittal to the Draughting and Reproducing Division. Brief summaries of the work of these sections follow.

TOPOGRAPHICAL MAPPING

Yukon

A. C. Tuttle and S. G. Gamble carried out the field work for the topographical mapping of the Mayo sheet (105 M), latitudes 63° to 64° , longitudes 134° to 136° . This work was done by photo-topographical reconnaissance methods for publication on a scale of 1 inch to 4 miles, contour interval 500 feet. The triangulation control was extended from the Carmacks sheet.

British Columbia

H. A. S. West and K. G. Francis commenced the topographical mapping of the Nass River sheet (104 A), latitudes 56° to 57° , longitudes 128° to 130° . This work is for publication on a scale of 1 inch to 4 miles with 500-foot contours. Field work was by photo-topographical reconnaissance methods. The triangulation control was tied to the British Columbia-Alaska boundary triangulation and also to existing stations in the net of the British Columbia Department of Lands.

R. J. Parlee and C. H. Smith, at the beginning of the season completed the field work for mapping the Hudson Bay Mountain area for publication on a scale of 1 inch to 1 mile, contour interval 100 feet. Photo-topographical methods supplemented by plane-table traverses were used. This is an irregular area of 132 square miles near Smithers (in 93 L/14). The vertical and horizontal control was based on existing triangulation stations and bench-marks of the Geodetic Service in the area.

On the completion of this work they commenced the mapping of the Tatlatui sheet (94 D), latitudes 56° to 57° , longitudes 126° to 128° . The field work was completed for the east half and a portion of the west half, for publication on a scale of 1 inch to 4 miles, contour interval 500 feet. This work was done by photo-topographical reconnaissance methods. The triangulation control was extended from the Hazelton sheet and was tied to existing triangulation stations in the net of the British Columbia Department of Lands.

N. E. McConnell completed the field work for the topographical mapping of the Big Bend sheet. This work was done by photo-topographical reconnaissance methods for publication on a scale of 1 inch to 4 miles, contour interval

500 feet. This sheet is an irregular area lying within the bend of Columbia River north of the Canadian Pacific Railway. Previous mapping in this area by the Department of the Interior was incorporated in the results. Control was based on existing triangulation stations of the British Columbia Department of Lands throughout the area.

Alberta

R. C. McDonald completed the field work for mapping the Bragg Creek sheet (82 J/15), latitudes $50^{\circ}45'$ to $51^{\circ}00'$, longitudes $114^{\circ}30'$ to $115^{\circ}00'$, and the west half of the Jumpingpound sheet (82 O/2), latitudes $51^{\circ}00'$ to $51^{\circ}15'$, longitudes $114^{\circ}45'$ to $115^{\circ}00'$. Both sheets are for publication on a scale of 1 inch to 1 mile, contour interval 100 feet, and were done by a combination of photo-topographical and plane-table methods. Both vertical and horizontal controls were based on previous work by the Geological Survey in the areas.

F. P. DuVernet completed a small portion of the Pekisko detail area field work on a scale of 1 inch to 2,000 feet, contour interval 50 feet; and also completed the field work for the Pekisko sheet (82 J/8), latitudes $50^{\circ}15'$ to $50^{\circ}30'$, longitudes $114^{\circ}00'$ to $114^{\circ}30'$. This work is for publication on a scale of 1 inch to 1 mile, contour interval 100 feet, and was done by plane-table methods. The control was based on previous work done by the Geological Survey in the area.

J. W. Spence completed the contouring of the Milk River sheet (72 E), latitudes 49° to 50° , longitudes 110° to 112° , for publication on a scale of 1 inch to 4 miles, contour interval 100 feet. This work consisted of putting the contours and additional culture features on the base maps provided by the township plans of the Department of the Interior. Existing bench-marks in the area were used for vertical control.

W. H. Miller visited the parties in Yukon, British Columbia, and Alberta, to inspect, and to co-ordinate, the work.

Nova Scotia

J. A. Macdonald extended to the south the series of detail sheets covering the Sydney-Glace Bay coal fields. These sheets are on a scale of 1 inch to 1,000 feet, the control being run by transit and tape or transit and stadia. No contouring was done. Where aerial photographs were available the detail was taken from these; in the remaining areas, detail was obtained by plane-table methods.

A list of the topographical maps published may be found under "Draughting and Reproducing Division," pages 34-36.

MAP COMPILATION

Manuscript Maps Completed in Topographical Mapping Section

BRITISH COLUMBIA

- Vancouver North (92 G/6—carry-over project), 1 inch to 1 mile.
- Sumas (92 G/11—carry-over project), 1 inch to 1 mile.
- Hudson Bay Mountain (93 L/14—irregular area), 1 inch to 1 mile.
- Manson Creek, east half (93 N), 1 inch to 4 miles.
- Manson Creek, west half (93 N), 1 inch to 4 miles.
- Hazelton, east half (93 M), 1 inch to 4 miles.
- Hazelton, west half (93 M), 1 inch to 4 miles.
- Nelson, east half (82 F), 1 inch to 4 miles.

ALBERTA

- Milk River, east half (72 E), 1 inch to 4 miles.
- Milk River, west half (72 E), 1 inch to 4 miles.
- Pekisko detail, 1 inch to 2,000 feet.
- Pekisko, east half (82 J/8), 1 inch to 1 mile.
- Pekisko, west half (82 J/8), 1 inch to 1 mile.

*Topographical or Geographical Base Maps Transmitted to the Draughting and
Reproducing Division*

No.	Name	Sheet No.	Publication Scale
BRITISH COLUMBIA			
1	Fort Fraser, east half.....	93 K-E. $\frac{1}{2}$	1 inch to 4 miles
2	Greenwood-Phoenix.....		1,200 feet to 1 inch
3	Hazelton, east half.....	93 M-E. $\frac{1}{2}$	1 inch to 4 miles
4	Hazelton, west half.....	93 M-W. $\frac{1}{2}$	1 inch to 4 miles
5	Hedley, east half.....	92 H/8-E. $\frac{1}{2}$	1 inch to 1 mile
6	Hedley, west half.....	92 H/8-W. $\frac{1}{2}$	1 inch to 1 mile
7	Manson Creek, east half.....	93 N-E. $\frac{1}{2}$	1 inch to 4 miles
8	Manson Creek, west half.....	93 N-W. $\frac{1}{2}$	1 inch to 4 miles
9	Nelson, east half.....	82 F-E. $\frac{1}{2}$	1 inch to 4 miles
10	Okanagan Falls, east half.....	82 E/5-E. $\frac{1}{2}$	1 inch to 1 mile
11	Okanagan Falls, west half.....	82 E/5-W. $\frac{1}{2}$	1 inch to 1 mile
12	Swift River, east half.....	93 A/13 E. $\frac{1}{2}$	1 inch to 1 mile
13	Swift River, west half.....	93 A/13-W. $\frac{1}{2}$	1 inch to 1 mile
ALBERTA			
14	Edmonton-Victoria, east half.....	83 H-E. $\frac{1}{2}$	1 inch to 4 miles
15	Edmonton-Victoria, west half.....	83 H-W. $\frac{1}{2}$	1 inch to 4 miles
16	Peace Hills-Red Deer, east half.....	83 A-E. $\frac{1}{2}$	1 inch to 4 miles
17	Peace Hills-Red Deer, west half.....	83 A-W. $\frac{1}{2}$	1 inch to 4 miles
18	Pekisko (detail).....		1 inch to $\frac{1}{2}$ mile
SASKATCHEWAN			
19	Battleford-Tramping Lake, east half.....	73 C-E. $\frac{1}{2}$	1 inch to 4 miles
20	Battleford-Tramping Lake, west half.....	73 C-W. $\frac{1}{2}$	1 inch to 4 miles
21	Cree Lake.....	74 G. $\frac{1}{2}$	1 inch to 4 miles
22	Fort Pitt, east half.....	73 F-E. $\frac{1}{2}$	1 inch to 4 miles
23	Fort Pitt, west half.....	73 F-W. $\frac{1}{2}$	1 inch to 4 miles
24	Foster Lake, east half.....	74 A-E. $\frac{1}{2}$	1 inch to 4 miles
25	Foster Lake, west half.....	74 A-W. $\frac{1}{2}$	1 inch to 4 miles
26	Mudjatik.....	74 B. $\frac{1}{2}$	1 inch to 4 miles
27	Reindeer Lake, south.....	64 D. $\frac{1}{2}$	1 inch to 4 miles
MANITOBA			
28	Berens River, east half.....	63 A-E. $\frac{1}{2}$	1 inch to 4 miles
29	Berens River, west half.....	63 A-W. $\frac{1}{2}$	1 inch to 4 miles
30	Beresford Lake (Gunnar Mines).....		
31	Carroll Lake, west half.....	52 M-W. $\frac{1}{2}$	1 inch to 4 miles
32	Deer Lake, west half.....	53 D-W. $\frac{1}{2}$	1 inch to 4 miles
33	Flinflon, northeast quarter.....		1 inch to 1,200 feet
34	Flinflon, northwest quarter.....		1 inch to 1,200 feet
35	Flinflon, southeast quarter.....		1 inch to 1,200 feet
36	Flinflon, southwest quarter.....		1 inch to 1,200 feet
37	Hecla, east half.....	62 P-E. $\frac{1}{2}$	1 inch to 4 miles
38	Norway House, east half.....	63 H-E. $\frac{1}{2}$	1 inch to 4 miles
39	Norway House, west half.....	63 H-W. $\frac{1}{2}$	1 inch to 4 miles
40	Oxford House, east half.....	53 L-E. $\frac{1}{2}$	1 inch to 4 miles
41	Oxford House, west half.....	53 L-W. $\frac{1}{2}$	1 inch to 4 miles
42	Rice Lake, Sheet 1.....		1 inch to 500 feet
43	Rice Lake, Sheet 2.....		1 inch to 500 feet
44	Rice Lake, Sheet 3.....		1 inch to 500 feet
45	Rice Lake, Sheet 4.....		1 inch to 500 feet
46	Rice Lake, Sheet 5.....		1 inch to 500 feet
47	Rice Lake, Sheet 6.....		1 inch to 500 feet
48	Rice Lake, Sheet 7.....		1 inch to 500 feet
49	Rice Lake, Sheet 8.....		1 inch to 500 feet
50	Stull Lake, east half.....	53 K-E. $\frac{1}{2}$	1 inch to 4 miles
51	Stull Lake, west half.....	53 K-W. $\frac{1}{2}$	1 inch to 4 miles

*Topographical or Geographical Base Maps Transmitted to the Draughting and
Reproducing Division—Concluded*

No.	Name	Sheet No.	Publication Scale
ONTARIO			
52	Bobcaygeon, east half.....	31 D/9 and 16..	1 inch to 2 miles
53	Bobcaygeon, west half.....	31 D/10 and 15.	1 inch to 2 miles
54	Haliburton, east half.....	31 E/1 and 8...	1 inch to 2 miles
55	Haliburton, west half.....	31 E/2 and 7...	1 inch to 2 miles
56	Markham Township.....		1 inch to 1 mile
57	Marmora.....		1 inch to 1 mile
58	Madoc.....		1 inch to 1 mile
59	Quetico, east half.....	52 B-E. $\frac{1}{2}$	1 inch to 4 miles
60	Quetico, west half.....	52 B-W. $\frac{1}{2}$	1 inch to 4 miles
61	Vaughan Township.....		1 inch to 1 mile
QUEBEC			
62	Clericy, east half.....	32 D/7-E. $\frac{1}{2}$	1 inch to 1 mile
63	Duvernay, east half.....	32 C/12-E. $\frac{1}{2}$	1 inch to 1 mile
64	Duvernay, west half.....	32 C/12-W. $\frac{1}{2}$	1 inch to 1 mile
65	Dufault Lake.....		1 inch to 1,000 feet
66	Malartic, northwest quarter.....		1 inch to 1,500 feet
67	Malartic, northeast quarter.....		1 inch to 1,500 feet
68	Malartic, southwest quarter.....		1 inch to 1,500 feet
69	Malartic, southeast quarter.....		1 inch to 1,500 feet
70	Newbec.....		1 inch to 800 feet
71	Opawica, east half.....	32 G/12-E. $\frac{1}{2}$	1 inch to 1 mile
72	Opawica, west half.....	32 G/12-W. $\frac{1}{2}$	1 inch to 1 mile
73	Perron-Rousseau, east half.....	32 E/3-E. $\frac{1}{2}$	1 inch to 1 mile
74	Perron-Rousseau, west half.....	32 E/3-W. $\frac{1}{2}$	1 inch to 1 mile
75	Waswanipi, east half.....	32 F-E. $\frac{1}{2}$	1 inch to 4 miles
76	Waswanipi, west half.....	32 F-W. $\frac{1}{2}$	1 inch to 4 miles
NEW BRUNSWICK			
77	Cape Spencer.....	21 H/4.....	1 inch to 1 mile
78	Loch Lomond.....	21 H/5.....	1 inch to 1 mile
79	Nipisiguit, east half.....	21 O/7-E. $\frac{1}{2}$	1 inch to 1 mile
80	Nipisiguit, west half.....	21 O/7-W. $\frac{1}{2}$	1 inch to 1 mile
81	Salisbury, east half.....	21 I/3-E. $\frac{1}{2}$	1 inch to 1 mile
82	Salisbury, west half.....	21 I/3-W. $\frac{1}{2}$	1 inch to 1 mile
83	Salmon River, west half.....	21 H/6-W. $\frac{1}{2}$	1 inch to 1 mile
84	Tobique.....		1 inch to 1 mile
85	Waterford, east half.....	21 H/11-E. $\frac{1}{2}$	1 inch to 1 mile
86	Waterford, west half.....	21 H/11-W. $\frac{1}{2}$	1 inch to 1 mile
YUKON			
87	Freegold Mountain.....		1 inch to 1,000 feet
NORTHWEST TERRITORIES			
88	Beaulieu.....	85 I.....	1 inch to 4 miles
89	Fort Smith.....	75 D.....	1 inch to 4 miles
90	Taltson Lake.....	75 E.....	1 inch to 4 miles

Preliminary Geological and Topographical Maps Prepared

No.	Name	Sheet No.	Publication Scale
BRITISH COLUMBIA			
1	Fort Fraser, northwest quarter.....		1 inch to 2 miles
2	Fort Fraser, west half.....	93 K-W. $\frac{1}{2}$	1 inch to 2 miles
3	Island Mountain.....		1 inch to 1,500 feet
4	Kettle River, west half.....	82 E-W. $\frac{1}{2}$	1 inch to 2 miles
5	Nimpkish, east half.....	92 L/7-E. $\frac{1}{2}$	1 inch to 1 mile
6	Nimpkish, west half.....	92 L/7-W. $\frac{1}{2}$	1 inch to 1 mile
7	Nelson, east half.....	82 F-E. $\frac{1}{2}$	1 inch to 2 miles
8	Schoen Lake, west half.....	92 L/1-W. $\frac{1}{2}$	1 inch to 1 mile
9	Woss Lake, east half.....	92 L/2-E. $\frac{1}{2}$	1 inch to 1 mile
10	Woss Lake, west half.....	92 L/2-W. $\frac{1}{2}$	1 inch to 1 mile
ALBERTA			
11	Del Bonita area.....		1 inch to $\frac{1}{2}$ mile
12	Index map showing location of Turner Valley.....		
13	North part of Turner Valley.....		1 inch to $\frac{1}{2}$ mile
14	Middle part of Turner Valley.....		1 inch to $\frac{1}{2}$ mile
15	South part of Turner Valley.....		1 inch to $\frac{1}{2}$ mile
16	Structural contour map of south part of Turner Valley.....		1 inch to $\frac{1}{2}$ mile
17	Taber district.....		1 inch to 1 mile
18	Pekisko Hills area.....		1 inch to 2,000 feet
SASKATCHEWAN			
19	Avonlea-Blackfoot area.....		1 inch to $\frac{1}{2}$ mile
20	Cree Lake, east half.....	74 G-E. $\frac{1}{2}$	1 inch to 2 miles
21	Cree Lake, west half.....	74 G-W. $\frac{1}{2}$	1 inch to 2 miles
22	Mudjatik, east half.....	74 B-E. $\frac{1}{2}$	1 inch to 2 miles
23	Mudjatik, west half.....	74 B-W. $\frac{1}{2}$	1 inch to 2 miles
24	Water supply papers—12 maps.....		1 inch to 3 miles
25	Foster Lake, east half.....	74 A-E. $\frac{1}{2}$	1 inch to 2 miles
26	Foster Lake, west half.....	74 A-W. $\frac{1}{2}$	1 inch to 2 miles
MANITOBA			
27	Echemamish, east half.....		1 inch to $\frac{1}{2}$ mile
28	Echemamish, west half.....		1 inch to $\frac{1}{2}$ mile
29	Geological sketch map of part of Claim 6277 (Echemamish).....		1 inch to 20 feet
30	Stull Lake, east half.....	53 K-E. $\frac{1}{2}$	1 inch to 2 miles
31	Stull Lake, west half.....	53 K-W. $\frac{1}{2}$	1 inch to 2 miles
ONTARIO			
32	Bobcaygeon.....	31 D-NE.....	1 inch to 2 miles
33	Haliburton.....	31 E-SE.....	1 inch to 2 miles
34	Ignace, southwest quarter.....		1 inch to 2 miles
35	North Spirit Lake.....	53 C.....	1 inch to 4 miles
36	Spirit Lake.....	53 C.....	1 inch to 4 miles
QUEBEC			
37	Amulet.....		1 inch to 800 feet
38	Dufault Lake.....		1 inch to 800 feet
39	Duverny Township.....		1 inch to $\frac{1}{2}$ mile
40	Newbec.....		1 inch to 800 feet
41	Perron-Rousseau, west half.....	32 E/3-W. $\frac{1}{2}$	1 inch to $\frac{1}{2}$ mile
42	Rouyn.....		1 inch to 800 feet
43	Waite.....		1 inch to 800 feet
44	Waswanipi, east half.....	32 E-E. $\frac{1}{2}$	1 inch to 2 miles
45	Waswanipi, west half.....	32 E-W. $\frac{1}{2}$	1 inch to 2 miles

Preliminary Geological and Topographical Maps Prepared—Concluded

No.	Name	Sheet No.	Publication Scale
NORTHWEST TERRITORIES			
46	Beaulieu River.....	85 I.....	1 inch to 2 miles
47	Fishing Lake.....	85 O/1.....	1 inch to 4 miles
48	Fort Smith.....	75 D.....	1 inch to 4 miles
49	Prosperous Lake.....	85 J/9.....	1 inch to 4 miles
50	Quyta Lake.....	85 J/16.....	1 inch to 4 miles
51	Taltson Lake.....	75 E.....	1 inch to 4 miles
52	Yellowknife Bay.....	85 J/8.....	1 inch to 4 miles

Base Maps in Varying Stages of Progress

BRITISH COLUMBIA			
1	Keithley Creek, east half.....	93 A/14-E. $\frac{1}{2}$...	1 inch to 1 mile
2	Keithley Creek, west half.....	93 A/14-W. $\frac{1}{2}$...	1 inch to 1 mile
ALBERTA			
3	Edmonton-Victoria, east half.....	83 H-E. $\frac{1}{2}$	1 inch to 4 miles
4	Edmonton-Victoria, west half.....	83 H-W. $\frac{1}{2}$	1 inch to 4 miles
5	Fish Creek, east half.....	82 J/16-E. $\frac{1}{2}$...	1 inch to 1 mile
6	Fish Creek, west half.....	82 J/16-W. $\frac{1}{2}$...	1 inch to 1 mile
7	Lethbridge, east half.....	82 H-E. $\frac{1}{2}$	1 inch to 4 miles
8	Milk River, east half.....	72 E-E. $\frac{1}{2}$	1 inch to 4 miles
9	Milk River, west half.....	72 E-W. $\frac{1}{2}$	1 inch to 4 miles
10	Peace Hills-Red Deer, east half.....	83 A-E. $\frac{1}{2}$	1 inch to 4 miles
11	Peace Hills-Red Deer, west half.....	83 A-W. $\frac{1}{2}$	1 inch to 4 miles
12	Pekisko, east half.....	82 J/8-E. $\frac{1}{2}$...	1 inch to 1 mile
13	Pekisko, west half.....	82 J/8-W. $\frac{1}{2}$...	1 inch to 1 mile
14	Steveville.....		1 inch to 2,000 feet
15	Vermilion-Saddle Lake, east half.....	73 E-E. $\frac{1}{2}$	1 inch to 4 miles
16	Vermilion-Saddle Lake, west half.....	73 E-W. $\frac{1}{2}$	1 inch to 4 miles
17	Wainwright-Sullivan Lake, east half.....	73 D-E. $\frac{1}{2}$	1 inch to 4 miles
18	Wainwright-Sullivan Lake, west half.....	73 D-W. $\frac{1}{2}$	1 inch to 4 miles
MANITOBA			
19	Swan River area, east half.....	63 C-E. $\frac{1}{2}$	1 inch to 4 miles
20	Swan River area, west half.....	63 C-W. $\frac{1}{2}$	1 inch to 4 miles
21	Central Manitoba.....		1 inch to 800 feet
ONTARIO			
22	Ignace, west half.....	52 G-W. $\frac{1}{2}$	1 inch to 4 miles
23	North Spirit Lake, east half.....	53 C/E. $\frac{1}{2}$	1 inch to 4 miles
24	North Spirit Lake, west half.....	53 C/W. $\frac{1}{2}$	1 inch to 4 miles
25	Ottawa, east half.....	31 G/3 and 6...	1 inch to 2 miles
26	Ottawa, west half.....	31 G/4 and 5...	1 inch to 2 miles
27	Toronto-Hamilton, west half.....	30 M/W. $\frac{1}{2}$	1 inch to 4 miles
QUEBEC			
28	Bousquet, east half.....		1 inch to 1,500 feet
29	Bousquet, west half.....		1 inch to 1,500 feet
30	Joannes, east half.....		1 inch to 1,500 feet
31	Joannes, west half.....		1 inch to 1,500 feet
32	Joliette, east half.....	31 I/3 and 6...	1 inch to 2 miles
33	Joliette, west half.....	31 I/4 and 5...	1 inch to 2 miles
34	Lamarck, east half.....	32 G/14-E. $\frac{1}{2}$...	1 inch to 1 mile
35	Lamarck, west half.....	32 G/14-W. $\frac{1}{2}$...	1 inch to 1 mile
36	Landrienne, east half.....	32 C/11 and 14..	1 inch to 2 miles
37	Landrienne, west half.....	32 C/12 and 13.	1 inch to 2 miles
38	Mistawak, east half.....	32 E/1 and 8...	1 inch to 2 miles
39	Mistawak, west half.....	32 E/2 and 7...	1 inch to 2 miles
40	Montgay, west half.....	32 C/11-W. $\frac{1}{2}$...	1 inch to 1 mile
41	Opemisca, west half.....	32 G/15-W. $\frac{1}{2}$...	1 inch to 1 mile
42	Rouyn, Sheet 1.....		1 inch to 800 feet
43	Rouyn, Sheet 2.....		1 inch to 800 feet
44	Rouyn, Sheet 3.....		1 inch to 800 feet
45	Rouyn, Sheet 4.....		1 inch to 800 feet

Base Maps in Varying Stages of Progress—Concluded

No.	Name	Sheet No.	Publication Scale
NOVA SCOTIA			
46	Hopewell, east half.....	11 E/7- E. $\frac{1}{2}$	1 inch to 1 mile
47	Hopewell, west half.....	11 E/7-W. $\frac{1}{2}$	1 inch to 1 mile
48	Liscomb River, east half.....	11 E/1- E. $\frac{1}{2}$	1 inch to 1 mile
49	Liscomb River, west half.....	11 E/1-W. $\frac{1}{2}$	1 inch to 1 mile
50	Lake Mulgrave, east half.....	11 E/2- E. $\frac{1}{2}$	1 inch to 1 mile
51	Lake Mulgrave, west half.....	11 E/2 W. $\frac{1}{2}$	1 inch to 1 mile
52	Moser River, east half.....	11 D/16- E. $\frac{1}{2}$	1 inch to 1 mile
53	Moser River, west half.....	11 D/16-W. $\frac{1}{2}$	1 inch to 1 mile
54	Owl Head, west half.....	11 D/10-W. $\frac{1}{2}$	1 inch to 1 mile
55	St. Mary River, east half.....	11 E/ 8- E. $\frac{1}{2}$	1 inch to 1 mile
56	St. Mary River, west half.....	11 E/ 8-W. $\frac{1}{2}$	1 inch to 1 mile
57	Sherbrooke Lake, east half.....	21 A/10-E. $\frac{1}{2}$	1 inch to 1 mile
58	Sherbrooke Lake, west half.....	21 A/10-W. $\frac{1}{2}$	1 inch to 1 mile
59	Tangier, east half.....	11 D/15- E. $\frac{1}{2}$	1 inch to 1 mile
60	Tangier, west half.....	11 D/15-W. $\frac{1}{2}$	1 inch to 1 mile
NORTHWEST TERRITORIES			
61	Artillery Lake.....	75 O.....	1 inch to 4 miles
62	Hardisty Lake.....	86 C.....	1 inch to 4 miles
63	Marian River.....	85 N.....	1 inch to 4 miles
64	Nonacho Lake.....	75 F.....	1 inch to 4 miles
65	Prosperous Lake.....	85 J/9.....	1 inch to 1 mile
66	Quyta Lake.....	85 J/16.....	1 inch to 1 mile
67	Walmsley Lake.....	75 N.....	1 inch to 4 miles
68	Yellowknife Bay.....	85 J/8.....	1 inch to 1 mile

Preliminary Geological and Topographical Maps in Varying Stages of Progress

No.	Name	Sheet No.	Publication Scale
1	Reindeer Lake South, east half.....	64 D- E. $\frac{1}{2}$	1 inch to 2 miles
2	Reindeer Lake South, west half.....	64 D-W. $\frac{1}{2}$	1 inch to 2 miles
3	Yellowknife Bay.....	85 J/8.....	1 inch to 2 miles

AIR SURVEY SECTION

Astronomical observations for latitude and longitude for control in compiling air photography were made in the following 4-mile map-sheet areas:

	Map-sheet	Positions Established
<i>Northwest Territories—</i>		
Hearne.....	85 I	2
Yellowknife.....	85 J	2
	85 P	6
	75 B	2
Hill Island Lake.....	75 C	3
Nonacho.....	75 F	3
<i>Ontario—</i>		
Windigo.....	53 B	2

Latitude and longitude observations for control use in compilation from oblique air photography were made in the following 4-mile map-sheets in northwestern Ontario:

	Map-sheet	Positions Established
Windigo.....	53 B	7
Spirit Lake.....	53 C	1
Severn River.....	53 G	6
Fort Hope.....	42 M	4

Stadia traverses for controlling the compilations from vertical air photography of 1-mile map-sheets in the Northwest Territories were made as follows:

	Map-sheet
Yellowknife Bay.....	85 J/8
Prosperous Lake.....	85 J/9
Quyta Lake.....	85 J/16
Part of Fishing Lake.....	85 O/1

During the fiscal year a total area of 48,616 square miles was compiled from oblique air photography, of which the photography of 35,602 square miles was available at the time of reorganization, and the photography of an area of 13,014 square miles along the Trans-Canada air route was obtained in the 1937 season. The carry-over projects, of which the plotting of the available oblique air photography was completed, comprise the following 4-mile map-sheets in whole or in part:

Northwest Territories

Fort Smith.....	75 D(W. ½)
Taltson Lake.....	75 E
Nonacho.....	75 F
McPherson.....	106 M
McKay Lake.....	75 M(E. ½)
Walmsley Lake.....	75 N
Artillery Lake.....	75 O
Hanbury River.....	75 P
Hardisty Lake.....	86 C
	86 B(W. ½)
Hottah Lake.....	86 D(25 per cent)

Ontario

Spirit Lake.....	53 C(E. ¼ and W. ½)
Timiskaming.....	31 M(W. ½)

Quebec

Timiskaming.....	31 M(E. ½)
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New projects photographed and compiled in 1937 comprised parts of the following 4-mile map-sheets required for the Trans-Canada air route:

Cochrane.....	42 H(S. ½)
Hearst.....	42 G(NW. ¼ and SE. ¼)
Hornepayne.....	42 F(N. ½)
Kenogami River.....	42 K(S. ½)

Plotting of available oblique air photography covering the following 4-mile map-sheet areas is in hand:

Northwest Territories

Hanbury River.....	75 P
Camsell River.....	86 F
Great Bear Lake.....	86 E(SW. ¼)
Red Rock Lake.....	86 G

Ontario

Windigo..	53 B (photographed in 1937)
Port Hope..	42 M

Quebec

Lac Evans..	32 K (photographed in 1937)
Lac Opataca..	32 J (photographed in 1937)

Also exploratory maps for R.C.A.F. use of areas in 4-mile map-sheets 85 G, 85 H, 85 I, 65 L, and 65 M, where further photography is required.

Vertical air photography, covering approximately 13,789 square miles, was plotted and compiled during the 1937 fiscal year. Of the vertical mapping projects carried over at the time of reorganization, the following were completed:

Ontario

Thessalon..	41 J/SW.
Bobcaygeon..	31 D/NE.
Haliburton..	31 E/SE.

Quebec

Joliette..	31 I/SW. (excepting 31I/3)
Landrienne..	32 C/NW.
Grand Mere..	31 I/NE. (north ½)

New Brunswick

Saint John..	21 G/SE.
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Nova Scotia

Sunny Brae..	11 E/SE.
Sheet Harbour..	11 D/NE.
Cape Breton..	11 K/NE.

In the Northwest Territories two areas totalling 1,377 square miles in Yellowknife-Gordon Lake area were photographed vertically. From this photography compilations on the half-mile scale were made of the following sheets:

Yellowknife Bay..	85 J/8
Prosperous Lake..	85 J/9
Quyta Lake..	85 J/16
Fishing Lake..	85 O/1 (southerly 60 per cent)

About 380 square miles of map-sheets 85 P/3 and P/6 were compiled for field use on the 1-inch to 1-mile scale.

In British Columbia, about 500 lineal miles of vertical photographic flight was made in 1937 along valley routes in Big Bend area, in map-sheets 82 M and 82 N, and in Tatlatui area in map-sheets 94 D and 104 A. The strip plots of this photography were made for use in conjunction with ground photography of these areas.

In Manitoba, a small area in the west half of sheet 63 K/13, Flinlon area, was compiled on a scale of 1 inch to 1,200 feet from available vertical air photography.

In Quebec, about 2,100 square miles of Mistawak Lake area, comprising part or all of map-sheets 32 E/9, E/10, E/11, E/14, E/15, and E/16, was plotted on the half-mile scale from vertical air photography obtained during the year, and work required to complete the compilation on the scale of 1 inch to 1,000 feet of the Rouyn-Beauchastel and Joannes-Bousquet project in map-sheet 32 D was carried out.

Considerable progress was made in the plotting of carry-over projects in hand, as follows:

Ontario

French River..	41 I/SE.
Capreol..	41 I/NE.

Quebec

St. Michel..	31 I/NW.
Charette Lake..	32 C/NE.

Approximate contouring, using vertical air photography with sparse height control, was carried out in the following areas:

Ontario

Steep Rock area in map-sheet 52 B/NW.

New Brunswick

Waterford 21 H/11, W. ½, mostly done in previous year

Cape Breton

Cape Breton 11 K/NE. for the use of National Parks Branch

A mosaic assembly in three sections of an area of approximately 113 square miles in map-sheets 11 L/6 and 11 L/7 in Prince Edward Island was made from available vertical air photographs for use of the National Parks Branch.

Flight maps and technical instructions required by the Royal Canadian Air Force in connection with the 1937 Federal program of air photographic mapping operations were prepared.

PHYSICAL GEOGRAPHY

Field work relative to the study of the physical geography of the eastern Arctic was continued during the summer months, and further observations were made at the places visited in 1935 and in 1936. The vicinity of Fort Ross at the eastern entrance of Bellot Strait was also visited, and a short trip was made to Brentford Bay on Boothia Peninsula where the relation between the sedimentary lowland and the crystalline upland was noted.

Additions were made to the collection of Quaternary marine fossils from most places visited, especially from the new locality at Fort Ross.

At the request of the Bureau of Mines, samples of coal were obtained from two localities near Pond Inlet and sent to the Bureau for analysis.

Archæological specimens were collected and purchased for the National Museum, and were turned over to the Division of Anthropology.

Office work consisted of the examination of soil samples, fossils, and rocks collected during the field season.

A large model of Saskatchewan, showing the mineral locations and water-powers of the province, was constructed, and additional work in modelling was completed.

Motion pictures taken during the field seasons were assembled into a four-reel story of the eastern Arctic cruise.

GEOGRAPHIC BOARD OF CANADA

The Geographic Board of Canada was created by Order in Council of December 18, 1897. The Order directs that all questions concerning geographic names in the Dominion that arise in the departments of the public service shall be referred to the Board, and that all departments shall accept and use in their publications the names and orthography adopted by the Board.

By Order in Council of December 14, 1899, each province was invited to appoint a representative on the Board, and all the provinces, except Alberta, are now represented. All names are submitted to the provincial representative concerned for advice and report before being dealt with by the Board.

During the past year D. L. McKeand, Secretary of the Northwest Territories Council, was appointed a member of the Board by Order in Council of December 9, 1937, P.C. 3024.

The present personnel of the Board is as follows: W. H. Boyd, Chairman; J. H. Corry, Secretary. The other members of the Board are: F. C. C. Lynch, G. A. Young, F. H. Peters, A. M. Narraway, A. Dickison, N. J. Ogilvie, D. L. McKeand, Department of Mines and Resources; J. E. Lyon, Department of

National Defence; and E. E. Gagnon, Department of Transport. The Provincial representative members are: British Columbia, G. G. Aitken; Manitoba, S. E. McColl; New Brunswick, A. S. McFarlane; Nova Scotia, Harry Piers; Ontario, C. H. Fullerton; Prince Edward Island, Hon. Bradford W. LePage; Saskatchewan, J. R. Hill.

In the past year a large number of controversial questions relating to place names in Canada were investigated and ruled upon by the Board, and thousands of place names were considered and passed for some sixty map-sheets. Many inquiries were received, and answered, from local, foreign, and departmental sources, regarding the location of geographical features in Canada, the authentic names for the same, and also the history and origin of the names.

DRAUGHTING AND REPRODUCING DIVISION

Maps Published April 1, 1937, to March 31, 1938

Publication Number	Title	Remarks
NORTHWEST TERRITORIES		
377A	Eastern portion of Great Slave Lake (west half), District of Mackenzie; scale, 1 inch to 4 miles.	Geology (reprint). For memoir by C. H. Stockwell.
378A	Eastern portion of Great Slave Lake (east half), District of Mackenzie; scale, 1 inch to 4 miles.	Geology (reprint). For memoir by C. H. Stockwell.
BRITISH COLUMBIA		
335A	Willow River sheet (west half), Cariboo District; scale, 1 inch to 1 mile.....	Geology. For separate distribution.
336A	Willow River sheet (east half), Cariboo District; scale, 1 inch to 1 mile.....	Geology. For separate distribution.
381A	Eagle-McDame area, Cassiar District; scale, 1 inch to 4 miles.....	Geology. For Memoir 194, by G. Hanson and D. A. McNaughton, and separate distribution.
ALBERTA		
404A	Bearberry sheet (west half), west of Fifth Meridian; scale, 1 inch to 1 mile.....	Topography. For separate distribution.
405A	Fallentimber sheet (east half), west of Fifth Meridian; scale, 1 inch to 1 mile.....	Topography. For separate distribution.
406A	Fallentimber sheet (west half), west of Fifth Meridian; scale, 1 inch to 1 mile.....	Topography. For separate distribution.
MANITOBA		
.....	Figure 2. Elizabeth-Dauphin claims, Herb Lake area; scale, 1 inch to 75 feet.....	Geology. For Memoir 208, by C. H. Stockwell, and separate distribution.
.....	Figure 3. Part of Rex group of claims, Herb Lake area; scale, 1 inch to 175 feet.....	Geology. For Memoir 208, by C. H. Stockwell, and separate distribution.

Maps Published April 1, 1937, to March 31, 1938—Continued

Publication Number	Title	Remarks
QUEBEC		
352A	Desbous sheet (west half), Abitibi County; scale, 1 inch to 1 mile.....	Geology. For separate distribution.
353A	Desbous sheet (east half), Abitibi County; scale, 1 inch to 1 mile.....	Geology. For separate distribution.
379A	Megantic sheet (west half), Frontenac County; scale, 1 inch to 1 mile.....	Geology. For separate distribution.
387A	Ville-Marie sheet (west half), Témiscamingue County; scale, 1 inch to 1 mile.....	Geology. For Memoir 201, by J. F. Henderson, also French edition, and separate distribution.
388A	Ville-Marie sheet (east half), Témiscamingue County; scale, 1 inch to 1 mile.....	Geology. For Memoir 201, by J. F. Henderson, also French edition, and separate distribution.
389A	Guillet Lake sheet (west half), Témiscamingue County; scale, 1 inch to 1 mile.....	Geology. For Memoir 201, by J. F. Henderson, also French edition, and separate distribution.
390A	Guillet Lake sheet (east half), Témiscamingue County; scale, 1 inch to 1 mile.....	Geology. For Memoir 201, by J. F. Henderson, also French edition, and separate distribution.
397A	Chibougamau sheet (east half), Abitibi Territory; scale, 1 inch to 4 miles.....	Geology. For separate distribution.
398A	Chibougamau sheet (west half), Abitibi Territory; scale, 1 inch to 4 miles.....	Geology. For separate distribution.
399A	Cadillac area, Cadillac Township; scale, 1 inch to 1,500 feet.....	Geology. For Memoir 206, by H. C. Gunning, also French edition, and separate distribution.
400A	Part of Cadillac belt, Cadillac Township; scale, 1 inch to 600 feet.....	Geology. For Memoir 206, by H. C. Gunning, also French edition, and separate distribution.
.....	Figure 2. Vertical section O'Brien Gold Mines, Limited, Cadillac Township; scale, 1 inch to 60 feet.....	Geology. For Memoir 206, by H. C. Gunning, also French edition.
.....	Figure 3. Plan of third level, O'Brien Gold Mines, Limited, Cadillac Township, scale, 1 inch to 60 feet.....	Geology. For Memoir 206, by H. C. Gunning, also French edition.
.....	Figure 4. Canadian Pandora Gold Mines, Limited, Cadillac Township; scale, 1 inch to 200 feet..	Geology. For Memoir 206, by H. C. Gunning, also French edition.

Maps Published April 1, 1937, to March 31, 1938—Concluded

Publication Number	Title	Remarks
QUEBEC—Concluded		
.....	Figure 5. Isometric diagram of the underground workings, Canadian Pandora Gold Mines, Limited, Cadillac Township; scale, 1 inch to 60 feet.....	Geology. For Memoir 206, by H. C. Gunning, also French edition.
NEW BRUNSWICK		
380A	Woodstock area, Carleton and York Counties; scale, 1 inch to 2 miles.....	Geology. For Memoir 198, by J. F. Caley, and separate distribution.
382A	Sevogle Rivers area, Northumberland County; scale, 1 inch to 2 miles.....	Geology. For Memoir 197, by E. W. Shaw, and separate distribution.
NOVA SCOTIA		
359A	Bras d'Or sheet, Cape Breton and Victoria Counties; scale, 1 inch to 1 mile.....	Geology. For separate distribution.
360A	Sydney sheet (west half), Cape Breton County; scale, 1 inch to 1 mile.....	Geology. For separate distribution.
361A	Sydney sheet (east half), Cape Breton County; scale, 1 inch to 1 mile.....	Geology. For separate distribution.
362A	Glace Bay sheet, Cape Breton county; scale, 1 inch to 1 mile.....	Geology. For separate distribution.

Maps in Process of Lithographing and Printing, March 31, 1938

BRITISH COLUMBIA		
396A	Cranbrook sheet, Kootenay District; scale, 1 inch to 1 mile.....	Geology. For Memoir 207, by H. M. A. Rice, and separate distribution.
407A	Ashcroft sheet (east half), Kamloops District; scale, 1 inch to 4 miles.....	Topography. For separate distribution.
420A	Kettle River sheet (west half), Similkameen and Osoyoos Districts; scale, 1 inch to 4 miles....	Topography. For separate distribution.
ONTARIO		
291A	Espanola sheet, Sudbury District; scale, 1 inch to 1 mile.....	Geology. For separate distribution.
292A	Copper Cliff sheet, Sudbury District; scale, 1 inch to 1 mile.....	Geology. For separate distribution.
338A	Shebandowan area, Thunder Bay District; scale, 1 inch to 1 mile.....	Geology. For separate distribution.

Maps in Process of Lithographing and Printing, March 31, 1938—Concluded

Publication Number	Title	Remarks
ONTARIO—Concluded		
351A	Manitoulin Island, Manitoulin District; scale, 1 inch to 4 miles.....	Geology. For separate distribution.
411A	Hearst-Kapuskasing area (east sheet), Cochrane and Algoma Districts; scale, 1 inch to 4 miles.....	Geology. For separate distribution.
412A	Hearst-Kapuskasing area (west sheet), Cochrane and Algoma Districts; scale, 1 inch to 4 miles.....	Geology. For separate distribution.
QUEBEC		
401A	Opémisca sheet (east half), Abitibi Territory; scale, 1 inch to 1 mile.....	Geology. For memoir by G. W. H. Norman, also French edition, and separate distribution.
415A	Thetford sheet (east half), Megantic, Beauce, and Frontenac Counties; scale, 1 inch to 1 mile.....	Geology. For Memoir 211, by H.C. Cooke, also French edition, and separate distribution.
416A	Thetford sheet (west half), Megantic County; scale, 1 inch to 1 mile.....	Geology. For Memoir 211, by H. C. Cooke, also French edition, and separate distribution.
417A	Disraeli sheet (east half), Wolfe and Frontenac Counties; scale, 1 inch to 1 mile.....	Geology. For Memoir 211, by H. C. Cooke, also French edition, and separate distribution.
418A	Disraeli sheet (west half), Wolfe, Megantic, and Frontenac Counties; scale, 1 inch to 1 mile..	Geology. For Memoir 211, by H. C. Cooke, also French edition, and separate distribution.
419A	Warwick sheet (east half), Wolfe and Arthabaska Counties; scale, 1 inch to 1 mile.....	Geology. For Memoir 211, by H. C. Cooke, also French edition, and separate distribution.
.....	Diagram showing cadastral subdivisions referred to in Memoir 211: Thetford, Disraeli, and Eastern Part of Warwick Map-areas; scale, 1 inch to 2 miles.....	For Memoir 211, by H. C. Cooke, also French edition.
NEW BRUNSWICK		
402A	Petitcodiac sheet (east half), Kings, Westmorland, and Albert Counties; scale, 1 inch to 1 mile..	Topography. For separate distribution.
403A	Petitcodiac sheet (west half), Kings and Westmorland Counties; scale, 1 inch to 1 mile.....	Topography. For separate distribution.
NOVA SCOTIA		
337A	Springhill sheet, Cumberland and Colchester Counties; scale, 1 inch to 1 mile.....	Geology. For separate distribution.

Other Map-work in Varying Stages of Progress

—	Title	Remarks
YUKON		
1	Freegold Mountain area; scale, 1 inch to 1,000 feet.....	Geology.
BRITISH COLUMBIA		
2	Fort Fraser sheet (east half), Coast District; scale, 1 inch to 4 miles.....	Topography.
3	Ashcroft sheet (west half), Kamloops, Lillooet, and Yale Districts; scale, 1 inch to 4 miles...	Topography.
4	Hope Sheet (east half), Yale, Kamloops, and Similkameen Districts; scale, 1 inch to 4 miles	Topography.
5	Hope sheet (west half), Yale and New Westminster Districts; scale, 1 inch to 4 miles.....	Topography.
6	Gun Lake area (Bridge River), Lillooet District; scale, 1 inch to $\frac{1}{2}$ mile.....	Geology.
7	Cadwallader Creek area (Bridge River), Lillooet District; scale, 1 inch to $\frac{1}{2}$ mile.....	Geology.
8	Geological plan of an area including the Bralorne and Pioneer mines, and showing the vein and fault systems.....	Geology.
9	Manson River sheet (east half), Cassiar District; scale, 1 inch to 4 miles.....	Topography.
10	Manson River sheet (west half), Cassiar District; scale, 1 inch to 4 miles.....	Topography.
11	Hazelton sheet (east half), Cassiar District; scale, 1 inch to 4 miles.....	Topography.
12	Hazelton sheet (west half), Cassiar District; scale, 1 inch to 4 miles.....	Topography.
13	Nelson sheet (east half), Kootenay District; scale, 1 inch to 4 miles.....	Topography.
SASKATCHEWAN		
14	Foster Lake sheet (east half); scale, 1 inch to 4 miles.....	Geology.
15	Foster Lake sheet (west half); scale, 1 inch to 4 miles.....	Geology.
MANITOBA		
16	Norway House sheet (east half); scale, 1 inch to 4 miles.....	Geology.
17	Norway House sheet (west half); scale, 1 inch to 4 miles.....	Geology.
18	Berens River sheet (east half); scale, 1 inch to 4 miles.....	Geology.
19	Berens River sheet (west half); scale, 1 inch to 4 miles.....	Geology.
20	Hecla sheet (east half); scale, 1 inch to 4 miles....	Geology.
21	Rice Lake-Gold Lake area (Sheet 1); scale, 1 inch to 500 feet.....	Geology.
22	Rice Lake-Gold Lake area (Sheet 2); scale, 1 inch to 500 feet.....	Geology.
23	Rice Lake-Gold Lake area (Sheet 3); scale, 1 inch to 500 feet.....	Geology.
24	Rice Lake-Gold Lake area (Sheet 4); scale, 1 inch to 500 feet.....	Geology.

Other Map-work in Varying Stages of Progress—Continued

—	Title	Remarks
MANITOBA—Concluded		
25	Rice Lake-Gold Lake area (Sheet 5); scale, 1 inch to 500 feet.....	Geology.
26	Rice Lake-Gold Lake area (Sheet 6); scale, 1 inch to 500 feet.....	Geology.
27	Rice Lake-Gold Lake area (Sheet 7); scale, 1 inch to 500 feet.....	Geology.
28	Rice Lake-Gold Lake area (Sheet 8); scale, 1 inch to 500 feet.....	Geology.
29	Isometric diagram of part of San Antonio mine..	Geology.
MANITOBA AND ONTARIO		
30	Deer Lake sheet (west half); scale, 1 inch to 4 miles.....	Geology.
31	Carroll Lake sheet (west half); scale, 1 inch to 4 miles.....	Geology.
32	Stull Lake sheet (east half); scale, 1 inch to 4 miles.....	Geology.
33	Stull Lake sheet (west half); scale, 1 inch to 4 miles.....	Geology.
ONTARIO		
34	Quetico sheet (east half), Thunder Bay and Rainy River Districts; scale, 1 inch to 4 miles.....	Geology.
35	Haliburton sheet (east half), Haliburton and Hastings Counties, and Nipissing District; scale, 1 inch to 2 miles.....	Topography.
36	Haliburton sheet (west half), Haliburton County and Muskoka and Nipissing Districts; scale, 1 inch to 2 miles.....	Topography.
37	Bobcaygeon sheet (east half), Peterborough and Haliburton Counties; scale, 1 inch to 2 miles..	Topography.
38	Bobcaygeon sheet (west half), Victoria, Haliburton, and Peterborough Counties; scale, 1 inch to 2 miles.....	Topography.
ONTARIO AND QUEBEC		
39	Ottawa sheet (east half), Carleton and Hull Counties; scale, 1 inch to 1 mile.....	Geology.
40	Ottawa sheet (west half), Carleton and Hull Counties; scale, 1 inch to 1 mile.....	Geology.
QUEBEC		
41	Rouyn area, Rouyn Township, Témiscamingue County; scale, 1 inch to 800 feet.....	Topography.
42	Amulet area, Duprat, Dufresnoy, Rouyn, and Beauchastel Townships, Abitibi and Témiscamingue Counties; scale, 1 inch to 800 feet.	Topography.
43	Waite area, Duprat and Dufresnoy Townships, Abitibi County; scale, 1 inch to 800 feet.....	Topography.
44	Newbec area, Dufresnoy Township, Abitibi County; scale, 1 inch to 800 feet.....	Topography.

Other Map-work in Varying Stages of Progress—Concluded

—	Title	Remarks
QUEBEC—Concluded		
45	Dufault area, Dufresnoy and Rouyn Townships, Abitibi and Témiscamingue Counties; scale, 1 inch to 800 feet.....	Topography.
46	Rouyn area, Rouyn Township, Témiscamingue County; scale, 1 inch to 800 feet.....	Geology.
47	Amulet area, Duprat, Dufresnoy, Rouyn, and Beauchastel Townships, Abitibi and Témiscamingue Counties; scale, 1 inch to 800 feet.....	Geology.
48	Waite area, Duprat and Dufresnoy Townships, Abitibi County; scale, 1 inch to 800 feet.....	Geology.
49	Newbec area, Dufresnoy Township, Abitibi County; scale, 1 inch to 800 feet.....	Geology.
50	Dufault area, Dufresnoy and Rouyn Townships, Abitibi and Témiscamingue Counties; scale, 1 inch to 800 feet.....	Geology.
51	Lake Etchemin area, Dorchester and Beauce Counties; scale, 1 inch to 1 mile.....	Geology.
NOVA SCOTIA		
52	Kejimikujik Lake sheet (east half), Annapolis and Queens Counties; scale, 1 inch to 1 mile.....	Geology.
53	Kejimikujik Lake sheet (west half), Digby, Annapolis, and Queens Counties; scale, 1 inch to 1 mile.....	Geology.
54	Liverpool sheet (east half), Queens and Lunenburg Counties; scale, 1 inch to 1 mile.....	Geology.
55	Liverpool sheet (west half), Queens County; scale, 1 inch to 1 mile.....	Geology.
56	Malaga Lake sheet (east half), Queens and Lunenburg Counties; scale, 1 inch to 1 mile.....	Geology.
57	Malaga Lake sheet (west half), Queens and Lunenburg Counties; scale, 1 inch to 1 mile.....	Geology.
58	Oxford sheet (east half), Cumberland and Colchester Counties; scale, 1 inch to 1 mile.....	Geology.
59	Oxford sheet (west half), Cumberland and Colchester Counties; scale, 1 inch to 1 mile.....	Geology.
60	Vertical ranges of species in the Morien series (Part 1).....	
61	Vertical ranges of species in the Morien series (Part 2).....	
MISCELLANEOUS		
62	Coalfields of Canada and United States.....	

In addition to the foregoing, some preliminary work has been done on about twenty-five maps; also one hundred and thirty-four map and other figure drawings were prepared for reproduction by zinc-cut process, for illustrating reports, papers, memoirs, and museum bulletins.

Other draughting and related work necessary for staff and public use amounted to ninety-five items.

NATIONAL MUSEUM OF CANADA

Biological investigations were continued during the summer of 1937 on the coast of the mainland of British Columbia; ornithological investigations were conducted in Manitoba, southward from The Pas; the special biological survey of Thelon Game Sanctuary was concluded; a botanical survey was made of an area north of Lake Superior in the vicinity of Schreiber; biological observations were made in Frobisher Bay, Baffin Island; further studies of French-Canadian handicrafts were carried on, and archaeological excavations were made on Prince Edward Island.

In the Hall of Anthropology habitat groups are being set up, for which a number of fine figures of life-size have been prepared. In the Hall of Biology a large case similar to that accommodating the wood buffalo group has been erected for a musk-ox habitat group. A start has also been made by the Geological Survey on a popular instructive mineralogical exhibit.

Educational work is one of the most important activities of the National Museum, and it is through this work that the Museum is able to reach out to all sections of the country, and to assist in the diffusion of accurate and specialized knowledge on natural history and related subjects.

Additions were made to the motion picture library by the purchase of a number of films on biological subjects, and sets of lantern slides, mostly coloured, are being added regularly. These films and slides are lent to schools, scientific societies, and other organizations, and catalogues may be had on application. Loans are also made of biological and anthropological specimens for teaching purposes. The Museum has supplied photographs to teachers, scientists, and authors at about the cost of printing, and collections and separate specimens of minerals and rocks can be had from the Bureau of Geology and Topography at moderate prices.

Detailed information on the educational work, and particularly on the series of lectures given in Ottawa during the winter months, will be found in the Annual Report of the National Museum.

ANTHROPOLOGICAL DIVISION

D. Jenness, Chief of the Division, has been reorganizing the public exhibits to make them more attractive and instructive. One hall is now virtually finished, and work on the second is well under way. Three guide-leaflets explaining the new exhibits are now available, and others are being prepared.

C. M. Barbeau continued his studies of ancient Quebec arts and handicrafts, particularly agricultural implements, weaving, and sash and garter making. He explored parts of Charlevoix County, Island of Orleans, Ile-Jesus, and Témiscouata County, and Lake St. John and Saguenay districts.

W. J. Wintemberg excavated an Indian village site in St. John County, Quebec, and some shell-heaps on Prince Edward Island. In the early autumn, at the request of Dr. W. Sherwood Fox, President of the University of Western Ontario, he examined a site near Waubaushene that may possibly be St. Ignace II, the mission where the two Jesuit priests, Fathers Lalemant and Brebeuf, were martyred by the Iroquois in 1649. Enough work was done to show that the site was palisaded, and conformed fairly closely to our historical information of the mission; but it will require intensive excavation for at least a month to confirm the identification.

Professor J. C. B. Grant, University of Toronto, investigated the physical anthropology and blood grouping of the Stoney Indians of Alberta. He examined in all 98 men and 68 women.

Miss Francis Loring, of Toronto, modelled four life-sized Indian figures and two heads of babies for the exhibition halls of the division.

BIOLOGICAL DIVISION

R. M. Anderson, Chief of Division, continued work on revising "Check-list of Canadian Mammals" and "Mammals of Canada." A paper on "Some New Records and Extensions of Ranges of Canadian Mammals" was prepared and read at the 19th annual meeting of the American Society of Mammalogists, at Washington, D.C., May 5, 1937, and a paper on "The Present Status and Distribution of the Big Game Mammals of Canada" at the Third North American Wildlife Conference at Baltimore, Maryland, February 14, 1938. Some systematic work was done on the mammal collections of the National Museum, which numbered 14,669 catalogued specimens on March 31, 1938.

Clyde L. Patch continued the rearrangement of the biological collections in the exhibition halls. Several small groups and individual specimens were completed and installed, and work was begun on a habitat group of six musk-oxen. From May until December an exhibit of 84 varieties of living native flowers, shrubs, and trees of Ottawa region was kept in the lobby of the Museum; labelled, and changed with the seasons. One hundred and thirty-six specimens were added to the collection of amphibians and reptiles, which now numbers 4,734 specimens.

A. E. Porsild continued work on his report on the flora of the western Arctic region of Canada, which included revising a number of critical families and genera in the herbarium. During July and August 1937, he accompanied the Robert A. Bartlett expedition to Labrador and Greenland, and collected about 2,500 specimens of vascular plants, which have been sorted and determined.

C. H. D. Clarke continued the biological survey of Thelon Game Sanctuary, Mackenzie District, Northwest Territories.

Professor Robert C. Hosie, Faculty of Forestry, University of Toronto, established a collecting base at Schreiber, Ontario, north of Lake Superior, from June 22 to September 5, and worked at many other points in the region, including Copper and Wilson islands off Rossport, and the Slate islands near Jackfish. Approximately 2,000 collections of plants were made.

Hamilton M. Laing, of Comox, B.C., made field collections on Rivers Inlet, B.C., from June 5 to September 9, 1937, the work being done on Calvert Island, along both sides of Rivers Inlet to its head, and to the head of Owikeno Lake; 298 mammals, 63 birds, and a number of amphibians being collected.

ORNITHOLOGICAL DIVISION

P. A. Taverner, Chief Ornithologist, continued a study of the birds of Manitoba, working from The Pas southward to Duck Mountain. He established the normal northern limits of range of a number of Transition species, and the southern limits of northern species.

V. C. Wynne-Edwards of McGill University made biological observations in Frobisher Bay, Baffin Island.

BUREAU OF MINES

The mining industry in Canada continues to make steady progress. New fields are being developed, and the older areas are being extended. Zeballos area, on the west coast of Vancouver Island, has come into prominence because of the occurrence there of narrow, high-grade shoots of gold ore. A concentrating plant has been put into operation in Taku area, northwestern British Columbia; the development at the Cariboo-Hudson holds promise for the extension of Barkerville area to the east. In the Ymir-Salmo area, new producing mines have come into being, and other mines are being developed.

Mercury deposits are being developed in the northern part of Bridge River district. In the Northwest Territories ore reserves are being extended by the development of the radium deposits at Great Bear Lake, the gold properties at Gordon Lake, and the Yellowknife areas north of Great Slave Lake. In Saskatchewan, the gold properties north of Lake Athabaska are approaching the producing stage. In northwestern Ontario promising developments have taken place at Sachigo River and Favourable Lake. Ore developments in the Little Long Lac-Beardmore area have resulted in a number of new producing properties, and have increased ore reserves considerably. Most promising are the developments in Porcupine, Kirkland Lake, and Larder Lake areas. New properties have reached the producing stage, and the ore prospects of the older ones are greatly increased. In Quebec, the Cadillac-Malartic area has attracted attention through the discovery of high-grade shoots at certain of the mines, and because of the large tonnages of low-grade ore being developed. The better market and increased prices for the base metals during the year brought about resumption of operations at a number of mines in British Columbia, Manitoba, Ontario, Quebec, and Nova Scotia.

The progress in mining development has meant increased work for the Bureau of Mines laboratories, and for its staff generally. Not only is this due to the discovery and development of new mines, and the resumption of operations at others, but to the larger number of milling plants now established, with their increasing number of problems in attempting to obtain higher efficiency of operation, and better recoveries of the metals.

A marked improvement in the production of industrial minerals, clay products, and other structural materials was reported for 1937, new records having been reached in asbestos, salt, sulphur, sodium sulphate, and nepheline syenite. The mica industry showed a larger number of operators, and the value of sales was 77 per cent higher than in 1936. A large plant was established in 1937 at Rochester, New York, to process Canadian nepheline, a new ceramic raw material, production of which was commenced in 1936. Canada continued to supply most of the world's requirements of asbestos. The production of gypsum increased. The mineral is now being exported to England, and in 1937 the first large shipment of anhydrite from Canada was made to that country. A salt mill and plant were put in production at McMurray, Alberta. The production of uranium salts from radium ore has increased, and the refinery capacity has been trebled. The Bureau has co-operated with the producers in improving the quality of their products; the main markets are in the United States and in Great Britain. Sulphur, recovered from the smelter gases at Trail, has reached a production considerably in excess of \$1,000,000, and experiments at Aldermac may be expected to lead to production in eastern Canada. Development at St. Remi, Quebec, indicate that the production of kaolin will be resumed in the near future.

As compared with 1936, the production of cement, lime, and building stones increased in value by more than 33 per cent in 1937, and the clay products industries (using domestic raw materials) show a similar increase.

The production of rock-wool, a comparatively new product in Canada, has become an important industry, with rapidly mounting sales. The establishment of this industry is a direct outcome of investigational work of the Bureau of Mines.

Research was continued during the year to extend the markets for Canadian coal and coal products; and a chemical and physical survey of the operating coal seams was in progress, the survey of the Nova Scotia seams being about completed. Some work was done also on the New Brunswick, Alberta, and British Columbia seams. The blending of Nova Scotia coals to obtain higher efficiency when used for the raising of steam continued as the subject of study and investigation, as did the blending of Alberta and British Columbia coals

for the manufacture of domestic coke in coke ovens. In this latter connection an investigation was in progress on their expansive and contractive properties. Attention was paid to the banking and storage of coal to prevent spontaneous combustion. The hydrogenation of Canadian coals to determine the yields of gasoline and by-product was continued.

A study was made of the crude petroleum from the newly developed part of Turner Valley, and work on the oxidation of lubricating oil was continued. The composition of natural gas from different parts of the country, with specific reference to the helium and sulphur contents, was investigated. The analysis of mine airs was continued.

Owing to the large amount of road and highway construction throughout the Dominion the activities of the Explosives Division were greatly increased.

A gold mining film "Unlocking Canada's Treasure Trove" in 16 mm. sound, in three parts, depicting underground operations, the treatment and refining of gold ores, is available for distribution. This is a technical and education film, suitable for presentation to Engineering Societies and educational institutions.

Owing to the demands of the industry, and of other Government departments for ore and metallurgical research, additional facilities for the Metallic Minerals Division became a necessity. Sufficient space was not available in the Ore Dressing Laboratory, built in 1912, and equipped in 1913, to house the required equipment, and, consequently, a new three-story Ore Dressing Laboratory building 60 feet wide, by 100 feet long, with a basement, is being erected of brick, steel, and concrete. This building will house the equipment for crushing and sampling, and for conducting continuous tests and mill runs. Among the special features are a crushing and sampling compartment for the bulk sampling of ores up to 100 tons or more if necessary, and a small scale continuous cyanide unit to be used for studying more thoroughly the problems in the cyanidation of gold ores under actual milling conditions. The new Graton Precision microscope was put into continuous use for the examination of polished and thin sections, and additions were made to the mechanical testing equipment for carrying out the metallurgical investigations. The tailings disposal plant was equipped and put into operation, and additions were made to the facilities for the roasting of ores and refractory concentrates.

To consolidate the activities of the Bureau of Mines, and thus co-ordinate the work of the various divisions, a new Industrial Minerals Laboratory building is under construction at the Booth street site. This building will be ready for occupancy and the installation of machinery in October 1938, when the staff of the division and its laboratory facilities now housed at the Mines Branch building, Sussex street, will be moved into it. The building has three stories, a basement, and sub-basement. It is 60 feet wide by 100 feet long, of brick, steel, and concrete construction, and is adjacent to the milling laboratory of the Industrial Minerals Division. All laboratory investigations on industrial minerals, including ceramics and road materials, will be carried out in these buildings, which are much more commodious and conducive to efficient work than those on Sussex street.

A third story was added to the Fuel Research Laboratory building to relieve the congestion on the other floors and to provide space for the carrying out of that part of the chemical and physical laboratory work done at the Sussex street building.

The Explosives Chemical Laboratory, formerly on Cliff street, was moved to a suitable building adjacent to the Fuel Research Laboratories, as the chemical analysis of explosives is now done by chemists of the Fuels Division. The inspection and administrative staff of the Explosives Division was moved from Cliff street to the Mines Branch building, Sussex street.

As a result of these changes, laboratory investigative and research work will all be carried out at the Booth street site, and administrative work at the old Mines Branch building, Sussex street. Eventually it is hoped to complete the consolidation of the activities of the Bureau of Mines by providing accommodation for both administrative and investigative work at the Booth street site.

DISTRIBUTION OF PUBLICATIONS

During the fiscal year, 27,508 copies of the Bureau of Mines' reports, memorandum series, lists of mines, metallurgical works, etc., were distributed; 18,150 pages were mimeographed, and 21,000 notification cards sent out. French publications distributed, numbered 3,459.

ECONOMICS DIVISION

Brief reviews for 1936 of sixty-one mineral products were compiled and printed for distribution, both as separates, and in book form. Two reports on Petroleum Fuels in Canada, giving deliveries for consumption for the calendar years 1935 and 1936, were also published, along with the following lists: Coal Mines in Canada; Producers of Coke in Canada; and Gold Mines in Canada. Manuscripts for a number of newsletters and articles were prepared for publication in the technical press of Canada and Great Britain.

Many requests for information on specific mining companies and mining properties, most of them from the United States, were received and answered.

The Chief of the Division was occupied mostly in the preparation of articles and memoranda, in answering correspondence, and in other routine work. He spent about 4 weeks inspecting developments in gold mining in northern Ontario and Quebec in the autumn of 1937.

The annual survey of the utilization of fuel oil in the different provinces was continued. Data for 1936 were completed in November, and a bulletin thereon was issued in March 1938. A survey was also made of fuels used in 1936 for bunkering in Quebec, Ontario, and Manitoba. Information was obtained in the field on current mining developments in British Columbia, northwestern Ontario, Nova Scotia, and other districts, and a statement was prepared showing concisely the average annual Canadian mineral production, import, export, and consumption data for the years 1932 to 1936. This contained data on 125 metals and minerals. Analytical studies were also made respecting iron and steel, and the status of scrap metal in this industry during the decade 1927 to 1936.

An investigation was begun of the competition of Canadian coal, petroleum, and natural gas in the Canadian fuel markets, with special reference to the effect of the rapidly increasing contribution of the new Turner Valley crude oil field to the Canadian petroleum supply upon the competition of oil fuels and Canadian coal in the Dominion.

The manuscript of the revised edition of Mining Laws in Canada was completed.

A number of special reports on mining properties, in connection with applications for exemption from income tax, was prepared for the Director's office.

The Draughting Section completed the following work:

Prepared 15 maps for reproduction, and 122 plans, charts, and drawings. Included in the above were drawings for the Motion Picture Bureau. Prepared 135 labels for a map of the Dominion of Canada for exhibition use.

Prepared 8 charts, including 75 hand-coloured copies, and revised to date others for the Dominion Fuel Board.

Made 2,967 prints on the Rectigraph machine.

Made 683 negatives, black and white, and blueprints on the blueprint machine.

Filed 137 halftone blocks and zinc cuts during the year.

Accessions to the Library

Books (by purchase)	105
Books (by gift)	50
Books and bulletins added to the circulating division	37
Canadian Government documents (by exchange and gift)	2,340
British and Foreign Government documents (by exchange and gift)	865
Scientific societies' bulletins, proceedings, and transactions (by exchange and gift)	1,757
Trade catalogues (by gift)	253
Periodicals and continuations subscribed for	232
Annals, continuations, and periodicals (by gift)	525
Volumes bound	115
Recorded loans (which include the circulating of 80 periodicals regularly received among 26 members of the staff)	3,670
Periodicals discontinued for the year 1938	20

METALLIC MINERALS DIVISION

The number of investigations carried out and completed totalled 127, exceeding that of any previous year.

Milling tests were made on 66 gold ores to determine the most economical methods of treatment for the extraction of the gold. Forty-seven of these ores came from properties under development and on which the owners contemplated building mills; 19 ores were from operating mills, the managers of which requested research work carried out for the purpose of improving recovery, or reducing costs. These shipments ranged from a few hundred pounds to car-load lots.

In addition to the work done on gold ores, 61 other investigations were completed, which included the treatment of copper, lead-zinc, chrome, silver, and tungsten ores, and problems in the metallurgy of iron and steel, and non-ferrous alloys.

In conjunction with this investigational work and research, the mineralogical laboratory was required to prepare, examine microscopically, and furnish reports on 1,065 polished sections of ores; the chemical laboratory to analyse 4,471 samples, on which over 8,000 chemical determinations were required.

Problems coming from other Government departments, particularly the Departments of Transport, Public Works, and National Defence, involving the use of iron and steel alloys and non-ferrous alloys, has occupied more than two-thirds of the time of the iron and steel section, and has become an important part of the work of the division.

In addition to the above, considerable research work was carried on, and included the following:

The refractory ores of Bridge River District, B.C., were investigated, and a report was issued on the refractory ore from the Minto mine.

Several studies were made on cyanide solutions from refractory gold ores, and the results were included in the reports on the various ores.

Work conducted on roasting and calcining problems in connection with the operation of the radium refinery at Port Hope, Ontario, resulted in a decision to install a multiple hearth type furnace and two reverberatory type furnaces.

Other research was carried out, but not completed, in connection with chemical reactions in ball-mills grinding ore; production of red oxide pigment from bog iron ore; the effect of molybdenum on the impact strength of cast iron, etc.

The following reports issued by the division during the year, cover the results of laboratory investigations and research on various products submitted by the industry:

Reports that are published in the semi-annual Report of Investigations for 1937 and printed in full:

- 704, Gold ore from Parkhill Gold Mines, Limited, Michipicoten area, Ontario.
- 705, Gold ore from Preston East Dome Mines, Limited, South Porcupine, Ontario.
- 706, Gold ore from Siscoe Gold Mines, Limited, Siscoe, Quebec.
- 707, Gold ore from Sladen-Malartic Mines, Limited, Amos, Quebec.
- 708, Gold ore from Hard Rock Gold Mines, Limited, Geraldton, Ontario.
- 709, Mill products from Little Long Lac Gold Mines, Limited, Little Long Lac, Ontario.
- 710, Gold ore and concentrate from Minto Gold Mines, Limited, Bridge River District, B.C.
- 711, Gold ore from Kerr-Addison Gold Mines, Limited, Larder Lake, Ontario.
- 712, Chromite ore from Chromium Mining and Smelting Corporation, Limited, Abonga Lake, Ontario.
- 713, Gold-Copper ore from Slave Lake Gold Mines, Limited, Great Slave Lake, N.W.T.
- 714, Gold ore from Moneta Porcupine Mines, Limited, Timmins, Ontario.
- 715, Gold ore from Naybob Gold Mines, Limited, Timmins, Ontario.
- 716, Chalcopyrite-pyrite ore from Aldermac Copper Corporation, Arntfield, Quebec.
- 717, Concentrate from Northern Empire Mines, Limited, Empire, Ontario.
- 718, Gold ore from Central Patricia Gold Mines, Limited, Pickle Crow, Ontario.
- 719, Gold ore from Coulson Consolidated Gold Mines, Limited, Matheson, Ontario.
- 720, Gold ore from Halliwell Gold Mines, Limited, Rouyn, Quebec.
- 721, Gold ore from Darwin Gold Mines, Limited, Gold Park, Ontario.
- 722, Gold ore from Grange Consolidated Mines, Limited, Kelly Creek, B.C.
- 723, Gold ore from Quesnelle quartz mine, Hixon Creek, Cariboo, B.C.
- 724, Gold ore from Moneta Porcupine Mines, Limited, Timmins, Ontario.
- 725, Concentrate from Britannia Mining and Smelting Company, Limited, Britannia Beach, B.C.
- 726, Gold ore from Francoeur Mines, Limited, Arntfield, Quebec.
- 727, Gold ore from B. R. X. Consolidated Mines, Limited, Bridge River, B.C.
- 728, Antimony from Trimble Mines, Limited, Lillooet District, B.C.
- 729, Gold ore from Dome Mines, Limited, South Porcupine, Ontario.
- 730, Tailing from Leitch Gold Mines, Limited, Beardmore, Ont.
- 731, Copper-lead-zinc ore from Stirling mine, Stirling, Nova Scotia.

Reports that are synopsisized and published in the semi-annual Report of Investigations for 1937:

- Gold-antimony ore from Congress Gold Mines, Limited, Bridge River Area, B.C.
- Flotation concentrate from Algoma Summit Gold Mines, Limited, Goudreau, Ontario.
- Gold-silver-copper-lead ore from Greenbridge Gold Mines, Limited, Greenwood, B.C.
- Mill products from Bralorne Mines, Limited, Bralorne, B.C.
- Graphite from Black Donald Graphite Company, Calabogie, Ontario.
- Gold ore from Amca Mines, Limited, Timiskaming County, Matheson, Ontario.
- Silver-lead ore from E. T. Kenney, Limited, Terrace, B.C.
- Flotation concentrate from Minto Gold Mines, Limited, Minto, Bridge River District, B.C.
- Gold ore from Paymaster Consolidated Mines, Limited, South Porcupine, Ontario.
- Gold ore from MacLeod-Cockshutt Gold Mines, Limited, Little Long Lac District, Geraldton, Ontario.
- Arsenical gold ore from Monte Carlo Exploration Gold Mines, Limited, Timagami, Ontario.
- Gold ore from McMillan Gold Mines, Limited, Footbanks, Ontario.
- Silver-pitchblende and mill tailing from Eldorado Gold Mines, Limited, Echo Bay, Great Bear Lake, N.W.T.
- Copper-zinc ore from Abana mine, Desmeloizes Township, Abitibi County, Quebec.
- Gold ore from Minto Gold Mines, Limited, Minto, Bridge River District, B.C.
- Silver ore from Lily of the Valley mine, Thunder Bay District, Ontario.
- Gold ore from B.C. Goldfield group, Spud Creek, B.C.
- Gold ore from Minto Gold Mines, Limited, Minto, Bridge River District, B.C.
- Gold-silver ore from Lakeview Mining Syndicate, Slocan, B.C.
- Gold concentrate from Murray-Algoma Mining Company, Limited, Algoma District, Ontario.
- Arsenopyrite-pyrite-gold ore from Athelstan-Jackpot mine, Grand Forks Mining Division, B.C.
- Gold ore from Wisik Gold Mines, Limited, Sullivan, Quebec.

- Gold ore from Lake Caswell Mines, Limited, Shining Tree, Ontario.
 Silver-lead ore from Silver Standard mine, Hazelton District, B.C.
 Gold ore from the Venus-Juno group, Nelson, B.C.
 Mill tailing from Orelia Mines, Limited, Rainy River District, Ontario.
 Molybdenite ore from Martel Gold Mines, Limited, Martel, B.C.
 The chemical and microscopic investigation of five ore samples from the Hope Mining Division, B.C.
 Microscopic examination of mill products from Bidgood Kirkland Gold Mines, Limited, Kirkland Lake, Ontario.
 Determination of the metallic minerals in a sample from Macassa Mines, Limited, Kirkland Lake, Ontario.
 An examination of the steel from two manganese steel castings (Sorel Steel Foundries, Limited).
 A chemical and microscopic examination of the steels from three ball-mill liners (Sorel Steel Foundries, Limited).
 A metallographic examination of the steel of a stainless fork end bolt.
 An examination of three steel castings (Sorel Steel Foundries, Limited).
 An examination of a manganese steel crusher jaw (Joliette Steel, Limited, Joliette, Quebec).
 An examination of three manganese steels (Sorel Steel Foundries, Limited).
 Corrosion tests on aluminium bronze (Sorel Steel Foundries, Limited).
 An investigation of the steel of the interlocking piling to be used in construction of harbour improvements at Rimouski, Quebec.

Reports that are listed by title only in the semi-annual Report of Investigations, 1937.

- Gold ore from the Payrock Gold Syndicate, Barrie Township, Ontario.
 Gold-copper ore from Wendigo Gold Mines, Limited, Kenora, Ontario.
 Gold ore from Powell Rouyn Gold Mines, Limited, Noranda, Quebec.
 Gold ore from Olive Gold Mines, Limited, Olive, Ontario.
 Drill cores from Minaki Mining and Development Company, Limited, Kenora-Rainy River District, Ontario.
 Iron-pyrite ore from Matachewan Hub Pioneer Mines, Limited, Elk Lake, Ontario.
 Copper ore from Mining and Finance Corporation, Limited, Copper Lake, Antigonish County, N.S.
 Gold-silver-copper-lead-zinc ore from Tye Consolidated Mining Company, Limited, Westholme, B.C.
 Gold ore from Lapa Cadillac Gold Mines, Limited, Heva River, Cadillac Township, Quebec.
 Gold ore from Lake Rose Mines, Limited, Rose Lake, via Senneterre, Quebec.
 Copper ore from Jay Copper Gold Mines, Limited, Amos, Quebec.
 Silver-zinc ore from Quebec Manitou Mines, Limited, Val D'Or, Quebec.
 Red mud from Aluminum Company of Canada, Limited, Arvida, Quebec.
 Gold ore from Thurlow Gold Mines, Limited, Shoal Bay, Taurlog, B.C.
 Gold ore from Golden Gate Mining Company, Limited, Swastika, Ontario.
 Gold ore from Clark Gold Mines, Limited, Dymont, Ontario.
 Gold placer material from "Aranka" area, British Guiana.
 Refinery material from the Royal Canadian Mint, Ottawa, Ontario.
 Gold ore from Claverny Gold Mines, Limited, Amos, Quebec.
 Gold ore from Oremond Gold Mines, Limited, Jelicoe, Ontario.
 Gold ore from Arcadia Gold Mines, Limited, South Porcupine, Ontario.
 Chrome ore from Chromium Mining and Smelting Corporation, Collins, Ontario.
 Gold-tungsten ore from Ince Syndicate, Birch Lake, Patricia District, Ontario.
 Gold ore from Horwood Lake Gold Mining Company, Limited, Horwood Lake, Ontario.
 Gold ore from Kenricia Gold Mines, Limited, Kenora, Ontario.
 Lead-zinc ore from Lake Geneva mine, Hess Township, Sudbury District, Ontario.
 Gold ore from Central Duvernay Gold Mines, Limited, Amos, Quebec.
 Gold ore from Big Thing Property, Yukon, N.W.T.
 Gold-silver-lead-zinc ore from Calumet Mines, Limited, Calumet Island, Bryson, Quebec.
 Gold ore from Packsack Mines, Limited, Bissett, Manitoba.
 Gold ore from Payore Gold Mines, Limited, Val D'Or, Quebec.
 An examination of several samples taken from steel piling used at Rimouski, Quebec.
 An examination of two austenitic manganese steels (Sorel Steel Foundries, Limited).
 The testing and examination of a mild steel (Department of National Defence).
 Tensile tests on alclad sheet (Department of National Defence).
 An examination of two welded austenitic manganese steel dipper teeth (Sorel Steel Foundries, Limited).
 The physical testing of a medium carbon steel (Naval Stores).

- An examination of the aluminium alloy in Junkers plane Cf-AMX (Department of Transport).
- An examination of an austenitic manganese steel (Manitoba Steel Foundries, Limited, Selkirk, Manitoba).
- An examination of a failed austenitic manganese steel plate (Sorel Steel Foundries, Limited).
- An examination of a worn austenitic manganese steel ball-mill liner (Sorel Steel Foundries, Limited).
- An examination of the steel used in engraved printing plates (British American Bank Note Company).
- Physical tests on air hardening nickel chrome steel (Canadian Atlas Steels, Limited).
- Steel examined, and four landing gear parts carburized, for Royal Canadian Air Force.
- Bolt tested in tension for Royal Canadian Air Force.
- Brass protecting tube of heating element examined for Dr. J. S. G. Shotwell.
- Section of rail polished and examined for Mr. J. G. Sutherland, Canadian Pacific Railway Offices, Toronto.
- A microscopic examination made of a white iron grinding ball for Hull Iron and Steel Foundries, Limited.
- Five hardness tests made on five white iron balls for Hull Iron and Steel Foundries, Limited.
- A cast iron test piece tested in tension for Modern Machine Company, Ottawa.
- Magnetic separation of one hundred pounds of high speed steel grindings made for Canadian Atlas Steels, Limited.
- Eighteen nickel chromium heat resisting trays cast for the Royal Mint, Ottawa.
- Photomicrographs obtained from the under surfaces of two types of light bulbs.
- An examination of a failed trailer coupling.
- The effect of temperature on the grain size of three carburizing steels.
- The impact testing of nine tool steels.
- Physical testing of a steel cable.
- Examination of sample of heavy metallic ore from Eldorado Gold Mines, Limited, Port Hope, Ontario.
- Microscopic examination of sample of gold ore from Beaver Lake, Saskatchewan (J. F. Wright, Winnipeg).
- Microscopic examination of sections of drill cores from the Stirling mine of the British Metal Corporation, Stirling, Nova Scotia.
- Determination of minerals in samples of high-grade ore from MacLeod-Cockshutt Gold Mines, Limited, Little Long Lac, Ontario.

Chemical Laboratory Report

	Number of Samples	Percentage of Total
Metallic ore mill products.....	4,284	80.8
Field samples (Bureau of Geology and Topography).....	175	3.3
Industrial Minerals Division mill products.....	131	2.5
Pyrometallurgical Laboratory.....	127	2.4
Fuels Testing Laboratory.....	19	0.4
Customs assays.....	562	10.6
	5,298	100.0
Total determinations.....	10,836	
Total gold assays.....	3,849	
Total silver assays.....	1,062	

Various methods of analyses were supplied in reply to requests.

The principal mines in northwestern Quebec and northeastern Ontario, including the Harricanaw, Noranda, Kirkland Lake, Porcupine, Sudbury, Red Lake, Pickle Crow, and Little Long Lac areas, were visited. The mines in Bridge River District, British Columbia, and some of the principal gold mines in Nova Scotia were also visited.

A survey of the iron and steel industry of Canada, carried out in co-operation with the Department of National Defence, required visits to the iron and steel plants of Nova Scotia, Quebec, and Ontario.

Visits were made to International Nickel Company's research laboratories at Bayonne, New Jersey; the Batelle Memorial Laboratories at Columbus, Ohio; the American Cyanamid laboratories at Linden, New Jersey, and Stamford, Connecticut; the non-metallic laboratories of the United States Bureau of Mines at Brunswick, New Jersey; and to Consolidated Mining and Smelting Company's research laboratories at Trail, British Columbia.

INDUSTRIAL MINERALS DIVISION

The Division's three sections deal, respectively, with industrial (non-metallic) minerals, their economic characteristics, mining, marketing, and uses; the crushing, grinding, and purification (milling) of these minerals; and with problems of processing in the manufacture of mineral products, particularly ceramic products.

The Division renders an important service in the furnishing of information and advice on minerals and mineral products to other Government departments and to companies and individuals. The many tests carried out on minerals and mineral products included tests of refractories for Government purchase.

Considerable time was given to the planning of structural details and equipment arrangements for the new building to house the Ceramics Laboratories and the staff of the Division. The Chief of the Division visited the leading ceramic laboratories in the northeastern United States to obtain information on the latest ideas of laboratory arrangements. Construction of the new building was started October 29.

Field investigations of rare-element and various industrial minerals were continued, radium-uranium-silver operations at Great Bear Lake, Northwest Territories being inspected and reported on, as well as occurrences of talc in British Columbia, and of bentonite in Alberta and Manitoba. Inspections were made of mining and milling operations in Ontario and Quebec for feldspar, mica, talc and soapstone, fluorspar, and nepheline syenite; of radium and uranium refining operations at Port Hope, Ontario; and of a new processing plant for Ontario nepheline syenite at Rochester, New York.

A manuscript report on the "Granite Industry in Canada" has been completed. It discusses in full the granite industry in Canada. In the late autumn a study was made of a drill hole sunk at Weldon, New Brunswick, by the New Brunswick Gas and Oilfields, Limited, in which nearly 1,000 feet of salt formation had been encountered. Part of this hole had been cored, and large-scale samples were obtained for laboratory testing to determine the possibility of recovering economically the various sodium, and other, salts present.

Sections of roads stabilized with various chemicals were examined in Ontario and Quebec, and highway officials of these two provinces were consulted on the effect of climatic conditions, particularly spring thawing, on the condition of such roads. A report was prepared on road soil stabilization, dealing with requirements for soil stability, construction practice, and materials used, or suitable for use, in building road surfaces and bases. At the request of the Provincial Government several deposits of conglomerate and gravel in Prince Edward Island were investigated with regard to their suitability for roads. A detailed report was being made on road materials of the Maritime Provinces.

Field work on industrial waters included Ontario, embracing the St. Lawrence River and Great Lakes watershed, the northern mining areas, the pulp- and paper-mill areas as far north as Mattagami River and its tributaries, the Prairie Provinces, and British Columbia, as far west as Columbia River. From these areas 87 samples from civic water supplies, and 48 samples of surface waters from rivers and lakes, the waters of which are of industrial importance, were collected. Six samples of surface waters, and six of civic supplies, were collected from the St. Lawrence watershed in December, and five of each in March, representing, respectively, the winter flow and the spring run-off. Complete analyses of these samples have been made of the surface waters, and six deter-

mnations of the civic waters. Interim Report No. 2, on the "Industrial Waters of Canada" (waters of western Canada and Ontario) was issued in mimeograph form.

Work was continued on limestone, lime, magnesite, marble, building stones, rock-wool, and whiting substitute. A report on the limestones of Ontario was completed, and field investigations were made of limestone, marble, and magnesite deposits in western Canada, and of deposits of brucite and marble in Ontario. Further laboratory investigations were made of rock-wool, particularly in connection with the briquetting of mixtures of various rocks. A number of industrial plants were visited in Ontario to obtain information on new uses for limestone and lime.

Investigations were continued on abrasives, diatomite, and molybdenite, and a large number of samples of these materials were tested and reported upon.

INDUSTRIAL MINERALS MILLING LABORATORIES

Concentration and abrasive tests of garnet rock from the Cyril Knight Prospecting Company, Limited, Toronto.

Concentration and abrasive tests of garnet rock from the valley of Peachland Creek, B.C. Tests of gypsum from the Victoria Gypsum Company, Little Narrows, N.S.

Tests of sandstone from the Beauharnois Silica and Sandstone Company, Melocheville, Quebec.

Concentration of four samples of asbestos rock from T. H. Clark, McGill University, Montreal.

Concentration of spodumene from Wekusko, Manitoba.

Fifteen tons of talc from Highwater, Quebec, were ground to 325 mesh; 6 tons of nepheline syenite were ground to 200 mesh; 7 tons of gold refinery clean-up from the Royal Canadian Mint were crushed and sampled, and another lot of 15 barrels was crushed; 20 tons of sandstone were crushed and washed for the Experimental Farm; 10 bags of sand were dried and screened; several large-scale rod-mill and pebble-mill tests were made on silica from Lac Remi, Quebec; 2,400 pounds of clay were ground for the Ottawa Public schools; two lots of sand were prepared for the Department of Trade and Commerce; and 3 bags of asbestos fibre were treated wet for the National Research Council. Twenty-five small samples of various minerals were subjected to minor tests.

CERAMICS LABORATORIES

Physical Properties of Canadian Brick.—The testing of all brick samples collected throughout southwestern Ontario and western Canada in 1936 was completed. The tests involved the determination of dimensional variations, absorption properties, transverse and compressive strengths, hardness and toughness, change in strength due to ten cycles of freezing and thawing, freezing and thawing tests (100 cycles), and wick tests for efflorescence. An interim report giving the results obtained on the determination of dimensional variations, transverse and compressive strength, and of absorption properties was sent to each manufacturer whose brick was sampled. Work proceeded on the compilation of results obtained from the balance of the tests.

Sodium Uranate.—At the request of Eldorado Gold Mines, Limited, further work was carried out on sodium uranate produced in the extraction of radium. Complaints were reported from certain United States ceramic manufacturers that the Company's yellow sodium uranate did not give satisfactory results, but tests showed that the material was equal, if not superior, to the Belgian, having a somewhat higher U_3O_8 content.

Refractories.—Tests of several samples of British and Canadian firebricks, submitted by the Department of National Defence, were made and reported upon.

Several tests were made on refractory materials submitted by the Department of National Revenue for purposes of tariff classification, and six samples of brick made from high alumina cement and fireclay grog were tested for refractoriness for the Penitentiaries Branch, Department of Justice.

At the request of the National Research Council, an extended petrographic investigation was undertaken in connection with the investigation of magnesian products. One hundred thin sections of experimental specimens prepared by the National Research Council have been under examination. Several separations were made of phases developed in the finished products, and the separated phases were analysed.

A minor investigation was carried out for a Canadian firebrick manufacturing company to improve the spalling resistance of its product. The investigation included experiments with de-airing, and the dry-press method of manufacture; and recommendations were made as to suitable machinery for producing a more satisfactory product.

Reports on experiments conducted on plastic refractories and high-temperature cements to assist in the framing of Government purchasing specifications were prepared for publication.

Seventy-eight samples of clay and shale were tested during the year.

DIVISION OF FUELS

The Chief of the Division, and senior technical officers, visited collieries in the eastern and western producing fields, and discussed problems under investigation. They also attended committee meetings in Ottawa with other Government departments, and in the United States, incident to testing and research work on Canadian coals, petroleum oils, and natural gas. Papers were prepared and published in technical journals on the significance of laboratory tests on coals; the specifications of coals for use in the by-product coke industry, and for ceramic purposes; the oil-shales of Canada; and on the use of hydrogenation in the production of aviation fuel.

COAL CLASSIFICATION AND METHODS OF TESTING

The standard specifications for the classification of coals by rank and grade, as recently adopted by the American Society for Testing Materials, were critically examined with respect to their adoption for Canadian coals and conditions. The "Drop Shatter" and "Tumbler" methods for testing the comparative handling properties of coals, developed at the Fuel Research Laboratories as part of the activities of the Friability Subcommittee of the above-mentioned Society, were adopted as A.S.T.M. tentative standards.

Small-scale laboratory investigations were made on the effect of degree of grinding of coal samples upon accuracy of analysis; the effect of variations in the volatile matter test on the results obtained; the determination of pyritic sulphur, using hydrogen instead of nitric acid; the "capacity" moisture of certain Canadian and American coals; and the moisture changes in powdered, low rank coal under different storage conditions. The study was continued of the change in composition and particle size of coal and coke samples stored in the open and under cover, and of the comparative friability and agglomerating properties of British and European semi-anthracites.

PURCHASE OF COAL BY SPECIFICATION

Samples submitted by the Department of Pensions and National Health, and by the Penitentiaries Branch, Department of Justice, incident to the purchase of their coal supplies according to specification, were analysed. The services of the Fuel Research Laboratories were also utilized by the Departments of Public Works, Transport, and National Defence in checking the quality of coal deliveries in relation to that guaranteed by contract.

COMBUSTION ENGINEERING INVESTIGATIONS

Test work for the Canadian National Railways on various coals and cokes in the domestic hot-water installation was continued from last year. This

series of tests was completed for the year after making nine more tests and reporting on them. A series of two tests was made in the domestic hot-water boiler installation to prove the merits, if any, of "Antrivol", a chemical salt claimed to improve combustion efficiency greatly. In co-operation with the Forest Products Laboratories, a series of tests was started to determine the relative efficiencies of three European and four Canadian wood-burning stoves, forty-one tests being made during the year. Data on the degree-day heating load for Ottawa, continued to be collected. The peat activities in Canada were observed throughout the year.

COAL BENEFICIATION, CARBONIZATION, AND BRIQUETTING

Tests were made on the washing, carbonizing, and briquetting characteristics of coals; and the physical and chemical properties of coal seams were studied, as well as the preparation and storage of coal in general. The physical and chemical survey included the sampling of nineteen seams from sixteen mines operated by ten companies in Nova Scotia, which practically completes this study of all the operating properties in that province. Examination of twelve of these samples was completed and reports were issued. The preparation of coal was investigated in connection with a study of the effect of blending various coals as produced in Nova Scotia with a view to the improvement of their clinkering properties, and consequent improvement in combustion.

The storage of coal at various plants in Canada and the United States was investigated. Storage methods were observed with a view to their possible application in Canada to coals having a tendency to spontaneous combustion. The briquetting of coal was investigated in connection with the opening of the briquetting plant located at Bienfait, in the southern Saskatchewan lignite field.

The investigation on carbonization, with regard to the use of Michel coal in the Winnipeg Electric Company's plant was completed, and reports were issued. The investigation included a study of the various coals of Canadian origin capable of being used for the production of a satisfactory domestic coke at this plant, and a complete study of the operating difficulties. A test on Michel coal in the Radiant Fuel Corporation's plant at West Frankfort, Illinois, to determine the suitability of the Curran-Knowles ovens for installation at the mines of the Crow's Nest Pass Coal Company, Limited, Michel, B.C., was witnessed by engineers of the division.

The carbonization studies involved an extensive investigation into the expansion properties of coal when used in by-product coke ovens. This entailed the construction of two test units at the Fuel Research Laboratories, and a co-operative program for the study of the subject with several important laboratories in the United States. The program resulted in a meeting on the subject in Johnstown, Pennsylvania, at which engineers of the division were present. Arrangements were made for further investigational work to establish a standard method for determining this important characteristic of coking coals.

HIGH PRESSURE HYDROGENATION

Test runs were made in the continuous liquid-phase hydrogenation apparatus on samples of coals from Michel colliery, Fernie, B.C.; Comox colliery, Cumberland, B.C.; Middlesboro colliery, Merritt, B.C.; Alexo mine, Alexo, Alberta; Rosedale mine, Rosedale, Alberta; and from Durham County, England. The Canadian coals selected represent various ranks from high to low in the A.S.T.M. classification. The British coal was used as a standard, as it had proved satisfactory in the commercial scale hydrogenation plant at Billingham, England. Steady improvement has been made in the continuous liquid-phase apparatus, and the technique employed in its operation. An internally heated reaction chamber for vapour-phase tests, and a scrubber for the removal of hydrocarbon gases from the pressure system have been installed for use as soon as the program on the liquid-phase testing is completed.

To facilitate the hydrogenation work, visits were made to the hydrogenation laboratory of the United States Bureau of Mines at Pittsburgh, Pa.; the Bureau of Standards, and the Geophysical Laboratory, Washington, D.C.; and to the Standard Oil Development Company's laboratories at Bayway, N.J.

PETROLEUM OILS, BITUMEN, NATURAL GAS, AND EXPLOSIVES

Studies were made of petroleum and natural gas developments in Alberta, Saskatchewan, and Manitoba, with particular reference to the increased production from the southern part of the Turner Valley field. Samples of crude oil, mainly from Alberta, and southwestern Ontario, and also of natural gas from different parts of the country were obtained and analysed, and the helium content of the natural gas samples was determined. A preliminary study was made of the forms of sulphur in natural gas. Analysis of mine airs was continued, the object being to lessen the risk of fire and explosion in mines and underground workings. The progress being made toward the commercial utilization of the bituminous sand deposits of northern Alberta was investigated. The study of the relative tendency of lubricating oil to oxidize was continued. A machine for testing the sensitivity of explosives to impact was designed and built.

The division was called upon frequently for assistance and advice by other Provincial and Dominion Government departments, independent companies, and private individuals. Co-operation was continued in the work of the Canadian Government Purchasing Standards Committee, and of the Dominion Fire Marshals' Association.

ROUTINE CHEMICAL LABORATORY WORK

As is shown below, a total of 6,437 samples of solid, liquid, and gaseous fuels were analysed, the examination of which involved some 33,000 separate chemical and physical determinations of the different items of analysis. The total number of samples includes 165 samples of explosives, submitted by the Explosives Division, and 330 samples of mine air.

		Number of Samples	Per cent of Total
1	Samples pertaining to investigations of the Fuels Division:		
	Solid Fuels.....	2,821	43.8
	Coals.....	2,671	
	Cokes, chars, peat, wood, and miscellaneous.....	150	
	Liquid fuels.....	216	3.1
	Gasoline, and other motor fuels.....	68	
	Lubricating oils.....	53	
	Crude oils, and miscellaneous.....	95	
	Gases.....	2,974	46.2
	Natural gas.....	32	
	Mine air.....	330	
	Flue gas.....	2,464	
	Manufactured gas, and miscellaneous.....	148	
2	Samples from other divisions of the Department of Mines and Resources:		
	Explosives Division.....	165	2.6
	Other Bureau of Mines' divisions.....	4	0.1
	Bureau of Geology and Topography, and Dominion Fuel Board.....	28	0.4
3	Samples from outside the Department:		
	Department of Pensions and National Health—coals.....	56	0.9
	Department of Justice (Penitentiaries Branch)—coals.....	51	0.8
	Departments of National Defence and Transport—coals, fuel oils, and lubricating oils.....	31	0.5
	Other Government departments—coals.....	14	0.2
	Provincial Governments and public institutions.....	14	0.2
	Commercial firms and private individuals.....	63	1.0
	Total.....	6,437	100.0

EXPLOSIVES DIVISION

AUTHORIZATION OF EXPLOSIVES

During the year the following explosives were authorized for manufacture or importation:

- 2 new high explosives
- 1 modification of a previously authorized safety fuse
- 1 detonating fuse
- 52 varieties of fireworks

FACTORIES

Nine licensed factories were engaged in the manufacture of the explosives detailed below:

- 1, commercial blasting, and military explosives
- 3, commercial blasting explosives only
- 1, sporting ammunition, detonators, track torpedoes, and blasting supplies
- 1, safety fuse
- 2, fireworks (one factory operated intermittently)
- 1, toy caps, and pistols

In the larger factories a policy of steady improvement in the physical condition of the plants has been pursued, so that they are rapidly attaining a very high standard of operation. Provision has been made for increased storage and manufacturing facilities to provide for larger production.

The production of explosives in 1937 amounted to about 35,000 tons, the highest since the inception of the Explosives Act, and an increase of 25 per cent over 1936, the former peak year. The figure does not include military explosives, ammunition, safety fuse, or fireworks.

During the fiscal year inspectors of the Division made 45 visits of inspection to licensed factories.

ACCIDENTS

There were no accidents in manufacture that resulted in loss of life or injury to persons.

At Beloeil on October 20, at 12.15 a.m., an explosion occurred in the small drowning tank in the No. 2 nitrator house that destroyed the building and its contents. It was due to impurities in one constituent, and steps have been taken to prevent a recurrence of such an accident. A full investigation was made, the results of which are given in detail in the Annual Report of the Division.

Accidents arising from the use of explosives in mines and quarries resulted in 32 deaths and 121 injuries.

Miscellaneous accidents involving explosives were fatal to 3, and injured 58, most of whom were children who played with detonators and other explosives.

There was an average of one fatal accident for every 992 tons of explosives manufactured, and of one injury for every 252 tons.

MAGAZINES

At the end of the fiscal year 1937-38 there were in force 330 magazine licences, and 227 temporary magazine licences.

One magazine and contents was consumed by a bush fire without explosion, and two detonator magazines were exploded, supposedly by rifle bullets, causing injury to four men. A man was killed in a quarry magazine by the explosion of a keg of black powder. The explosion did not affect the rest of the stock in the magazine.

During the year 3,778 pounds of deteriorated blasting explosives and 400 detonators were destroyed.

IMPORTS OF EXPLOSIVES

The quantities of various explosives imported was about normal with the exception of fireworks which showed an increase of about 100 tons owing to the Coronation festivities. A decrease was shown in the importation of detonators and primers because of increased manufacturing facilities in Canada. A total of 456 importation permits and 44 special permits were issued.

DOMINION FUEL BOARD

The Dominion Fuel Board administers the expenditure of funds authorized by the Governor General in Council to aid the Canadian coal industry, and by the Domestic Fuel Act (1927) to assist coking plants. It also acts in an advisory capacity to the Sub-committee of the Cabinet dealing with the general fuel problems of the country. These duties are performed by a permanent staff operating as a division of the Mines and Geology Branch.

Most of the Board's attention is given to the administration of coal subventions, which during the past fiscal year have amounted to \$2,453,901. This represents the movement of 2,607,930 net tons of Canadian coal at an average cost of 94 cents a ton, and is responsible for the provision of about 1,200,000 man-days work, or the employment throughout the year of about 4,600 men.

The routine administrative work in connection with the granting of subventions has continued to increase, the number of applications dealt with being 5 per cent greater than during the previous year, and 24 per cent greater than in 1935.

Three coke plants, located at Halifax, Quebec, and Vancouver, operate under the Domestic Fuel Act. The amount paid out in assistance under the Act during the year was \$59,732, and represented the use of 59,732 net tons of Canadian coal. As required by the Act, these plants are inspected each year, to ensure that operations are in conformity with the contracts under the Act, and to calculate, and check the amount of benefit payable to the contracting parties. These inspections were carried out by technical officers of the Fuel Board with the collaboration of local auditors appointed by the Comptroller of the Treasury. A large tonnage of Canadian coal was also moved during the year under assistance as provided by P.C. 944 for processing in by-product coke plants.

Movements of coal from Nova Scotia to St. Lawrence ports by water amounted to 3,200,000 net tons, an all time record, and more than 1,000,000 tons of which was marketed in Ontario. However, the tonnage moved was insufficient to fill the market requirements, and there was a particularly heavy all-rail movement after navigation had closed.

The Board, through the resident inspector in Winnipeg, maintained a close check on the distribution of subvention coal in the Winnipeg district.

Owing to the confused state of the coal trade in the United States during the year a close and detailed study of coal imports, cost trends of United States coal, and transportation costs was maintained. The setting up of the National Bituminous Coal Commission, their announcement of minimum coal prices, and the subsequent withdrawal of these prices, have all called for a close observation by the Board on all legislative developments at Washington.

The annual survey of operating costs and revenues of Canadian coal mines was again completed, this being the sixth year in which such data have been collected and published.

Officers of the Board during the year acted in an advisory capacity to the Tariff Board on the question of coal and coke references No. 97.

Annual inspectional work was carried out in the various coal producing areas, and problems arising from the administration of coal movements were dealt with directly with the operators concerned. Visits were made to the coal fields of Nova Scotia, New Brunswick, Alberta, and British Columbia.

Many investigations were initiated and continued throughout the year on general fuel matters. Detailed reports were made for administrative and governmental use on the opening up of new coal mines in the several provinces; the production and distribution of coke in Canada; changing conditions in the coal mining industry of New Brunswick; Alberta domestic coal shipments to Ontario, including the distribution, cost to Government, and general effect with respect to the Alberta industry; and the competitive situation with regard to domestic fuel consumption in the Head of Lakes area, etc. Detailed studies were continued on the competition with Canadian coals of foreign coals entering the Canadian market.

The Board wishes to acknowledge the co-operation received from other Government departments, particularly the Dominion Bureau of Statistics; the mining departments of the provinces; members of the coal mining industry; and from the many interests concerned with the production, marketing, and use of Canadian coal. It also wishes to acknowledge the assistance and co-operation extended by the National Bituminous Coal Commission, and by the Bureau of Mines in Washington.

PUBLICATIONS

MINES AND GEOLOGY BRANCH

Report No.

English Publications

Annual Report for the Fiscal Year Ending March 31, 1937.

French Translation

Rapport annuel sur l'année financière se terminant le 31 mars 1937.

BUREAU OF GEOLOGY AND TOPOGRAPHY

English Publications

- 2434 Memoir 206. *Cadillac Area, Quebec*—by H. C. Gunning.
 2437 Memoir 208. *Gold Deposits of Herb Lake Area, Northern Manitoba*—by C. H. Stockwell.
 2438 Memoir 209. *Mining Industry of Yukon, 1936*—by H. S. Bostock.
 2440 Memoir 211. *Thetford, Disraeli, and Eastern Half of Warwick Map-areas, Quebec*—by H. C. Cooke; with chapters on the Beauceville, St. Francis, and Lake Aylmer Series—by T. H. Clark.
 2442 Memoir 212. *Mineral Resources, Usk to Cedarvale, Terrace Area, B.C.*—by E. D. Kindle.
 2443 Memoir 213. *Geology and Mineral Deposits of Bridge River Mining Camp, B.C.*—by C. E. Cairnes.
 2446 Memoir 214. *Geology and Mineral Deposits of Freegold Mountain, Carmacks District, Yukon*—by J. R. Johnston.

French Translations

- 2428 Mémoire 201. *Géologie et gisements minéraux des régions de Ville-Marie et du lac Guillet (Mud), Québec*—par J.-F. Henderson.
 2430 Mémoire 199. *L'étendue de la carte du lac Etchemin, Québec*—par Carl Tolman.
 2441 Mémoire 206. *Région de Cadillac, Québec*—par H.-C. Gunning.

PUBLICATIONS—Continued

Mimeographed Reports

Report No.

- 37-5 *Waswanipi Map-area (East Half), Que.*—by J. C. Sproule.
 37-6 *World Petroleum Situation and Developments in Turner Valley, Alta.*—by G. S. Hume.
 37-7 *Stull (Mink) Lake Area, Man.*—by D. L. Downie.
 37-8 *Waswanipi Map-area (West Half)*—by G. W. H. Norman, A. H. Lang, Chas. Longley, and B. C. Freeman. Map only.
 37-9 *Duvernay Township, Abitibi County, Que.*—by L. J. Weeks.
 37-10 *Del Bonita Area, Alta.*—by L. S. Russell.
 37-11 *Opemisca Map-area (East Half), Que.*—by G. W. H. Norman.
 37-12 *Pekisko Hills Area, Alta.*—by G. S. Hume. Hand-coloured map only.
 37-13 *Fort Fraser Map-area (West Half), B.C.*—by J. E. Armstrong.
 37-14 *Geology of the Vicinity of Taber, Alta.*—by L. S. Russell and J. C. Sproule.
 37-15 *The Barkerville Gold Belt on Island Mountain, B.C.*—by N. F. G. Davis.
 37-16 *Foster Lake Area (East Half), Sask.*—by R. C. McMurchy.
 37-17 *Foster Lake Area (West Half), Sask.*—by R. C. McMurchy.
 37-18 *Echimamish Area, Man.*—by T. L. Tanton.
 37-21 *Mineral Deposits of Kettle River Area (West Half), B.C.*—by C. E. Cairnes.
 37-25 *General Geology and Petroleum Resources of Manitoulin and Adjacent Islands, Ont.*—by M. Y. Williams.
 37-26 *Avonlea-Blackfoot Area, Sask.*—by R. T. D. Wickenden and Roy Graham.
 37-27 *Nelson Map-area (East Half), B.C.*—by H. M. A. Rice.
 38-1 *Beaukeu River Area, N.W.T.*—by J. F. Henderson.
 38-2 *Nimpkish Map-area (East Half), B.C.*—by H. C. Gunning. Map only.
 38-3 *Nimpkish Map-area (West Half), B.C.*—by H. C. Gunning. Map only.
 38-4 *Woss Lake Map-area (East Half), B.C.*—by H. C. Gunning. Map only.
 38-5 *Woss Lake Map-area (West Half), B.C.*—by H. C. Gunning. Map only.
 38-6 *Schoen Lake Map-area (West Half), B.C.*—by H. C. Gunning. Map only.
 38-7 *Turner Valley, Alta.*—by G. S. Hume.
 38-8 *Mudjatik Area, Saskatchewan*—by J. C. Sproule.
 38-9 *Cree Lake Area, Saskatchewan*—by J. C. Sproule.
 38-10 *Fort Fraser Map-area (northwest quarter), B.C.*—by J. E. Armstrong.
 38-12 *Perron-Rousseau Map-area (West Half), Que.*—by G. F. Flaherty. Map only.
 38-13 *Ignace Sheet (southwest quarter), Kenora District, Ontario*—by T. L. Tanton.
 38-14 *East Half Fort Fraser Map-area, British Columbia*—by J. G. Gray.
 38-15 *Reindeer Lake South Map-area*—by F. J. Alcock.

French Translations

- 37-5 *Moitié est de la région de la carte de Waswanipi, Qué.*—par J.-C. Sproule.
 37-8 *Moitié occidentale de la région de la carte de Waswanipi, Qué.*—par G.-W.-H. Norman.
 37-9 *Canton de Duvernay, Comté d'Abitibi, Qué.*—par L.-J. Weeks.

NATIONAL MUSEUM OF CANADA

English Publications

- Bulletin 85. *The Lepturini of America North of Mexico, Part II*—by Ralph Hopping.
 Bulletin 86. *The Indian Background of Canadian History*—by D. Jenness.
 Bulletin 87. *Physical Anthropometry of the Roebuck Iroquois*—by Sir Francis H. S. Knowles.
 Bulletin 88. *Botanical Investigations in Batchawana Bay Region, Lake Superior*—by R. C. Hosie and T. M. C. Taylor.
 Bulletin 89. *Annual Report of the National Museum for the Fiscal Year 1936-37.*
 Museum Leaflet No. 1. *The Algonkians.*
 Museum Leaflet No. 2. *The Iroquoians.*
 Museum Leaflet No. 3. *Mackenzie River Tribes.*
 Pamphlet. *Edible Roots and Berries of Northern Canada*—by A. E. Porsild.
 Separate. *Mammals and Birds of the Western Arctic, N.W.T.*
 Separate. *Flora of the Western Arctic, N.W.T.*
 Separate. *Faunas of Canada.*

French Translations

- Bulletin 86. *La Trame indienne de l'histoire du Canada*—par D. Jenness.
 Bulletin 89. *Rapport du Musée national sur l'année financière 1936-37.*
 Feuillet N° 2. *Les Iroquois.*

PUBLICATIONS—Concluded

BUREAU OF MINES

English Publications

Report No.

- Separates 701, 702, and 703* (Investigations in Ore Dressing and Metallurgy, July-December, 1936).
Separates 704-716 (Investigations in Ore Dressing and Metallurgy, January-June, 1937).
Separates 717-721 (Investigations in Ore Dressing and Metallurgy, July-December, 1937).
 771 *Combined Report of Investigations in Ore Dressing and Metallurgy, July-December, 1936.*
 774 *Combined Report of Investigations in Ore Dressing and Metallurgy, January-June, 1936.*
 776 *Combined Report of Investigations in Ore Dressing and Metallurgy, July-December, 1936.*
 779 *Analyses of Coal and Other Solid Fuels*—by J. H. H. Nicolls and C. B. Mohr.
 780 *Petroleum Fuels in Canada, 1935*—by J. M. Casey.
 786 *Canadian Mineral Industry 1936.*
 787 *Gasoline Survey 1935 and 1936.*
 789 *Petroleum Fuels in Canada 1936*—by J. M. Casey.

French Translation

- 778 *Les calcaires de construction au Canada*—par M. F. Goudge.

Mimeographed Reports

- 66 *Industrial Waters in Canada (Interim Report No. 2)*—by H. A. Leverin.
 67 *What Canada is Doing in Steel*—by A. W. G. Wilson.

French Translation

Les industries minérales au Canada en 1936.

EXPLOSIVES DIVISION

English Publication

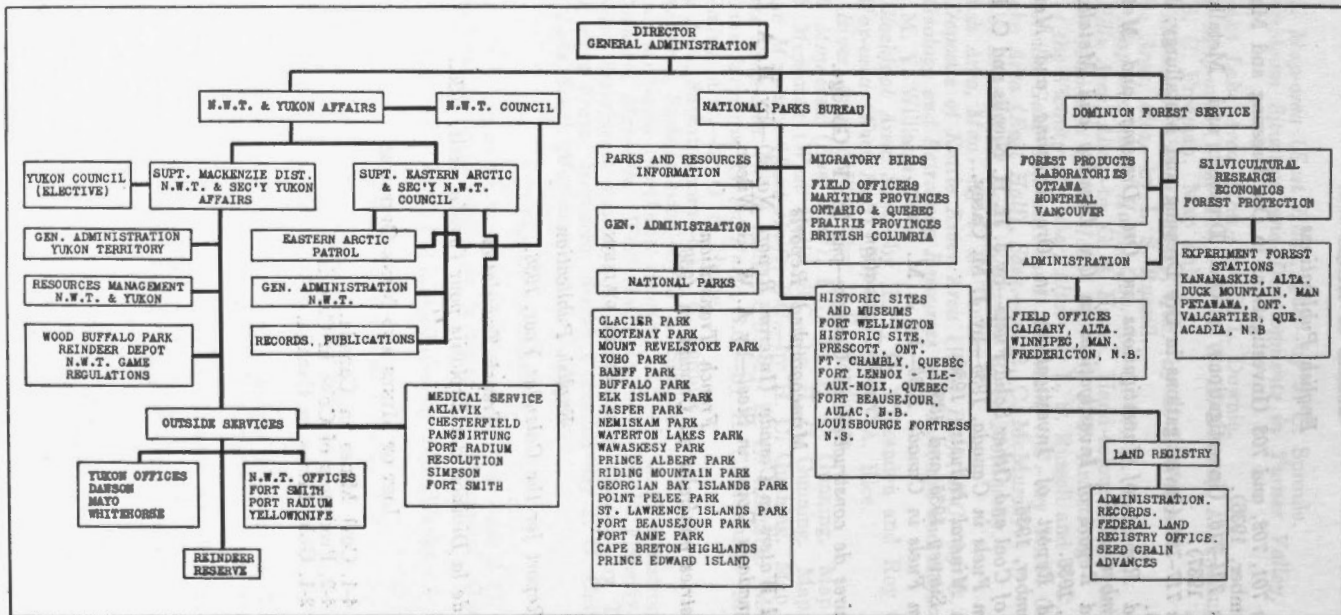
- 41 *Annual Report for the Calendar Year, 1936.*

French Translation

- 42 *Rapport de la Division des Explosifs pour l'année civile, 1936.*

LIST OF MINES AND MINE OPERATORS

- List No. 4-1, Coal Mines in Canada.
 List No. 4-2, Producers of Coke in Canada.
 List No. 2-1, Gold Mines in Canada.



Organization Chart, Lands, Parks, and Forests Branch.

LANDS, PARKS, AND FORESTS BRANCH

ROY A. GIBSON, DIRECTOR

The Lands, Parks, and Forests Branch administers the mineral, fur, and other natural resources of the Northwest and Yukon Territories, which Territories comprise approximately 40 per cent of the total area of the Dominion. The Branch deals also with any business arising from the local government of the two Territories. It administers the National Parks of Canada, gives a lead in the conservation of wild life, marks historic sites of national importance, and assists in the encouragement of tourist travel. It conducts scientific investigations relating to the safeguarding, management, and maximum utilization of the Dominion's forest resources, for which work it maintains forest experimental stations and forest products laboratories. The Branch also maintains a Federal Land Registry Office.

As is shown on the accompanying chart the Branch consists of four main divisions, viz.: Bureau of Northwest Territories and Yukon Affairs, Bureau of National Parks, Dominion Forest Service, and Federal Land Registry.

BUREAU OF NORTHWEST TERRITORIES AND YUKON AFFAIRS

NORTHWEST TERRITORIES

The Northwest Territories comprise that portion of the mainland of Canada lying north of the Provinces of Manitoba, Saskatchewan, and Alberta, and east of Yukon Territory, the islands in Hudson and James Bays and in Hudson Strait, including Ungava Bay and the vast Arctic Archipelago. The estimated total of land and freshwater areas of the Northwest Territories is 1,309,682 square miles. According to the official census of 1931 the population of the Northwest Territories totalled 9,723, classified as follows: Indians, 4,046; Eskimos, 4,670; and white inhabitants, 1,007. However, due to the mining activity which has developed in the Mackenzie District during recent years, the white population has considerably increased, the estimated total being 2,000.

The Northwest Territories Act (Chapter 142 R.S.C. 1927) provides for a Territorial Government composed of the Commissioner of the Northwest Territories, the Deputy Commissioner, and five Councillors, all appointed by the Governor General in Council. The Commissioner in Council has power to make ordinances for the Government of the Territories under instructions from the Governor General in Council or the Minister of Mines and Resources, respecting direct taxation within the Territories in order to raise revenue, etc., establishment and tenure of territorial offices and the appointment and payment of officers, maintenance of prisons, municipal institutions, licences, solemnization of marriages, property and civil rights, administration of justice, and generally all matters of a local or private nature in the Territories. The seat of Government is at Ottawa.

Council

Commissioner—Charles Camsell, C.M.G.

Deputy Commissioner—R. A. Gibson.

Members of Council—Sir James H. MacBrien, K.C.B., C.M.G. (deceased); K. R. Daly; A. L. Cumming; Dr. H. W. McGill; S. T. Wood; O. D. Skelton.

Secretary—D. L. McKeand.

WORK OF COUNCIL

Twelve regular and five special sessions of Council were held during the year. The important matters dealt with included the following:—

Assent was given to ordinances to provide for registration of miner's liens; control of dogs; protection of sheep and other animals from dogs; maintenance of orphans, aged, infirm, and destitute; the licensing of motion picture theatres; authority to practise the legal profession.

A committee was appointed to assist the legal officers of the Crown and the Northwest Territories Council in the revision of the ordinances of the Northwest Territories.

The organization and itinerary of the annual Eastern Arctic patrol was arranged.

A number of applications for permits to make exploratory and scientific investigations in the Northwest Territories under the terms of the Scientists and Explorers Ordinance were considered.

In connection with medical services, Council recommended a grant of \$5,000 towards the construction of a mission hospital at Resolution, and grants of \$10,000 each towards the purchase of materials and the construction of similar hospitals at Rae and Norman. Various other measures were considered for the assistance of the missions in providing hospital facilities.

In the interests of game conservation consideration was given to changes in the Northwest Game Regulations with a view to restricting the use of aircraft in trapping operations; to restrict the granting of hunting and trapping licences; and to the possibility of increasing the wolf bounty. The creation of the Mackenzie Mountains Game Preserve was recommended, and numerous other questions dealing with game conservation were under review.

During the year, Council made recommendations for improvements in transportation facilities for the benefit of mining and other interests, for the survey of a townsite and the erection of docks at Yellowknife, and for the placing of aids to navigation along transportation routes. Other matters considered included: a policy for the development of water power; the improvement of radio facilities; the policy with regard to the licensing of trading posts; the future development of the reindeer enterprise; and appointments of stipendiary magistrates.

ADMINISTRATION

The administration of the various Acts, Ordinances, and Regulations pertaining to the Northwest Territories is supervised by the Director of Lands, Parks, and Forests Branch, who is also Deputy Commissioner of the Northwest Territories. For purposes of departmental administration a Superintendent has been appointed for the Eastern Arctic and one for Mackenzie District. A departmental agent is stationed at Fort Smith, the first settlement reached by those entering the Mackenzie District from the south. This officer is also Superintendent of Wood Buffalo National Park, Dominion Lands Agent, and Mining Recorder, as well as Stipendiary Magistrate. A member of the Royal Canadian Mounted Police at Port Radium is Dominion Lands Agent, Mining Recorder, and Crown Timber Agent. A member of the Force also acts as Sub-Mining Recorder at Yellowknife.

MEDICAL OFFICERS

Medical Officers employed by the Department are stationed at Fort Smith, Resolution, Simpson, Norman, Aklavik, Port Radium (part time), Yellowknife (part time), Chesterfield, and Pangnirtung (Baffin Island). The full time Medical Health Officers are responsible for the general health and welfare of

the population of their respective districts, making extensive patrols to outlying areas to diagnose and treat cases. They supervise mission hospitals, and enforce sanitary and quarantine regulations. All Medical Officers are appointed coroners.

HOSPITALS

Hospitals are maintained at principal centres throughout the Territories by the Anglican and Roman Catholic Missions with the assistance of the Dominion Government. During the year payments to these hospitals amounted to \$18,882.50, representing the maintenance and treatment of indigent whites, Eskimos, and half-breeds for a total of 7,553 days at the rate of \$2.50 per diem. Payments in connection with the newly established Industrial Home at Chesterfield amounted to \$1,255.88. In addition, payment was made of the sum of \$2,356.53 for the maintenance of mental and other patients at points outside the Territories. All accounts for these services had not reached the Administration when the books for the year were closed. These figures do not include Indians reported separately under Indian Affairs Branch.

SCHOOLS

The Anglican and Roman Catholic Missions, assisted by grants from the Dominion Government, maintain day and boarding schools for native and white children in connection with their general mission work. Schools are conducted at all the principal mission centres in the Mackenzie Valley, and at all points where there are branches of the missions provision is made for the education of children of the district. The number of indigent children in the residential schools was 138, and 296 pupils attended the day schools. The sum of \$23,109.91 was expended for the assistance of schools during the year. These figures do not include the Indian children reported separately under Indian Affairs Branch.

TRANSPORTATION

Access to the Northwest Territories may be by ocean steamer, by inland water navigation, and by aircraft. Flying is, of course, restricted during the break-up season in the spring, and in the freeze-up season in the autumn. The utilization of air transportation has been varied and widespread, and to its influence may be attributed a speeding up of the administrative, industrial, and social activities of the Territories. Regular air mail services to many northern points are maintained, wide areas have been explored for minerals, and lines of rapid transport of passengers and freight into many parts of the Territories established. During the season of 1937 the two main air transportation companies handled approximately 1,200 tons of freight. By arrangement with the aerial transportation companies practically any point in the Territories may be reached.

In view of the increase in the use of aircraft in the Territories in recent years the development of suitable landing facilities has received considerable attention. During the past year winter landing fields and seaplane bases were improved at Fort Smith, Resolution, Rae, Providence, and Norman.

COMMUNICATION

The Northwest Territories and Yukon radio system is operated by the Department of National Defence through the Royal Canadian Corps of Signals (Permanent Force). The stations in this system are Edmonton, McMurray, and Chipewyan in Alberta; Goldfields in Saskatchewan; Fort Smith, Resolution, Outpost Island, Yellowknife, Gordon Lake, Simpson, Norman, Port Radium, Aklavik, and Tuktoyaktuk (seasonal) in the Northwest Territories; and Herschel Island (seasonal), Dawson, Mayo, Whitehorse, and Burwash Landing in Yukon

Territory. The Department of Transport operates wireless stations at Coppermine on Coronation Gulf, Chesterfield, Nottingham Island, Cape Hopes' Advance, Resolution Island, and Port Harrison on Hudson Bay and Strait. Private companies are installing radio communication at an increasing number of places.

Formerly mail was conveyed from Edmonton to Waterways, at the end of steel in Alberta, thence to nearby McMurray and northerly from there by water during the season of navigation. Since November 1929, however, air mail service has been in operation during summer and winter. Illustrative of the extent of this service are the 1937-8 air mail schedules which called for one hundred trips to serve Fort Smith, with a lesser number of trips in connection with more northerly points. Additional commercial flights and police patrols are also utilized for the carrying of mail. These serve particularly out-of-the-way points. Mail for most points in the Eastern Arctic is delivered once a year, by the vessel that carries the Eastern Arctic Patrol of the Department, but this service is supplemented by non-scheduled trips by police, missionaries, and other travellers.

LAW AND ORDER

The enforcement of law and order in the Territories is the responsibility of the Royal Canadian Mounted Police and detachments have been established at strategic points throughout the Territories. By means of extensive patrols a reasonably close check is kept on this vast region by a comparatively small body of men. As might be expected their duties are multifarious. The Commissioner of the Royal Canadian Mounted Police acted as Sheriff of the Northwest Territories during the year.

VITAL STATISTICS

The Director of the Branch is Registrar-General for the Northwest Territories and the method of recording vital statistics of whites, Eskimos, Indians, and half-breeds is in accordance with that adopted by the provinces. The information obtained is supplied to the Dominion Bureau of Statistics for inclusion in the vital statistics of the Dominion.

LIQUOR PERMITS

Under the Northwest Territories Act, Chapter 142, R.S. 1927, the importation of intoxicating liquor in small quantities for medicinal purposes, is authorized under permits issued by the Commissioner to eligible persons. During the past calendar year 890 permits were issued.

LANDS AND TIMBER

Lands in the surveyed settlements of the Northwest Territories are disposed of by sale to transportation companies, mining companies, traders, and missions in connection with their several undertakings and to settlers for residential purposes. Homestead entries are not granted, but small parcels of land, suitable for agricultural and fur-farming purposes, are leased under the provisions of Chapter 113, R.S.C. 1927. Two lots were sold, one of which was patented; one grazing lease and two leases for agricultural and fur-farming purposes were issued; one assignment was registered; bringing the total number of such leases in force to twenty-six. In Port Radium Settlement surface leases of surveyed lots are granted for terms of 5 years, mainly for residence and business purposes, and during the year three leases were granted and fourteen cancelled, leaving twenty-one in good standing. Five hay permits were issued under which 63 tons of hay were cut in Wood Buffalo Park and in the vicinity of the settlements of Simpson and Norman.

The number of timber permits issued, exclusive of those granted in connection with timber berths, was 117, authorizing the cutting of 57,372 lineal feet of timber, 119,840 feet board measure of saw timber, 40 fence posts, 893 roof poles, and 2,466 cords of wood. Thirty-eight of these permits were issued free of dues to educational, religious, and charitable institutions; to settlers for domestic use, and to Government departments. Twelve timber berth permits were granted. The revenue derived from lands, timber, hay, and grazing was \$6,231.37, being an increase of \$1,577.28 over the previous year.

MINING

From the Eldorado mine at Echo Bay, Great Bear Lake, where pitchblende and native silver were discovered in 1930, shipments of concentrates to the refinery at Port Hope, Ontario, continue and a substantial increase over the previous year in the quantity shipped has been noted. Radium, silver, and uranium by-products result from the treatment of the ore from this mine. The mill is capable of handling 100 tons daily, and recent additions include two 70,000-gallon tanks for fuel oil, a chemical laboratory, and an assay office.

Since the discovery of gold at Yellowknife Bay, Great Slave Lake, in 1935, and at Gordon Lake, about 50 miles northeast of Yellowknife Bay, in 1936, further discoveries were made in 1937. These include a gold discovery at Moberly Lake, about 35 miles north of Yellowknife Bay, and one in the vicinity of Snare River. Exploration and development work were conducted in these several fields, and so much interest was shown that the Department opened a Sub-Mining Recorder's office at Yellowknife Bay for the convenience of the public.

A modern mining plant, including a 100-ton mill, has been constructed on the "Con" property of the Consolidated Mining and Smelting Company of Canada, Limited.

Miners' licences issued during the year numbered 512, and 358 such licences were renewed. Entries were granted for 1,787 quartz mining claims and a large number of claims were renewed by the owners obtaining certificates of work. Final leases have been issued comprising an area of 6,900.85 acres. The total revenue obtained from fees payable under the Quartz Mining Regulations amounted to \$31,439.20, including \$8,691 collected as licence fees.

Placer Mining.—Of the 300 claims staked and recorded in the South Nahanni and Liard River districts since 1934 only 17 are now in good standing. Placer mining fees amounted to \$92.

Coal.—Six coal mining leases are in force, comprising an area of 687.66 acres. The total revenue derived from fees, rentals, and royalties in connection with coal mining rights during the year amounted to \$867.96.

Petroleum and Natural Gas.—Petroleum and natural gas leases affecting lands in the Northwest Territories comprise a total area of 3,173.33 acres. Petroleum produced from the wells of Northwest Company, Limited, below Norman on Mackenzie River, amounted to 11,370 barrels during the year. Most of the oil was shipped to the Great Bear Lake, Yellowknife, and Gordon Lake mining fields. Revenue from petroleum and natural gas locations totalled \$5,851.58, of which \$2,828.25 was received on account of royalty.

Dredging.—One dredging lease is in force in the Northwest Territories, comprising a stretch of an unnamed river lying about 70 miles west of the point where Gossage River joins Mackenzie River. Rental paid on this lease during the year amounted to \$50.

NORTHWEST GAME ACT

The conservation of the wild life in the interests of the native population is receiving constant attention. The Northwest Game Act passed in 1917 authorizes the enactment of regulations to conserve the wild life; and to March 31, 1938, areas totalling 514,000 square miles had been set aside as game preserves, in which only natives are permitted to hunt and trap. In addition Wood Buffalo Park, 17,300 square miles, and Thelon Game Sanctuary, 15,000 square miles, have been established for the preservation of the wild life.

Wood Buffalo Park.—Wood Buffalo Park, lying partly in the Northwest Territories and partly in Alberta, has been divided into six sub-districts for convenience of administration, each of which is under the supervision of a warden, who is responsible for the enforcement of the regulations and the maintenance of effective patrols throughout his district. Cabins, fire towers, and fire control equipment have been established at convenient points within each patrol area; roads and trails are being constructed and improved, and a telephone line provides direct communication between the headquarters of several of the wardens and the office of the park superintendent at Fort Smith. Motor boats and canoes are used extensively in connection with the patrol work during the summer months, and the mode of travel is by sled dogs during the winter season.

Fur and Game.—The difficulties of communication with outlying settlements prevent the compilation of accurate game statistics for the fiscal year ended March 31, 1938. The preliminary statement appearing hereunder has been compiled from returns for the licence year ended June 30, 1937, received in the Department to date.

Preliminary statement of pelts of fur-bearing animals taken during the year ended June 30, 1937.

Bear, black..	173	Fox, red..	5,931
Bear, brown..	13	Fox, silver..	341
Bear, grizzly..	5	Fox, white..	17,327
Bear, white..	157	Lynx..	1,908
Beaver..	11,125	Marten..	5,974
Coyote..	94	Mink..	3,273
Ermine..	7,847	Muskrat..	218,923
Fisher..	36	Otter..	372
Fox, blue..	158	Skunk..	99
Fox, black..	19	Wolverine..	137
Fox, cross..	2,899	Wolf..	1,093

Preliminary statement of big game mammals and birds taken during the licence year ended June 30, 1937.

Deer..	21	Grouse..	213
Caribou..	10,839	Prairie chicken..	483
Moose..	1,289	Ptarmigan..	4,510
Sheep..	41	Wild duck..	8,378
Partridge..	1,206	Wild goose..	645

Buffalo.—In Wood Buffalo Park during the past year the reports of the wardens indicate that the buffalo continue to thrive. Thirty surplus buffalo were slaughtered during the winter season, the meat being allotted to the missions and to the Indian Affairs Branch for distribution to needy native families in districts adjacent to the park. Twelve wolves were killed by wardens during the winter of 1937-8.

Caribou.—Barren ground caribou were fairly plentiful throughout the greater part of their range although the natives living in the coastal areas adjacent to the Coronation Gulf district and between Eskimo Point and Churchill on the west side of Hudson Bay reported a scarcity of caribou. Consequently, they were forced to move inland to secure sufficient for their needs. The reports of excessive slaughter of caribou by the Eskimo in the Burnside River and Red

Rock Lake districts were studied by the Advisory Board on Wild Life Protection and the matter is to be made the subject of further investigation to determine what action should be taken for the preservation of the herds.

Woodland caribou and moose, although plentiful in some districts, were unusually scarce during the months of December and January in the area between Providence and Fort Norman on Mackenzie River, and as a result representations were made to the Department on behalf of the Indians and half-breeds for an extension of beaver and muskrat trapping privileges. A temporary extension of the open season for muskrats was authorized for the period January 15 to March 15 as a relief measure, but investigation revealed that the beaver were not plentiful enough to justify an increase in the bag limit. Conditions improved later and during the month of February the majority of the natives were well supplied with fresh meat.

Musk-ox.—C. H. D. Clarke, and his assistant, W. H. B. Hoare, continued their biological reconnaissance of the Thelon Game Sanctuary. They left Ottawa on June 13, 1937, reaching Reliance on June 18. They proceeded by air to Heuss Lake at the headwaters of Hanbury River and then travelled by canoe, following Hanbury and Thelon Rivers to Baker Lake. All areas adjacent to their route of travel considered favourable to the musk-oxen were carefully investigated and the location and extent of their habitat was determined. The investigators reported that there were approximately 300 musk-oxen in the sanctuary area, located as follows: Thelon Valley to Finnie River (western), 175; Tourgis Lake and outlying range, 50; Finnie River, 50; Beverly Lake area, 25 to 50.

Moose.—A total of 1,289 moose were taken during 1936-7, as compared with 2,634 in 1935-6.

Beaver.—Under the regulations each male resident over the age of 18 years may be granted a permit to take fifteen beaver during the period of open season. The open season was changed to the period from March 1 to May 31, as investigation revealed that the former open season, January 16 to May 14, was not suitable. Permits were granted to 1,574 persons, who secured a total of 11,123 animals. The beaver population is increasing in the more favourable districts, but these animals are still quite scarce in a number of areas where they were overtrapped in former years.

Fox.—The normal cyclic decline affected the yield of fox pelts during 1937, the returns for the past 5 years being as follows:

Year ended June 30	White Fox	Red Fox	Cross Fox
1933.....	25,687	6,256	2,586
1934.....	52,467	8,763	3,668
1935.....	52,615	11,789	4,875
1936.....	25,897	9,556	4,074
1937 (preliminary report).....	17,327	5,931	2,899

In addition, the returns for 1936-7 showed 19 black, 158 blue, and 341 silver foxes. Reports received during the past winter indicated an improvement in the yield and an increase is anticipated for the season of 1938-9.

Marten.—Compared with 1935-6 there was a slight increase in the number of marten pelts during the season of 1936-7 when 5,974 pelts were obtained, but there appears to have been no appreciable increase in the supply. The average annual take for the past 5 years has been about 6,000 pelts, whereas for the season of 1924-5 a total of 13,314 pelts was taken. The marten is one of the principal fur-bearers of the district between Simpson and Good Hope and as a conservation measure the open season was reduced from 4 to 5 months.

Investigations indicate the necessity of adopting further measures for the conservation of all fur-bearers in this district, and a proposal to establish a game preserve embracing the greater part of the habitat of the marten in the Mackenzie District was under consideration at the end of the fiscal year.

Mink.—Only 3,273 mink pelts were taken as compared with 5,466 during the previous year. These animals are subject to periods of abundance and scarcity and it would appear that the low period of the mink cycle has now been reached. Preliminary reports indicate a slight increase in the yield for the year ended June 1938, and improved conditions may be anticipated for 1938-9.

Muskrat.—The number of muskrat pelts taken was 218,923 compared with 136,257 pelts for the previous year. Advance returns would indicate a further increase in the yield next season.

Wolf.—Reports continue to reach the Department of the prevalence of wolves in many districts. During the year ended March 31, 1938, a total of \$7,080 was paid in bounties for the destruction of wolves in the Northwest Territories and in Wood Buffalo Park, representing payment of a \$5 bounty for the destruction of 1,416 wolves. The residents have petitioned the Department urging an increase in the bounty to encourage the destruction of these animals.

Fur Export Ordinance.—During the year ended March 31, 1938, the sum of \$57,061.86 was collected under the provisions of this ordinance compared with \$69,810.02 for the previous year. The small yield of fox and mink pelts was largely responsible for the decrease in revenue.

Licences.—Licences were issued during the licence year ended June 30, 1937, as follows:

<i>Hunting—</i>	
Resident	481
Non-resident British	2
Non-resident non-British	1
Non-resident bird licence	8
<i>Trading—</i>	
Resident	134
Non-resident British	10

Infractions of Game Laws.—There were ten prosecutions and ten convictions for infractions of game laws.

Permits.—Permits were issued or dealt with as indicated below:

To establish trading posts.....	34
To take mammals for propagation purposes.....	1
To hunt and trap in Wood Buffalo Park.....	355
To render Migratory Birds permits operative in the N.W.T. (countersigned).....	30
To take specimens of mammals and non-migratory birds for scientific purposes	11
To take fifteen beaver	1,574
To export caribou skins	3

Revenue.—The revenue collected under the Northwest Game Act and the Fur Export Ordinance for the fiscal year 1937-8 was as follows:

Hunting licences	\$ 1,665 03
Trading licences	2,190 00
Bird licences	40 00
Fur-farm licences	18 00
Trading post permits	42 00
Sale of furs	704 40
Fur export tax	57,061 86
Fines and forfeitures	236 25
Total	<u>\$61,957 54</u>

General.—Reports received from the more important fur trade settlements are to the effect that the fur yield for 1937-8 is much below the average. The shortage of game and the low prices for fur have resulted in increased demands for relief supplies from some centres. It would appear that the period of low fur cycle was reached during the past winter and the indications are for an increased yield in 1938-9.

REINDEER

The Government reindeer herd on the reservation immediately east of the Mackenzie Delta has continued in a thriving condition. The surviving fawn increase for 1937, as determined at the round-up in July, was 1,181 head. The total number of deer corralled and counted was 4,092 head, and there were a number of strays left on the range.

Richards Island, included in the Reindeer Reserve, was used again for summer grazing, having proved eminently suitable for the purpose. Improvements have been effected in the corraling facilities at Kigdluit on the southeast shore of the island. It is the practice to handle the herd in two sections to reduce the danger of injury to the animals, and for convenience in corraling and counting.

The Reindeer Station was included in a tour of inspection in the Mackenzie District made by Mackay Meikle, Departmental Agent at Fort Smith, during the summer of 1937. He inspected the main station on the winter range, observed part of the round-up activities, and submitted a report on many phases of the reindeer work.

Dr. J. A. Urquhart, Medical Officer of Aklavik, who had general supervision over the reindeer field work, reported by each mail on the progress of affairs, and monthly returns were made by the general foreman. The reports show that the deer are not affected to any serious extent by parasites or infectious diseases.

At the slaughtering operations conducted about the end of September, shortly before freeze-up, over 200 animals, surplus to requirements in maintaining a balanced herd, were killed, and the meat distributed in the district. The allotments to the Anglican and Roman Catholic Missions were 65 head each, the same as in the previous 2 years. A further quantity of meat was held for camp use or for direct relief. The meat from 51 deer was sold to the Royal Canadian Mounted Police, Signals Officers, traders, and others in the district, producing a revenue of \$1,263.90. It was observed that the average dressed weight of the deer had increased from about 150 pounds in 1935 to 165 pounds in 1937. Subsequent slaughter during the winter to secure meat for camp use brought the total of slaughtered animals to about 275 head during the year. Reductions in the herd from other causes appeared normal for a herd of its size. Losses due to wolves were very light.

In the early winter season, after freeze-up, the reindeer herd was moved inland to the winter range which lies near the main station, extending in a northeasterly direction along Sitidgi and Eskimo Lakes. The winter food of the deer consists mainly of reindeer moss which when overgrazed takes many years to recover. Arrangements have been made to change the grazing areas at frequent intervals to conserve the range.

Two of the herders at the Reindeer Station are Laplanders brought from Norway in 1931. They are assisted in the herding work by four natives, three Eskimos, and one Indian, who are serving as apprentices to learn the reindeer industry. A chief herder regulates the field camp under the direction of the supervising officer.

Plans are under way for improving communication facilities between the Reindeer Station and Aklavik by the installation of two-way radio equipment, to work in conjunction with the Signals Station, Department of National Defence, Aklavik.

The question of extending the reindeer industry in the interests of the native population is receiving close attention, and a scheme whereby a part of the herd would be placed under native management in the Anderson River area is being considered.

The Interdepartmental Reindeer Committee met on June 17 and October 25, 1937, and on March 23, 1938, and discussed the various field reports, and the plans under consideration for extending the reindeer industry.

EASTERN ARCTIC PATROL

The annual Eastern Arctic Patrol by the Canadian Government was again carried out successfully in the R.M.S. *Nascopie* owned by the Hudson's Bay Company. The vessel sailed from Montreal on July 10, and after a voyage of more than 10,000 miles returned to Halifax on September 28.

The Officer in Charge and Government representative in the Northern Archipelago was D. L. McKeand, Superintendent of the Eastern Arctic. The Government party included the following: E. Gravel, Post Office Department; D. A. Nichols, Geological Survey; R. G. Madill, Dominion Observatory Astronomer; C. H. Ney and K. Gladstone, Geodetic Service of Canada; H. M. Rogers, Ichthyologist, University of Toronto; V. C. Wynne-Edwards, Biologist, McGill University; R. Finnie, Cinematographer; J. F. Willis and R. D. Cahoon, Canadian Broadcasting Corporation; J. H. T. Aial, A. F. Crowell, and A. Tamblin, Radio Branch, Department of Transport, and R. K. Carnegie, Canadian Press, Ottawa, who acted as Historian. Superintendent G. F. Fletcher was in charge of the Royal Canadian Mounted Police party. Dr. L. D. Livingstone was Medical Officer and Ship's Doctor.

A notable feature of the 1937 patrol was the linking of the Eastern Canadian Arctic with the Western Arctic by the meeting at Bellet Strait of two vessels, the R.M.S. *Nascopie* from the east and the M.S. *Aklavik* from the west. Near the junction point the Hudson's Bay Company has established a new trading post known provisionally as Fort Ross.

During the 1937 expedition opportunities were taken to demonstrate further the practical use of radio in communication within or to and from the Arctic regions of Canada. The Officer in Charge made inspections at the various ports of call to determine the economic condition of the native population and to secure information on all matters affecting their welfare.

Motion pictures were taken of various phases of the life of the natives. The members of the party were afforded every opportunity to pursue their respective lines of scientific investigation and the result is a considerable addition to the scientific knowledge available in regard to the Canadian north. The Eastern Arctic Patrol made contact with members of five private scientific expeditions operating under permit. The annual patrol provided, as usual, an opportunity for the Officer in Charge to get in touch with Government officials, fur traders, missionaries, and others engaged in activities in the Eastern Arctic. Prospectors operating under licence were able to submit their applications to the Sub-Mining Recorder on board the *Nascopie*.

In addition to Government officers who travelled for administrative work and to secure scientific data, relieving officers were taken to various points. The estimated weight of building materials, machinery, boats, coal, gasoline, oil, food supplies, and other freight carried for Government purposes was 453 tons.

PUBLIC IMPROVEMENTS

Yellowknife-Gordon Lake Winter Road.—Under an agreement with the Dominion Government, the Mining Corporation of Canada, Limited, constructed a winter road from Yellowknife Bay to Gordon Lake, a distance of approxi-

mately 75 miles. The total cost of this road was \$9,493.10, of which the Dominion contributed \$4,493.43. This road has speeded up the movement of heavy freight and contributed very materially toward the mineral development of the Gordon Lake area.

Public Wharf at Labine Point, Great Bear Lake.—This wharf was constructed in 1936-7 by Eldorado Gold Mines, Limited, to serve the public interests of the easterly end of Great Bear Lake. It is rock filled, 113 feet in length and 8 feet wide, with 5 to 6 feet of water along its face. In 1937-8 this dock was further improved, the Dominion contributing \$1,944.72 toward the cost of construction.

Public Wharf at Fort Franklin.—During the past year the public wharf at Fort Franklin which was commenced in 1936 was further improved and decked at a cost of \$1,851. This wharf is located on Great Bear River near its junction with Great Bear Lake. It is 211 feet long and 20 feet wide. The deck is 2½ feet above the August water-level. The water along the face ranges from 2 feet at the easterly end to 7 feet at the westerly or downstream end. The construction is stone-filled cribbing. This dock is used for the trans-shipment of freight.

Public Wharf at Norman.—This wharf was constructed during the past fiscal year by the Department of Public Works. It is located on the south bank of Great Bear River one-half mile above its confluence with Mackenzie River. It is 200 feet long and 22 feet wide. It is used in the trans-shipment of freight consigned to points on Great Bear Lake.

Great Bear River Portage Road.—During the past year this road was maintained in good condition at a cost of \$1,000, under an arrangement entered into between the Department of Public Works and Eldorado Gold Mines, Limited.

Aids to Navigation.—Existing aids to navigation were maintained at all points on Lake Athabaska, Great Slave Lake, and Great Bear Lake. The work was carried out for the Department of Transport under the immediate supervision of our agent, Mr. Meikle. The following additional aids were established:

Permanent buoys were established at the mouth of Athabaska River and four flashing lanterns were placed at strategic points along the north shore of Lake Athabaska.

A flashing lantern was placed on an island outside Yellowknife Bay, Great Slave Lake, and a buoy in the bay beyond the settlement.

Flashing lanterns were placed on Five Sisters Islands and at Leith Point, Great Bear Lake.

Winter Aeroplane Landing Fields and Seaplane Bases.—During the past year improvements were made to the following winter aeroplane landing fields and seaplane bases:

Further clearing and levelling were carried out at Fort Smith winter landing field and seaplane base with special attention being given to the runway. All existing facilities, including cabins and telephone service, were maintained. The wharf provided for the use of seaplanes was reinforced and strengthened and the floating dock anchored off the main wharf was maintained.

The winter landing field at Resolution was further improved through the extension of the main runway to 3,500 feet in length by 100 feet in width. Additional clearing and levelling was also carried out.

During the past year increased docking facilities for seaplanes were provided at Rae seaplane base. The main wharf was extended 175 feet with two additional piers extending a distance of 60 and 75 feet, respectively. This harbour is buoyed annually to further facilitate the movement of seaplanes.

The winter landing field at Providence was improved by levelling and the removal of obstructions.

A floating dock 18 feet long by 8 feet wide was constructed at Norman seaplane base for the use of aircraft.

Main Road to Waterfront at Fort Smith.—During the latter part of September and the first part of October, 1937, a serious landslide occurred at Fort Smith, completely destroying the main road to the waterfront. Construction of a new road was commenced immediately and work continued until freeze-up, with an expenditure of \$5,627.40.

YUKON TERRITORY

Yukon Territory has an area of 207,076 square miles. It is bounded on the south by British Columbia and Alaska; on the west by Alaska (longitude 141 degrees west); on the north by the Arctic Ocean; and on the east by the North-west Territories. Most of the Yukon's present population is found in three areas: the northern or Dawson District, the southern or Whitehorse District, and the Upper Stewart River or Mayo District. According to the census of 1931 the total population was 4,230 (2,593 whites, 1,543 Indians, 85 Eskimos, and 9 unspecified). There has been an increase lately in the white population due to revival of mining activities.

The Yukon was created a separate territory in June 1898. Provision is made for a local government composed of a Chief Executive, called the Controller, also an Elective Legislative Council of three members, with a 3-year tenure of office. The Controller administers the Government under instructions from the Governor General in Council or the Minister of Mines and Resources. The Controller in Council has power to make ordinances dealing with the imposition of local taxes, sale of liquor, preservation of game, establishment of territorial offices, maintenance of prisons and municipal institutions, issue of licences, incorporation of companies, solemnization of marriages, property and civil rights, administration of justice, and generally all matters of a local and private nature in the Territory.

Territorial Council

Controller Yukon Territory—G. A. Jeckell, Dawson
Seat of Government—Dawson, Y.T.

In 1934, the following Council was elected: Dawson District, Andrew T. Taddie, Granville; Whitehorse District, Charles T. Atherton, Whitehorse; Mayo District, Ernest J. Corp, Keno.

The Council was dissolved on July 6, 1937, and a new Council was elected on August 27, 1937, as follows: Dawson District, John A. McDonald; Whitehorse District, George Wilson; Mayo District, Ernest J. Corp.

WORK OF COUNCIL

The Yukon Council met on April 26, 1937, and continued in session until May 4. Ordinances were passed amending the Game Ordinance and placing certain restrictions on the use of aircraft by trappers; provisions respecting fur-farming were introduced and amendments adopted respecting definition of "resident" and increasing licence fees for trappers; a close season for beaver and marten was declared in a defined area in the southwestern part of the Territory. Further ordinances dealt with related to hours of labour and minimum rates of wages in mining operations, the Miners' Lien Ordinance, the Crown Grant Tax Ordinance, the Assessment Ordinance, the Dental Ordinance, and the Judicature Ordinance.

ADMINISTRATION

The Lands, Parks, and Forests Branch is responsible for business arising from the general administration of the Territory under the Yukon Act and Ordinances passed by the Territorial Council; for the disposal of lands under the Dominion Lands Act; the Administration of the Yukon Placer and Quartz Mining Acts; and for the collection of revenue.

The activities of Dominion Government Departments in the Territory involved an expenditure of \$585,320.46 during the past fiscal year and the revenue collected in the Yukon amounted to \$292,373.20. For local purposes the Territorial Government raised \$143,714.22, of which amount \$85,000 represented the profit from the operation of Government liquor stores.

LANDS AND TIMBER

Lands.—Eight sales were made, one homestead was patented, five hay permits and one renewal lease were issued, and four assignments were registered. There are now in force 25 homestead entries, 6 agricultural leases, 23 waterfront leases, 2 miscellaneous leases, and 13 permits to occupy. The revenue derived from lands amounted to \$5,987.57.

Timber.—One hundred and forty-nine permits were issued authorizing the cutting of 5,320 lineal feet of timber, 400,000 feet board measure of saw timber, and 19,677 cords of wood. Eleven permits to cut wood for mining purposes were issued free of dues. Five licence timber berths were cancelled, leaving 34 in force. Four timber seizures were made. The total revenue collected from timber was \$8,134.94.

MINING

Mining is the principal activity, and a marked increase in silver-lead production was noticeable during the past year. The value of silver-lead production was \$2,171,428, an increase of \$1,682,157 over the previous year. Placer mining operations produced 58,540.01 ounces of gold, the total value of which, at \$35 an ounce, is \$2,048,900.35. This is a decrease of 4,095.74 ounces as compared with the previous year.

Entries were granted for 155 placer and 115 quartz mining claims staked and applied for during the year, and 3,254 such claims were renewed for another year. As no leases of quartz mining claims were granted or cancelled the area held under lease remains the same as last year, namely 4,927.37 acres.

Gold Royalty.—The total amount collected for royalty on gold obtained from placer deposits up to March 31, 1938, was \$5,122,652.40, of which amount \$21,952.53 was collected during the fiscal year. (For the purpose of calculating royalty, the gold is valued at \$15 an ounce, and a rate of 2½ per cent charged pursuant to Section 83 of the Yukon Placer Mining Act.)

Dredging.—Three leases to dredge for minerals in the beds of rivers in the Territory are now in force, comprising a total river stretch of about 14½ miles. The total rental from this source up to March 31, 1938, amounted to \$210,058.86, of which \$144.30 was received during the year. These leases comprise portions of the beds of Klondike and Fortymile Rivers. For the purpose of gold recovery there are eight dredges engaged in mining in Yukon Territory, all but one of which are being operated by hydro-electric power.

Hydraulic Mining.—The regulations for the disposal of hydraulic mining locations were withdrawn by Order in Council dated February 4, 1904, but the leases then in force were not affected by such withdrawal. There are still seven hydraulic mining locations held under lease, comprising a total area of approximately 18 square miles. Rentals amounting to \$201,033.50 have been collected on account of such locations, the amount received during the fiscal year being \$2,764.20.

Placer Mining

Important placer mining operations were conducted in the Dawson District by the Yukon Consolidated Gold Corporation, Limited, which company holds practically all the known reserve areas in the district. Seven dredges were operated by this company during the year, and these produced 36,850 fine ounces of gold and 8,114 ounces of silver. During the operating season the company employed an average of 512 men and expended \$1,024,404 for salaries, wages, and supplies. Of the 58,540 ounces of gold produced during the year, 57,103 ounces were from the Dawson District, 762 ounces from the Mayo District, and 675 ounces from the Whitehorse District.

Lode Mining

Dawson District.—Seventy quartz grants were issued in the Dawson District during the year and 342 claims were renewed. In Mount Freegold area a small mill was installed on the Brown-Fairclough group and operated for a brief period.

Mayo District.—There are 738 claims in good standing in the Mayo District, mining operations being conducted mainly by the Treadwell Yukon Corporation, Limited. The mine of this company was closed during 1935 and re-opened in 1936. Production increased steadily until 1937 when the ore and concentrates marketed reached a value of \$2,171,428. The ore was produced from the "Silver King," "Elsa," and "Hector" groups on Galena Hill, and the increased production may be due partly to improved concentration ratio towards the end of the year, and to favourable autumn weather which prolonged the working season.

Grants and Leases

Prospecting Leases.—Prospecting leases representing a total of 64 miles were issued during the year on the following watercourses: All Gold, Barlow, Right Fork Clear, Haggart, Geary, Silver, Kirkman, Bonanza, Moose, Duncan, Eureka, Clear, Ruby, Glacier, Canadian, Left Fork Clear, Shootanook, Twelfth of July, Scurvey, Bullion, Sixtymile, Selwyn, Black Hills, Sheep, and Dublin Gulch.

Water Rights.—There are now in force 40 grants to divert water for mining purposes, under the provisions of the Yukon Placer Mining Act, which grants aggregate a total of 18,300 miners' inches.

Coal.—One coal mining lease is in force, comprising an area of 40 acres on the south fork of Coal Creek.

Assay Office

The Assay Office was maintained as usual at Keno by the Territorial Government. A total of 1,372 samples of rock for assay was received from all parts of the Territory, and 2,219 assays or quantitative analyses were made. In addition, numerous qualitative determinations and chemical tests were made in connection with the identification and classification of various rocks and minerals of which no record was kept. The assays made were, gold and silver, 1,372; lead, 844; and zinc, 3.

NOTE.—For detailed information respecting mining in the Yukon see "Mining Industry of Yukon, 1937," by H. S. Bostock—Geological Survey Memoir 218.

ROADS, BRIDGES, AND PUBLIC WORKS

Expenditures on the maintenance of the road system out of territorial funds were \$56,498.43, a decrease of \$5,997.77 from the previous year. The operations were confined to general repairs and the maintenance of roads most used. Some new road equipment was purchased, and all working equipment was repaired and kept in first-class condition.

Apart from the grant to Yukon Council, a special appropriation of \$63,000 was received from the federal vote for mining roads, of which \$4,000 was allotted for landing fields. The total expenditure made out of these votes was \$62,299.15. Highway work consisted of the following: completion of the road westward from Dawson to the Alaskan boundary, and a new route around the Swede Creek Dome and the maintenance of the older portions of this road. Improvements were made to all the roads in the Dawson area used extensively for freighting mining equipment and supplies to the areas where operations were in progress by the Yukon Consolidated Gold Corporation, Limited, and there was also a continuation of the construction to summer standard of the Silver King Road in the Mayo District. Roads and trails in Yukon Territory are as follows:

First Class Gravel Roads

Name	District	Mileage
Glacier Creek (summer).....	Dawson to Glacier Creek.....	62
Bonanza-Indian River.....	Bonanza to Indian River.....	27½
Hunker-Dominion.....	From mouth of Hunker Creek to Dominion Creek....	52
Klondike.....	Dawson to Glenboyle.....	24
Klondike River.....	Klondike River to Crooked Creek Junction.....	34
Mayo-Keno.....	Mayo to Keno.....	41
Silver King.....	Keno to Silver King mine.....	18½
Mayo Lake.....	Mayo Lake to junction of Mayo-Keno road.....	5
Takhini.....	Whitehorse Rapids to Takhini.....	31
Carcross.....	Carcross to Whitehorse.....	43
Tagish.....	Carcross to Tagish.....	20
Total.....		358

Second Class Gravel Roads

Indian River.....	Indian River to Stewart River.....	50
Upper Bonanza.....	North from Radford.....	10
Upper Quartz.....	Radford to King Solomon Dome.....	6
Gold Run.....	Granville to The Dome.....	8
Sulphur-Dome.....	Dominion Creek to The Dome.....	25
Klondike River.....	Klondike River to Crooked Creek Junction.....	50
Hight Creek.....	Minto Lake to Minto Bridge.....	12
Galena Hill.....	Ross Creek to Galena Hill.....	6
Wheaton.....	Along bank of Wheaton River.....	12
Watson.....	Hodnett Mountain to Robinson.....	20
Total.....		199

Trails

Miller and Glacier.....	Miller to Glacier via Swede Creek.....	75
Klondike.....	East from Dawson.....	20
Silver King.....	Keno to Silver King mine.....	37
Sourdough Hill.....	North from Keno Hill.....	3½
Lightning-Hope Gulch.....	Lightning to Hope Gulch.....	4
Faro Gulch.....	Keno Hill to Faro Gulch.....	2½
Bunker Hill.....	Braeburn to Bunker Hill.....	2
Silver Hill-Beaver.....	Keno Hill to Silver Hill.....	58
Haggart Creek.....	Minto Bridge along Haggart Creek.....	26
Mayo-Minto.....	Mayo to Minto.....	95
Kluane Junction.....	Kluane Junction to Minto.....	142
Kluane.....	Kluane to junction of Whitehorse-Dawson road....	266
Canyon.....	Along Whitehorse Rapids at Whitehorse.....	4
Copper King.....	Copper King to Grafter.....	10
Total.....		745

DEVELOPMENT OF AIRCRAFT LANDING FACILITIES

Improvements were made to existing fields at Dawson, Mayo, and Carmacks. The Whitehorse landing field was enlarged by clearing an additional 24 acres of trees and small growth, and constructing a diagonal runway 4,500 feet in length, and a cross runway 2,000 feet in length at right angles to the original runway. These two new runways greatly improved the field, and made safer landings possible. There has been a marked increase in aeroplane traffic in the Territory over previous years.

GENERAL

Agriculture.—The summer season was early and exceptionally wet. Good crops of vegetables were secured. The gardeners anticipating heavier demand from the increased population, planted a greater acreage, but even then were unable to supply the market. The wet season was not favourable for cutting and curing hay and grain fodder crops.

Fur and Game.—The net collections made under the Fur Export Tax Ordinance amounted to \$10,872.13, which was an increase of \$1,343.96 over net collections for the previous year. An increase is shown in bear, beaver, cross fox, lynx, muskrat, otter, wolverine, wolf, and coyote, and a decrease in other kinds of fox, and marten, mink, and weasel. Coyote pelts numbering 1,162 and 629 wolf pelts were presented for payment of export tax.

Public Welfare.—The hospitals at Dawson, Mayo, and Whitehorse were operated throughout the year and grants were provided by the Yukon Council towards their maintenance. The number of hospital days of patients for the year were: Dawson 13,590, Mayo 2,595, and Whitehorse 2,090. The number of hospital days for indigents were: Dawson 8,865, Mayo 152, and Whitehorse 227. The indigents treated were practically all aged people. Health conditions on the whole were good.

Education.—The same number of schools were maintained in the Territory as during the previous year, namely, at Dawson, Whitehorse, Carcross, and Mayo. The enrolment of pupils was less than for the previous year, particularly in the high school grades.

Law and Order.—Law and order has been well maintained throughout the Territory by the Royal Canadian Mounted Police, and the local administration received the co-operation of the Police at all times.

LAND REGISTRY

The principal functions of the Land Registry are the conduct of a Central Office of Record for lands owned or otherwise controlled by the Dominion of Canada; the administration of Ordnance and Admiralty lands, Dominion-owned Public lands, Soldier Settlement lands on which advances have been made, and timber and grazing on Soldier Settlement charged lands and on Military reserves; the adjustment of seed grain, fodder, and relief indebtedness; and the issuing of Letters Patent.

CENTRAL OFFICE OF RECORD

The Central Office of Record for all lands owned or otherwise controlled by the Dominion of Canada is being increasingly used by the different departments and the public. This convenient inventory provides a ready means of determining which department controls a property regarding which inquiries have been received.

ORDNANCE AND ADMIRALTY LANDS

Ordnance and Admiralty lands are those areas in the Maritime Provinces, Quebec, Ontario, and British Columbia which were at one time, because of their

strategic situation, reserved or acquired by purchase or otherwise by the Crown. When no longer required for such purposes they are transferred to the Department to administer. These lands, many of which are among the most valuable properties in their respective localities, are wherever possible made revenue producing, usually by the issue of leases at an annual rental of 6 per cent of the valuation.

Investigations.—Work of administration required investigations, appraisals, surveys, searches of titles, the preparation of plans, leases, and reports, and the collection of rentals. As a measure of economy the Soldier Settlement of Canada undertakes the field inspection work when one of its officers is in the vicinity on regular duty. During the year, investigations were made at the following points: Charlottetown, P.E.I.; Shelburne, Sydney, Tufts Cove, N.S.; Dalhousie, Oromocto, Fredericton, N.B.; Blairfindie, Coteau du Lac, La Prairie, Lauzon, Lévis, Longueuil, Portneuf County, Sorel, P.Q.; Burlington Heights, Burritts Rapids, Newboro, Owen Sound, Pittsburgh, Turkey Point, Ont.; and Ioco, Burrard Inlet, B.C.

Surveys.—A boundary survey was made along a portion of the Belleville Rifle Range site, Ont. A lot was surveyed in Belair Ordnance Reserve at Dorval, P.Q.

Patents.—Letters patent were issued for the old drill shed lot at Durham, Pictou County, N.S.

Water Supply.—Arrangements were made with a view to insuring a water supply for residents of the Government Reserve, Tp. 39, W.C., B.C.

Investigation of Titles.—Title to the Military Reserve, at Laprairie, P.Q., is being investigated but is not completed. Titles to the drill shed lots at Durham, Pictou County, and Billtown, Kings County, N.S., were investigated. Investigation of the titles for certain ordnance lands at Queenston, Ont., and Shelburne Harbour, N.S., was undertaken.

Three properties were transferred to the Department to administer and two properties were transferred by this Department to other departments. There were 68 leases issued and 2 sales effected. The revenue from Ordnance lands amounted to \$16,436.68.

PUBLIC LANDS

Lands acquired by other departments and no longer required for the purpose for which they were obtained are transferred to the Department under the class of Public lands. During the year investigations were made at twelve different points. The revenue received from rentals of Public lands amounted to \$7,820.38.

An area of 45.74 acres in the Royal Canadian Mounted Police Reserve in the N. $\frac{1}{2}$ 28-17-20 W. 2nd Mer., was sold to the Provincial Department of Public Works, Regina, for \$45 an acre, and the land was transferred to the control of the Province of Saskatchewan.

A few parcels of land in Alberta which remained under the control of the Dominion Government after the transfer of the natural resources to the Province were turned over to provincial control during the year, subject to any trusts existing in respect to such lands and to any interest other than that of the Dominion in the same. The Orders in Councils authorizing these transfers were P.C. 239, January 31, 1938; P.C. 379, February 23, 1938; and P.C. 278, February 10, 1938.

RAILWAY RIGHTS OF WAY AND ROADS

A portion of the west boundary of Glacier National Park, B.C., was surveyed and letters patent were issued to the Canadian Pacific Railway Company for its right of way in part of the N. $\frac{1}{2}$ 9-26-27 W. 5th Mer., lying east of the west boundary of the park.

A certificate of title covering some 26 miles of the right of way of the Pembina Branch, C.P.R., located on statutory road allowances in Manitoba was forwarded to the company and title to portions of the right of way on certain streets in Emerson, Manitoba, have yet to be completed and delivered to the company. A reservation of an area for railway right of way was made in one patent issued.

Five reservations for roads were made in patents and three new road plans showing roads affecting lands of the Dominion were received for the purpose of turning over the necessary lands to the provinces.

SOLDIER SETTLEMENT CHARGED LANDS

The unpatented lands in the four western provinces against which charges are registered under the Soldier Settlement Act remain vested in the Dominion. There are 332 quarter-sections comprising approximately 53,120 acres thus administered. They are divided among the four provinces as follows: Manitoba, 54; Saskatchewan, 153; Alberta, 100; British Columbia, 25. Letters patent for such lands are issued by the Department to those entrants who have completed the duties in accordance with the terms of the Dominion Lands Act, and who have repaid in full their indebtedness to the Soldier Settlement of Canada. In other cases where the entrants have completed the duties referred to but have not repaid their indebtedness, patents are issued in the name of the Director of Soldier Settlement of Canada. During the fiscal year 22 applications for patent were received, of which 12 were approved.

TIMBER AND GRAZING

Grazing.—During the year 48,134 acres were covered by 33 annual grazing permits on quarantine reserves along the southern boundary of Saskatchewan and Alberta. This was an increase in acreage of 2,078 acres as compared with last year. In the summer grazing season of 1937 there were 1,034 cattle, 415 horses, and 250 sheep grazed on these pasture lands.

Timber.—Within the boundaries of the national parks there are 11 licence timber berths, 2 in Manitoba and 9 in British Columbia, covering a total area of 65.90 square miles. Operations were conducted on the berths in Manitoba and dues were paid on 1,228,000 feet board measure of sawn lumber, 584 cords of wood, 140 cords of slabs, and 48,000 lath. During the year licences in duplicate were prepared for these 11 berths. On the Dominion Government Coal Block near Hosmer, B.C., there are 2 permit timber berths, one of which was operated. One settler's timber permit was issued on a soldier grant homestead in the Province of British Columbia, and one hay permit was granted in the Province of Saskatchewan. During the year 70 accounts, covering timber permits issued to homesteaders by the Dominion before the transfer of the natural resources, were verified for the western provinces.

Summary of Revenue Collected

Grazing permits—Saskatchewan.. . . .	\$ 953 62
Grazing permits—Alberta.. . . .	9 10
Hay permit—Saskatchewan.. . . .	2 00
<i>Licence Timber Berths in National Parks:</i>	
Ground rental.. . . .	650 00
Interest on ground rental.. . . .	3 28
Licence fees.. . . .	22 00
Fire-guarding.. . . .	191 09
Royalty dues.. . . .	1,421 30
Settlers' timber permits, British Columbia.. . . .	51 00
<i>Permit Timber Berths in British Columbia.. . . .</i>	
Dues.. . . .	2 00
	712 15
Total.. . . .	\$4,026 54

SEED GRAIN, FODDER, AND RELIEF INDEBTEDNESS

During the fiscal year, the Alberta, Saskatchewan, and Manitoba Adjustment Boards submitted recommendations relating to the adjustment or apportionment of outstanding seed grain, fodder, or relief indebtedness in 545 cases. Their recommendations were ratified by Orders in Council and 398 discharges and releases of liens were issued, resulting in writing off the amount of \$37,300.56. There were 1,985 inquiries received from the provinces for statements of indebtedness outstanding relative to the issue of land grants, and 173 certificates of indebtedness were issued to be attached to title. Gross collections for the fiscal year amounted to \$9,317.66.

The following summary shows the financial operations of the year ending March 31, 1938:

Debits	Principal	Interest	Total
	Balance outstanding March 31, 1937..	\$2,863,072 96	\$2,624,553 98	$5,487,626 94
Accrued interest April 1, 1937, to March 31, 1938..	.....	436,846 81	436,846 81
	<u>\$2,863,072 96</u>	<u>\$3,061,400 79</u>	<u>\$5,924,473 75</u>
Credits	Principal	Interest	Total
	Net collections, April 1, 1937, to March 31, 1938..	\$ 6,622 02	\$ 2,485 47	$ 9,107 49
Amount written off as loss by Orders in Council..	14,196 76	23,103 80	37,300 56
*Amount collected and retained by Province of Saskatchewan as commission..	75	23 37	24 12
	<u>\$ 20,819 53</u>	<u>\$ 25,612 64</u>	<u>\$ 46,432 17</u>
Amount outstanding March 31, 1938..	\$2,842,253 43.	\$3,035,788 15	\$5,878,041 58

* Clause 18, Natural Resources Agreement with the Province of Saskatchewan.

LETTERS PATENT

During the fiscal year there were 31 Letters Patent issued, covering a total area of 3,691 acres, divided, according to provinces, as follows:

	Patents	Acres
Manitoba..	5	774
Saskatchewan..	10	1,429
Alberta..	6	814
British Columbia (Railway Belt)..	3	100
British Columbia (Peace River Block)..	3	322
Northwest Territories..	1	1
Yukon Territory..	3	251
Totals..	31	3,691

The various kinds of grants are dealt with in the following table:

	Special*		Homestead†		Soldier†		Sale	
	Patent	Acres	Patent	Acres	Patent	Acres	Patent	Acres
Manitoba..	4	611	1	163				
Saskatchewan..	10	1,429						
Alberta..	3	480	1	16	2	318		
British Columbia..	3	100						
British Columbia (P.R. Blk.)..	3	322						
Northwest Territories..							1	1
Yukon Territory..			1	160			2	91

* Under this heading are included lands entered for by returned soldiers affected by loans from the Director of Soldier Settlement of Canada, which lands were patented to the said Director, either at the request of the entrant or pursuant to salvage proceedings under the Soldier Settlement Act.

† Under these headings are included lands entered for by returned soldiers, affected by loans from the Director of Soldier Settlement of Canada, said loans having been repaid in full, patents were issued direct to the settler.

There were 256 certified copies of Letters Patent issued during the fiscal year.

NATIONAL PARKS BUREAU

The functions of the National Parks Bureau involve the administration of the National Parks Act and Regulations made thereunder by the Governor in Council, the supervision of all activities within the National Parks, the establishment of National Parks, the preparation and distribution of information of all types respecting National Parks and wild life, and the conservation, marking, and care of historic and prehistoric sites of national importance. The Bureau also administers the Migratory Birds Convention Act. In the maintenance of law and order within the National Parks, the Bureau has the assistance of the Royal Canadian Mounted Police, who also are game officers under the Migratory Birds Convention Act. Highways and other public works in the National Parks are constructed by the Surveys and Engineering Branch of the Department.

The National Parks system at the close of the fiscal year included twenty separate units, having a combined area of 12,525 square miles.

NATIONAL PARKS VISITORS

Visitors during the year numbered 1,008,690, compared with 908,161 for 1936-7, thus establishing a new record of attendance. This increase is 100,529 or 11 per cent in excess of the previous year. Visitors by motor amounted to approximately 97 per cent of the total and comprised 246,063 cars and 977,259 passengers. Estimated passenger rail traffic was 31,431.

Tourist figures for the fiscal year ended March 31, 1938, compared with returns for the preceding year are given in the following table:

Visitors to National Parks

National Park	1937-8	1936-7
Banff.....	194,435	178,940
Buffalo.....	9,830	10,557
Cape Breton Highlands.....	20,000*	.....
Elk Island.....	63,040	46,295
Fort Anne.....	17,029	16,364
Fort Beausejour.....	20,000*	20,000*
Georgian Bay Islands.....	7,110	4,878
Glacier.....	1,200*	1,200*
Jasper.....	16,083	14,659
Kootenay.....	64,657	53,004
Mount Revelstoke.....	8,271*	71,88*
Nemiskam.....	21	29
Point Pelee.....	296,338	287,900
Prince Albert.....	28,846	25,327
Prince Edward Island.....	2,500*	.....
Riding Mountain.....	117,253	101,013
St. Lawrence Islands.....	22,000*	16,800*
Waterton Lakes.....	59,520	59,546
Yoho.....	60,557	64,461
	1,008,690	908,161

* Estimated.

RECREATION

Excellent opportunities for the enjoyment of outdoor life, and a diversity of forms of recreation are to be found in the National Parks of Canada. Riding, hiking, mountain climbing, fishing, canoeing, swimming, tennis, golf, and motor-ing are among some of the sports which may be enjoyed in the summer. During recent years ski-ing has greatly increased in popularity.

Bungalow camps have been established by private enterprise and public camp-grounds have been laid out at convenient places. Hundreds of miles of trails have been constructed, which make accessible many points of interest and beauty which cannot be reached by motor. Supervised outings on the trails are also available in some parks.

Golf courses are maintained by the Department in Waterton Lakes, Elk Island, Prince Albert, and Riding Mountain Parks. Payment of a reasonable green fee is required. In addition, excellent courses operated by private enterprise are open to visitors at Banff and Jasper. During the year a new golf club-house was completed at Elk Island National Park and a new putting green opened. At Waterton Lakes Park the complete 18 holes were opened for play. Tennis courts maintained by the Department are also available to visitors in several parks and prove centres of attraction.

The open air swimming pools at the two Hot Springs in Banff Park and at Radium Hot Springs in Kootenay Park, were exceptionally well patronized. During the year an increase was registered of 4,000 persons at Radium Hot Springs in Kootenay Park, and 3,895 at the Cave and Basin bath-house at Banff over the corresponding period in 1936-7. Supervised bathing was also available at beaches in many of the parks.

Fishing was very popular, particularly in the western parks, where many excellent catches were made. The policy of restocking lakes and streams, which the Department has carried out for some years, was continued and as a result greatly improved conditions have prevailed.

The annual "ride" of the Trail Riders of the Canadian Rockies, held in Banff Park from July 30 to August 3, was well attended. The route followed was southwesterly from Banff via Brewster and Allenby Creeks, to Mount Assiniboine, and returning along the Simpson Summit and Healy Creek to Banff. The outing conducted by the Sky Line Trail Hikers took place in Banff Park with a central camp established at Larch Valley.

The annual winter carnival held at Banff Park in February attracted many visitors. The outstanding event of the winter season was the Dominion Ladies' Ski Championships, which took place on the slopes of Mount Norquay, near Banff, early in March. It was well attended by competitors from Canada and foreign countries.

WILD LIFE CONSERVATION

Recent reports indicate a general increase in game of all species. Moose and elk are particularly abundant in Jasper and Banff Parks, and grizzly bear are reported to be more numerous than usual in certain areas in Jasper Park. Bird life is reported to be on the increase, with an abundance of waterfowl in evidence at Elk Island, Point Pelee, and Prince Edward Island Parks. A recent check of bird life at Elk Island Park revealed a total of 190 distinct species of birds.

To conserve animal species native to the plains of Western Canada, the Department has for some years maintained, in Alberta, four wild animal parks. Three of these areas, namely, Elk Island, Buffalo, and Nemiskam Parks, are enclosed by fences, and the fourth, Wawaskesy, is unfenced. With the exception of Nemiskam, which suffered from severe drought conditions, reports from these parks indicate a normal increase in the number of animals. A reduction in the number of animals at Elk Island and Buffalo Parks was made by supervised slaughter.

During the year, the Banff Zoo was discontinued and the animals either liberated or donated to museums in Canada and other parts of the world. Other donations made during the year included one pair each of black bear and beaver from Jasper Park and two buffalo from Elk Island Park to the Dudley Zoo, Dudley, England; four elk from Buffalo Park to the Royal Society of Zoology, Antwerp, Belgium; two moose from Buffalo Park to the Zoological Society at Pittsburgh, Pennsylvania; and 81 elk from Elk Island Park to the Alberta Government; eight buffalo specimens for mounting were also donated from Buffalo Park to the Hunting Museum at Munich, Germany.

The exhibition herds maintained in the animal paddocks at Banff, Prince Albert, and Riding Mountain Parks continued to be a source of interest, and

attracted over 60,000 visitors. Late in the season the number of animals in the Banff Park enclosure was reduced, leaving only a few buffalo and elk. At Riding Mountain Park, ten Canada geese were obtained as an added attraction.

Following is a census of wild animals in fenced enclosures in the National Parks, as at March 31, 1938.

Animals in Fenced Areas

Animal	Banff Park Paddock	Buffalo Park	Elk Island Park	Nemis-kam Park	Prince Albert Park Paddock	Riding Mountain Park Paddock	Total
Buffalo.....	9	3,247	2,000		7	58	5,321
Antelope.....				320			320
Elk.....	3	1,781	1,000			58	2,842
Hybrids (cattalo).....		46					46
Moose.....		127	350			6	483
Mule deer.....		1,242	261			9	1,512
White-tailed deer.....						2	2
Yak.....		31					31
	12	6,474	3,611	320	7	133	10,557

FOREST FIRE CONTROL

The 1937 fire season in the National Parks on the whole was an extremely favourable one, and serious fires occurred only in Riding Mountain and Prince Albert Parks. The parks in British Columbia and Alberta, as well as those in Ontario and the Maritimes, experienced a good season with practically no losses by fire. In western Manitoba and northern Saskatchewan, the continued shortage of rainfall culminated in one of the worst fire seasons in some years. Out of a total of 79 fires burning over an area of 21,886 acres, 59 occurred in Prince Albert and Riding Mountain Parks and burned an area of 21,786 acres. Fortunately the loss of valuable timber was small, a large part of the burned area consisting of grassland and old burn.

Regular aeroplane patrols were carried out in Prince Albert and Riding Mountain Parks, and rendered valuable assistance in the detection and suppression of fires.

Following is a summary of fires for the fiscal year 1937-8, indicating the number, area burned, and cost of extinguishing:

General Fires

Region	Fires	Area Burned	Cost of Extinguishing
	Number	Acres	\$
Banff National Park.....	6	Spot	12 95
Cape Breton Highlands National Park.....	2	"	
Elk Island National Park.....	1	100	169 02
Georgian Bay Islands Park.....	1	Spot	
Jasper National Park.....	5	"	19 40
Mount Revelstoke National Park.....	2	"	94 97
Prince Albert National Park.....	23	9,867	7,471 85
Riding Mountain National Park.....	36	11,919	3,231 04
Total.....	76	21,886	10,992 23

Railway Fires

Banff National Park.....	1	Spot	
Jasper National Park.....	2	"	7 60
	3		7 60
Grand Total.....	79	21,886	11,006 83

PARK ROADS, TRAILS, AND TELEPHONE LINES

Further progress in the construction of the Banff-Jasper Highway was made during the year. Highway development was also carried out in Cape Breton Highlands Park on the Cabot Trail. General maintenance and minor improvements such as widening of grades on curves, construction of additional guard-rail, and repairing of bridges and culverts were also undertaken on existing roads. During the season approximately 23 miles of new road were constructed to grade as follows: Banff-Jasper Highway, 14 miles; Cabot Trail (Cape Breton Highlands Park), 6.6 miles; Prince Edward Island Park, 1 mile; Point Pelee Park, 1.25 miles.

The mileage of roads, trails, and telephone lines within the National Parks of Canada on March 31, 1938, is detailed in the following table:

Means of Travel and Communication

Region	Roads			Trails Miles	Telephone Lines Miles
	Motor Miles	Secondary Miles	Total Miles		
Banff National Park (including Lake Louise end, Banff-Jasper Highway)...	153.10	19.00	172.10	907.50	220.00
Buffalo National Park.....	2.00	25.00	27.00	57.00	36.00
Cape Breton Highlands National Park..	7.00	48.00	55.00	10.00	.....
Elk Island National Park.....	16.00	2.00	18.00	3.75	.....
Glacier National Park.....	.....	12.00	12.00	109.00	3.25
Jasper National Park (including Jasper end, Banff-Jasper Highway).....	141.50	10.00	151.50	624.00	340.50
Kootenay National Park.....	61.10	11.00	72.10	126.00	62.00
Mount Revelstoke National Park.....	19.00	.....	19.00	45.00	17.00
Point Pelee National Park.....	6.00	1.50	7.50	.....	6.00
Prince Albert National Park.....	63.20	34.10	97.30	421.00	145.00
Riding Mountain National Park.....	50.25	34.50	84.75	100.00	150.00
Waterton Lakes National Park.....	44.45	3.00	47.45	236.00	58.00
Yoho National Park.....	44.50	6.00	50.50	192.50	56.00
Prince Edward Island National Park....	1.00	.....	1.00	.....	.....
Totals.....	609.10	206.10	815.20	2,831.75	1,093.75

ENGINEERING

Engineering work carried out in the National Parks included general maintenance and operation of electric light, telephone, water, and sewerage systems; the construction and maintenance of highways, bridges, and buildings in the parks and at historic sites; and the maintenance of streets and sidewalks in park townsites; the collection and disposal of refuse; and mosquito control.

A description of the engineering work carried out in the National Parks during the year will be found in the sections dealing with the individual parks.

UNEMPLOYMENT RELIEF

Unemployment relief work in the National Parks was provided for permanent park residents with domestic responsibilities during April and May, 1937, and during January, February, and March, 1938.

In Banff National Park 6,884 man-days of work were provided for 137 individuals having 309 dependants, making a total of 446 park residents assisted. In Jasper National Park 1,857 man-days of work were provided for 42 individuals having 97 dependants, thereby assisting 139 park residents.

The work carried out for the relief of unemployment included control of mistletoe blight, improvement and maintenance of roads, clearing snow from townsite streets, repairing cabins, camp-grounds improvement, cutting firewood, construction of portable band-stands, and miscellaneous improvements.

REVENUE

Receipts from public utilities and other sources of direct revenue in the National Parks of Canada, including administration of the Migratory Birds Convention Act, amounted to \$325,674.12 for the fiscal year 1937-8, as compared with \$218,167.55 for the preceding 12 months, an increase of \$107,506.57.

A statement of revenue by parks, etc., follows:

National Park	Revenue
Banff	\$137,948 11
Buffalo	65,071 79
Elk Island	3,753 75
Fort Beausejour	16 51
Georgian Bay Islands	105 00
Glacier	117 51
Jasper	40,127 76
Kootenay	18,021 45
Point Pelee	2,397 80
Prince Albert	9,767 23
Riding Mountain	32,346 48
St. Lawrence Islands	200 00
Waterton Lakes	9,630 43
Wawaskesy	460 00
Yoho	4,009 43
Historic Sites	11 00
Migratory Birds (taxidermist licences)	62 00
Fines and forfeitures:	
National Parks Regulations	\$818 32
Magistrates fees	20 75
Migratory Birds Convention Act	788 80
	1,627 87
Total	\$325,674 12

PUBLICITY AND INFORMATION

The Publicity and Information Division was particularly active in stimulating tourist travel to the National Parks. This work, which includes the furnishing of general and specific tourist information, is accomplished by means of lectures; the lending of motion picture films, lantern slides, line-cuts, and half-tones; the preparation and distribution of press articles, descriptive illustrated literature, maps and photographs, and radio addresses; and also by correspondence. The Bureau maintains close contact with individuals and organizations interested in the promotion of tourist travel, including particularly the Canadian Travel Bureau, which was supplied with articles, photographs, and literature. Special efforts were made to attract visitors from the United States and the British Isles.

Following a survey of the motion picture film library, a number of obsolete subjects were discarded. The library now contains 83 film subjects in 35 mm. size and 85 subjects in 16 mm. size, comprising a total of 1,532 prints descriptive of scenery, wild life, and recreational resources of the National Parks. During the year, 6,485 feet of new negative film and 132,610 feet of positive film were purchased. The above included 339 new prints. New film subjects produced and released during the year included the following:

Angling in the Infinite; Byways of Jasper; Winter Wonderland; Playgrounds of the Prairie (black and white); Playgrounds of the Prairie (Kodachrome colour); Health and Recreation in Prince Albert National Park (black and white); Colourful Days in Prince Albert National Park (Kodachrome colour); Wild Life at Home (produced for lecture purposes in England).

In addition, the film subject *From Sea to Sea* produced by the Associated Screen News of Montreal was re-edited for National Park publicity purposes. The following films were also re-edited for general distribution: *Border Trails; Home of the Buffalo; Around the Year in the Big Woods.*

A small projection room was constructed for laboratory purposes, and new equipment purchased included new 16 mm. and 35 mm. sound projectors.

The following comparative figures indicated the increased demand for films: 1936—3,293; 1937—3,884; 1938—4,026. Prints were circulated in the United States, Great Britain, Australia, South Africa, Roumania, Norway, Alaska, Hawaii, and India, as well as in different parts of Canada.

The lantern slide library, which contains several thousand subjects, was augmented by 1,380 slides, and 6,717 slides were lent for lecture purposes. A total of 7,219 slides were coloured in the Division and an additional 3,251 slides were retouched and remounted.

A total of 8,836 photographs was distributed for publicity purposes. Additions to the photographic library included 634 negatives of various sizes, and 10,160 photographic prints and enlargements. Twenty-five enlargements and 28 translites were coloured in water colours and 30 enlargements in oils. A total of 508 half-tones, line-cuts, and stereotypes were lent during the year to editors, publishers, and writers.

A total of 107 articles, descriptive of the various phases of National Parks work, was supplied to newspapers, magazines, and other publications. More than 200 short articles were circulated by means of the 52 issues of the Canadian Resources Bulletin. By special arrangements made with the Commissioner of Immigration, London, England, a large number of articles and photographs descriptive of the National Parks were published in leading newspapers in the British Isles.

To meet the increased number of requests for printed literature descriptive of the National Parks, 353,865 copies of publications were printed and delivered during the year. These included the following:

Descriptive Atlas of Canada, French, completed.....	20,000
Annual Report, National Parks Bureau (contained in separate report of the Director, Lands, Parks, and Forests Branch)....	550
Automobile Roads and Points of Interest in Banff and Vicinity (Map folder)	25,000
Canada's Mountain Playgrounds (Descriptive Booklet).....	50,700
Catalogue of Exhibits, Louisbourg Fortress Museum.....	10,000
“ “ Fort Beausejour Park Museum	10,000
“ National Parks Motion Picture Films (First and second editions)	2,000
Elk Island National Park (General Information Folder).....	24,400
Fort Anne National Park (Descriptive Booklet).....	25,235
Fort Wellington, Guide to	10,000
Playgrounds of the Prairies (Descriptive Booklet)	24,900
Prince Albert National Park (Descriptive Booklet)	25,230
Prince Albert National Park (General Information Folder).....	25,000
Riding Mountain National Park (Descriptive Booklet).....	25,350
Riding Mountain National Park (General Information Folder)...	25,000
Waterton Lakes National Park (Descriptive Booklet).....	25,000
Waterton Lakes National Park (General Information Folder) ...	25,000
List of Lantern Slides (mimeographed)	500

A total distribution of 38,065 copies of Immigration literature, and 235,024 copies of Parks literature was made during the year, in addition to approximately 7,500 copies of other maps and pamphlets.

During the course of the year the Superintendent of Publicity and Information delivered addresses in different parts of Canada and the United States.

An attractive exhibit, which occupied more than 3,000 square feet of floor space and included very fine mounted specimens of wild life native to the park areas, was presented at the Canadian National Exhibition in Toronto.

Photographs and translites were shown also at the Pacific Northwest Tourist Association exhibit held in the Stevens Hotel, Chicago. At the Canadian Wilderness Exhibit, New England Sportsmen's Show, Boston, and similar exhibitions held in New York, Detroit, and Indianapolis, attractive exhibits were also provided. Mounted animal and bird specimens, oil paintings, posters in

oil, and translites were made ready and shipped for use at the Empire Exhibition at Glasgow, Scotland. One hundred enlargements were sent to the Art Exhibit Bureau, London, England, and were circulated in Great Britain throughout the year. The Library of International Relations, Chicago, was also provided with a selection of art photographs for a series of exhibits in the United States.

NATIONAL PARKS OF CANADA

As the term "National Park" in Canada is used to cover a variety of reservations, the National Parks may be divided, for purposes of comparison, into three main classes. These include: (a) the scenic and recreational parks, situated in British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Nova Scotia, and Prince Edward Island; (b) the wild animal parks or preserves, situated in Alberta; and (c) the national historic parks situated in Nova Scotia and New Brunswick.

Scenic and Recreational Parks

BANFF NATIONAL PARK

This mountain playground, with its many ice-fields and glaciers, is typical of the central Rockies. The park has an area of 2,585 square miles, and located therein are the world famous resorts of Banff, with its hot mineral springs, and Lake Louise. Motor highways in the park have a total length of 153.1 miles, in addition to which there are 907 miles of trails and numerous motor camp-grounds. The park is a big game sanctuary and a year-round sports centre, recreations including motoring, riding, climbing, hiking, golf, tennis, boating, swimming, ski-ing, skating, and curling. Visitors to Banff Park showed a considerable increase over the previous year. Banff, Kootenay, and Yoho being linked together by standard highways, and forming what is commonly known as the "Three Park Unit," it is necessary in the compilation of tourist figures, to include a certain proportion of the traffic originating in these areas. The following table gives the total number of visitors entering Banff Park during the past year, and comparative figures for the previous year:

Visitors to Banff National Park

Route	Motor Vehicles		Passengers	
	1937-8	1936-7	1937-8	1936-7
<i>Westbound—</i>				
Via Banff Park (Eastern Gateway Entrance).....	44, 192	40, 872	148, 981	135, 839
<i>Eastbound—</i>				
Via Kootenay Park (Radium Hot Springs entrance —75% eastbound traffic).....	6, 593	5, 707	20, 773	17, 788
Via Yoho Park (Leancoil entrance, 66½% east- bound traffic).....	1, 562	1, 825	4, 681	5, 313
Tourists for Banff Park by rail—east and west (esti- mated).....			20, 000	20, 000
Totals.....	52, 347	48, 404	194, 435	178, 940

The Information Bureau, which was open from May 18 to September 30, dealt with 27,759 inquiries.

Health conditions throughout the year were generally good, and no cases of disease of a serious nature were reported. Constant supervision was maintained over all matters affecting public health. All water and milk supplies

were frequently tested, and all dairy herds were subjected to the tuberculin test. Public camp-grounds and other housing accommodation offered to the travelling public were inspected.

At the Cave and Basin bath-house a total of 40,144 persons passed through the turnstile, an increase of 3,895 over last year. The total number of persons making use of the Upper Hot Springs bath-house was 42,338, a decrease of 13,745 from the previous year.

The public camp-grounds, owing to the advent of bungalow camps operated by private enterprise, were not as extensively patronized as in former years. Registration at the Tunnel Mountain camp-ground showed a total of 4,319 motor vehicles and 17,523 campers, a decrease of 878 persons from the previous year. The number of person days spent in camp was 32,063, or 1.73 days per person.

Improvements at Tunnel Mountain camp-ground included the addition of wind-breaks by the planting of some 100 young spruce trees. Among the bungalow camps operated by private enterprise, two new cabins were constructed at the Banff camp, and a start was made on the construction of a new camp located on the Trans-Canada Highway just east of Banff townsite.

Licences and permits issued during the year totalled 20,209 compared with 18,906 during the previous year. In addition 58 building permits, having an estimated property value of \$48,366, were issued.

All main and secondary roads were maintained in good condition, and oil-treated where traffic conditions warranted. Some revisions and re-alinements were also carried out. New construction was limited to 7 miles on the Banff-Jasper Highway. All park trails were maintained in good order, a number of culverts were renewed, and 55 miles of trail graded.

A total of 12 miles of new telephone line was constructed as follows, 8 miles from the end of Lake Minnewanka to the cabin, and 4 miles from the motor road at Baker Creek.

During the fire season hazard conditions remained about normal, and no fires of a serious nature occurred. Six general and one railway fire, which burned over approximately 320 square feet consisting mostly of grassland, were reported.

New construction was confined to a warden's cabin at Massive, a storage cabin for fire equipment at Healy Creek, and a garage and workshop at Castle.

During the season the zoo was discontinued and the cages removed. The animals formerly in this zoo were either liberated or donated to other zoos. Donations were as follows: Calgary Zoo, 2 Rocky Mountain sheep, 6 four-horned sheep, 5 yak, 1 eagle, 1 polar bear, 1 cinnamon bear, 2 timber wolf, 3 coyote, 1 badger, 1 lynx, 1 racoon, 3 marten, 2 owl, 7 geese, 6 fan-tailed pigeon, and 1 albino gopher; Winnipeg Zoo, 2 wolf; Toronto Zoo, 1 mountain lion and 1 eagle; Quebec Zoo, 3 Rocky Mountain goat and 1 eagle; and Rome Zoo, Italy, 2 Rocky Mountain sheep. The animal paddock attracted 59,567 visitors. The buffalo herd has been reduced to 9 and the elk to 3.

Reports on wild life received from park wardens indicate that wild animals are generally in good condition. Rocky Mountain goat, moose, and elk are on the increase everywhere, and mule deer and Rocky Mountain sheep are increasing in a few districts. A decrease in predatory animals has been noted in all districts.

Fishing in park waters continued to be good, and some excellent catches of cut-throat trout were reported from Baker, Redoubt, Ptarmigan, and Lost Lakes. Owing to a shortage of cut-throat trout eggs in the collecting areas, it was found necessary to purchase a limited quantity from outside sources. Distribution of fry from the Banff hatchery during the past year was as follows: in park waters—rainbow trout, 213,000; salmon trout, 95,945; speckled trout, 182,500.

CAPE BRETON HIGHLANDS NATIONAL PARK

Established in 1936, Cape Breton Highlands Park is a typical example of the rugged coastline of Cape Breton Island. Its mountain background and remarkable seascape are visible from the motor road that girdles the park. The park contains 55 miles of motor roads, and recreations include fishing, boating, bathing, and hiking. This park covers an area of approximately 458 square miles.

The park is accessible by a motor road known as the Cabot Trail, which circles the park area and connects with the main provincial highway system. The eastern approach to the park leads through the famous Bras d'Or Lake region to Ingonish, while approach from the west is made by way of the well known Margaree Valley to Cheticamp.

Although facilities were not available for an accurate check of the number of visitors, it was estimated from the registrations in the local hotels that at least 20,000 persons visited the park during the season.

All roads within the park were maintained in good condition. On the Cabot Trail many small culverts and bridges were re-built and some larger bridges re-decked. During the season 3.6 miles of new road were built, 3 miles of old road reconstructed, and 0.8 mile of dry stone and 1.6 miles of wooden guard-rail completed. Three large bridges and several smaller bridges and culverts were constructed.

Foundations for two new wardens' cabins were completed and stone for the superstructure collected. One of these cabins is located at the Cheticamp Gate and the other half a mile up the Grand Anse Valley back of Pleasant Bay.

About 4 miles of new trail was constructed on the north side of Cheticamp River, and some improvement work done on the old trails. In place of the ordinary park telephone system, experiments were made with two wireless radio sets and good results obtained over a radius of 20 miles.

A preliminary biological survey was made of the principal waters of the park as a step towards improving fishing within the park. Good catches of salmon were reported from Cheticamp River, and of trout from North Aspy and Lazare Rivers and Warren Lake. During the year, fingerlings were distributed in park waters as follows: salmon, 170,000; trout, 7,666.

Among the wild animals, white-tailed deer and snowshoe rabbit appear to be the most numerous. In addition, a few black bear, red fox, otter, wildcat, and muskrat have been reported. Partridge are plentiful.

Two small fires occurred within the park but both were extinguished before any damage was caused. Two large fires occurred outside the park but were controlled before they reached the boundary.

GEORGIAN BAY ISLANDS NATIONAL PARK

The park includes thirty islands in the Georgian Bay Archipelago, many of which provide recreational opportunities for camping, fishing, boating, and bathing. The park was established in 1929 and has an area of 5.37 square miles. Beausoleil Island, north of Midland and Penetanguishene, is the largest of the island group, and on it are located the park headquarters, camp-sites, and other tourist attractions.

During the past year it is estimated that 7,110 persons visited Beausoleil and Flowerpot Islands, as compared with 4,878 during the corresponding period last year. Improvements carried out on Beausoleil Island included the construction of new docks at Beausoleil and Minnehaha Points, rebuilding of docks at Thumb and Thurallin Points, Beausoleil Bay, and Godette's Grove, construction of a recreation building and stove at Beausoleil Point, a stove at McCabe's Rock, and shingling of the shelter at Godette's Grove. In addition, a new dock was constructed on Island No. 92 and a stove on Island No. 95. On Flowerpot Island the only improvement undertaken was deepening of the channel leading into the harbour.

Throughout the season patrols to the various islands were made by the park warden. Bird life appears to be increasing and includes many varieties of land, shore, and water birds. An increase has been noted in the number of elk and white-tailed deer. Red fox and black and grey squirrel are also reported to be numerous.

GLACIER NATIONAL PARK

This park with its snow-capped peaks, immense ice-fields, luxuriant forests, alpine flora, and subterranean caves, is typical of the Selkirk Mountain region. It is also a popular centre for alpine climbing. The park was established in 1886 and has an area of 521 square miles.

As Glacier National Park is not accessible by motor and lacks adequate accommodation, it is visited by only a limited number of tourists. Two large parties from the United States spent considerable time mountain climbing and studying botany and geology in the park. There are at present no facilities for recording accurately the number of visitors, but it is estimated that 1,200 persons visited the park.

In addition to maintenance of all park trails, considerable work was done on the old Glacier-Nakimu Caves road including the erection of three bridges. Two bridges were constructed on Baloo Pass trail and one over Tupper Creek.

All varieties of wild animals are reported to be increasing, and such species as moose and elk, which were unknown in the park a few years ago, are making an appearance. Fur-bearing animals, such as marten and beaver, are also numerous. Good catches of Dolly Varden and brook trout were reported, some weighing as much as 5 pounds.

No fires were reported in the park during the year. Logging operations on privately controlled property which were commenced in 1936, were discontinued and no logging was carried on during the past year.

JASPER NATIONAL PARK

This mountain wilderness on the eastern slope of the Rockies is rich in historical associations, and contains many majestic peaks, alpine valleys, glaciers, canyons, and beautifully coloured lakes. Outstanding points of interest include Mount Edith Cavell, Maligne Lake, Tonquin Valley, Miette Hot Springs, Sunwapta Falls, Athabaska Glacier, and the Columbia Ice-field. The park is a big game sanctuary and alpine playground. Motor highways extend for 141 miles through the park and trails cover 624 miles. The park was established in 1907 and has an area of 4,200 square miles.

A substantial increase in tourist traffic was recorded. The following comparative table gives the number of visitors during the past 2 years:

Visitors to Jasper National Park

Mode of Travel	Motor Vehicles		Passengers	
	1937-8	1936-7	1937-8	1936-7
<i>By Motor Vehicles—</i>				
Canadian.....	1,331	1,097	4,276	3,351
United States and Foreign.....	122	78	376	238
<i>By Rail.....</i>			11,431	11,070
	1,453	1,175	16,083	14,659

A total of 2,245 licences and permits were issued during the year as follows: business licences, 79; building permits, 51; camping permits, 16; grazing permits, 8; timber permits, 91; chauffeur licences, 127; guide licences, 33; automobile licences (yearly), 192; automobile licences (transient), 1,166; provincial licences, 246; dog licences, 71; hotel licences, 8, and miscellaneous, 157. This is a decrease of 851 from the corresponding period last year.

Streets in Jasper Townsite were maintained in good condition and treated with one application of oil. Owing to the exceedingly low water level in Cabin Lake, the townsite water supply, it was found necessary to obtain an additional supply from the headwaters of Caledonia Creek by constructing a short diversion to Cabin Creek, and thence to Cabin Lake. The flow of this diversion is estimated at more than one million gallons a day, so that an adequate supply is now assured.

The motor camp at Patricia Lake and parking area at Medicine Lake were the only motor camp-grounds open to the public. Registrations at these points, which showed an increase over the previous year, were as follows: Patricia Lake, 223 cars and 730 campers; Medicine Lake, 43 cars and 136 campers. The average stay per person was 4-57 days. Improvements included re-grading of camp-ground streets, levelling of lots, clearing of brush, and planting of trees. At Cottonwood Creek a sewer system with septic tank was installed and improvements made to the dam. Two kitchens were partly completed at Miette Hot Springs, 1,300 feet of water-pipe were laid, and some grading done on lots and camp streets.

All park roads and trails were maintained in good condition, and the following improvements carried out. On the Maligne Canyon road, cut banks were sloped and straightened, 840 feet of old guard-rail replaced, and the bridge over Athabaska River painted. On the Mount Edith Cavell road, 7,960 feet of new guard-rail was erected. On the Pyramid Lake road, 720 feet of new guard-rail was erected and the road reshaped and widened for half a mile near Cottonwood Creek bridge. Several hundred feet of new guard-rail was placed on the Pocahontas-Miette Hot Springs road. Construction of the Jasper-Banff Highway was advanced to mile 73 in Banff Park, approximately 8 miles having been completed during the year. In September this road was opened to the public as far as Athabaska Glacier, 66 miles from Jasper. Improvement of the highway between Edmonton and the park boundary was carried on by the Provincial Government. Improvement work was carried out on the Maligne Lake and Canyon trails and the pony trails between Lac Beauvert and Lake Edith. The trail bridge over Caledonia Creek was rebuilt, and 14 stone fire-places constructed at various points near lakes and streams.

One new shelter cabin was built at the foot of Poboktan Pass on the headwaters of Brazeau River. The Signal Mountain cabin was reconditioned for use as a fire lookout, and all other cabins were maintained in a serviceable condition. During the winter logs were cut for cabins at Yellowhead, Sunwapta, and Cottonwood Creek. The bath-house at Miette Hot Springs was completed. Improvements at headquarters included alterations to the interior of the Administration building and fire equipment shed.

One mile of telephone line was reconstructed on Poboktan trail below Waterfalls cabin, and 15 miles of poles were re-set along the highway east of Jasper. All park lines were overhauled and maintained in good order throughout the season. An automatic telephone service was opened for public use on September 1.

A total of seven fires including two railway fires occurred, all of which were extinguished without causing any appreciable damage.

As a result of control efforts there were few mosquitoes at Jasper Townsite and Jasper Park Lodge.

Specimens collected for museum purposes included two grizzly bear, two wolverine, and one Rocky Mountain goat. The heads of two Rocky Mountain rams and two caribou were secured for museums at Rome and Bologna, Italy.

All species of game animals appear to be thriving. During the winter, elk in search of food caused considerable damage to young poplar trees and shrubs in the vicinity of the townsite and Jasper Park Lodge. Rocky Mountain sheep and goat, moose, caribou, and mule deer are present in normal numbers. Predatory animals have not caused any serious losses. Coyotes are slightly more numerous, but are being kept well in hand. Cougar have been seen, but they are not numerous. Fur-bearing animals, such as beaver, otter, marten, mink, weasel and wolverine, appear to be thriving. One pair each of black bear and beaver were shipped alive to the Dudley Zoological Gardens, Dudley, England.

Operations for the control of mistletoe blight were carried on at Cottonwood auto camp-ground and along the highway one mile east of Jasper.

A total of 1,127 angling permits was issued for the Medicine-Maligne area, an increase of 154 over the previous season, and the total number of fish taken was 8,779, an increase of 1,776 over the previous season. The smaller fishing waters all afforded exceptionally good sport. Stocking was carried out in accordance with the recommendations of Dr. C. M. Mottley, and the following distribution of rainbow trout fry was made from the Jasper hatchery: in park waters, 500,000; in provincial waters, 150,000.

Many forms of recreation are available at Jasper, and include riding, hiking, fishing, golf, tennis, climbing, and motoring in the summer and skiing, curling, and skating in the winter. Increasing interest is being shown in skiing, and the newly organized Jasper Ski Club has undertaken developments on the north slope of the Whistlers Mountain, which is attracting many enthusiasts.

KOOTENAY NATIONAL PARK

This mountain park is on the western slope of the Rockies and encloses the Vermilion-Sinclair section of the Banff-Windermere Highway. It has many deep canyons, beautiful valleys, and hot mineral springs. Motor camp-grounds are provided, and recreations include bathing, riding, hiking, and motoring. There are within the park 61 miles of motor highways and 126 miles of trails. The park was established in 1920 and has an area of 587 square miles.

Kootenay Park again showed a gratifying increase in tourist traffic over the previous year. A total of 20,205 motor vehicles and 64,657 persons entered the park, an increase of 3,537 cars and 11,653 persons over the corresponding period in 1936-7. Owing to the fact that many visitors from Banff enter Kootenay Park at Vermilion Pass, and return eastward to Banff Park without registering at Radium Hot Springs, 5 per cent of westbound traffic into Banff Park is included in the above figures.

Following is a table showing how these figures are made up, and giving a comparison with the figures for the previous season:

Visitors to Kootenay Park

Route	Motor Vehicles		Passengers	
	1937-8	1936-7	1937-8	1936-7
<i>Eastbound—</i>				
Via Radium Hot Springs.....	8,791	7,609	27,698	23,717
<i>Westbound—</i>				
Via Radium Hot Springs.....	9,205	7,015	29,510	22,495
Via Vermilion Pass (5% of Banff westbound traffic)	2,209	2,044	7,449	6,792
Totals.....	20,205	16,668	64,657	53,004

Camp-grounds throughout the park proved very popular. The Radium Hot Springs (Red Rock) camp-ground attracted the greatest number of visitors, with a total registration of 5,500 persons. A caretaker was retained at this camp-ground during the busy season.

The Banff-Windermere Highway, which is the main avenue of travel through the park, was opened for traffic on May 20. All existing trails and telephone lines were maintained in good order. A new bridge was constructed over Swede Creek on the Settlers' Road.

At Radium Hot Springs improvements in public services included installation of electric meters in private houses and hotels, and a new sewage system.

No forest fires were reported during the year. The fire season was very favourable, with adequate precipitation and normal hazard conditions. Investigation of bark-beetle infestation near McLeod Meadows was carried on by the Dominion Department of Agriculture. Reports indicate that the beetle is now definitely on the decline.

Game in the park is reported to be in good condition, and all wild life, with the exception of coyotes, increased in numbers. Rocky Mountain sheep, moose, elk, and bear are very plentiful and can be seen at almost any time along the highway.

MOUNT REVELSTOKE NATIONAL PARK

This park is situated on the alpine plateau that forms the summit of Mount Revelstoke, on the western slope of the Selkirk Mountains. A camp-ground has been laid out and the chief recreations are fishing and hiking. Motor highways total 19 miles, and trails 45 miles. The park, established in 1914, contains an area of 100 square miles and is reached from Revelstoke by a motor road.

Approximately 8,271 persons entered the park, a considerable increase over 1936. Cars shipped over the Canadian Pacific Railway line between Revelstoke and Golden numbered 707 as against 623 in 1936.

Work generally was confined to maintenance of roads, trails, cabins, and telephone lines. Mule deer and caribou are numerous and were frequently seen on the mountain slopes. Bird life is abundant, particularly the grouse species.

The only two forest fires occurring in the park—one near Eight Mile Creek and the other on Silver Creek—were caused by lightning and were quickly extinguished without serious damage.

POINT PELEE NATIONAL PARK

This park occupies the most southerly mainland point in Canada. It is a recreational area noted for its unique flora and fine bathing beaches, and is the resting place for migratory birds during the seasonal flights. There is a motor camp-ground in the park and approximately 7 miles of motor roads. The park was established in 1918 and has an area of 6.04 square miles.

Although there was a slight decrease in the number of campers from the previous year, tourist travel into the park surpassed all previous records. The figures for 1937-8 are: Canadian motor vehicles, 38,746, carrying 135,611 passengers; United States motor vehicles, 45,922, carrying 160,727 passengers; a combined total of 84,668 motor vehicles and 296,338 passengers, or an increase of 30,165 persons over the corresponding period last year. A total of 1,035 camping permits were issued as against 1,046 last year.

Improvements included the construction of $1\frac{1}{4}$ miles of new road, rebuilding of an incinerator furnace, one new shelter, and a system of groins to protect the east beach from erosion.

During the migration period in the spring and fall, many kinds of water-fowl, including ducks, geese, and swans, find a resting place in the park. Due

to an abundant supply of water in the marshes, waterfowl were particularly numerous and have shown a decided increase over the last 2 years. Pheasants are plentiful and have increased considerably during the year. Quail are also increasing but are not plentiful. The smaller mammals, including muskrat, racoon, mink, weasel, squirrel, fox, and rabbit, appear to be increasing.

PRINCE ALBERT NATIONAL PARK

Prince Albert National Park embraces 1,869 square miles of lake and forest land and contains a remarkable system of waterways and many interesting forms of wild life. The townsite of Waskesiu is a popular summer resort. There is an up-to-date camp-ground. Recreations are golf, tennis, fishing, bathing, canoeing, and boating. There are over 63 miles of motor highways in the park and 421 miles of trails. The park was established in 1927.

The volume of tourist travel to the park, surpassing all previous records, was as follows: Canadian motor vehicles, 7,328, carrying 28,191 passengers; United States motor vehicles, 147, carrying 655 passengers. Combined total, 7,475 motor vehicles and 28,846 passengers as against 6,056 motor vehicles and 25,327 passengers during the previous year. Apart from residents of Saskatchewan, tourists from four other Canadian provinces and 22 states of the Union were among those registered.

A new concrete pump-house, a new pumping unit at headquarters, and two new warden's cabins—one in the Silver Grove and one in the German Crossing district—were built.

All park roads and trails were maintained in good condition. The new grade between Waskesiu and Heart Lakes portage was gravelled and on other sections of road sharp curves were straightened, grades levelled, and gravel applied where required.

The mature black bass that were put into Waskesiu Lake in 1936 spawned in 1937. Fishing was not so good as in former years, although lake trout and pickerel still appear to be plentiful in the lakes.

No change was noticeable in the number of big game animals with the exception of elk which again show a definite increase. White-tailed deer, moose, and caribou remain about the same, wolves are plentiful, but coyotes are scarce. Beaver are increasing rapidly; snowshoe rabbits show a slight increase; fox, marten, and weasel show little change in number, and otter and fisher have been seen. The small herd of buffalo acquired in 1936 wintered well and are in good condition. The herd was increased by two bull calves and now numbers seven. Bird life is plentiful, with a noticeable increase in the number of prairie chicken and Hungarian partridge.

A lack of rainfall in recent years created one of the worst fire seasons yet experienced in northern Saskatchewan. A total of 23 fires occurred within the park. Although some of these fires were severe, very little valuable timber was lost, and in all cases it was possible to keep the fire from reaching the lake shores and damaging the scenic beauty of the shoreline.

The number of visitors making use of the camp-grounds totalled 5,250, an increase of 356 over the previous year; registrations were as follows: Waskesiu, 5,035; Crean Lake, 131; Kingsmere Lake, 80, and Clearwater Lake, 4. Motor vehicles numbered 1,247, a decrease of 17 from the corresponding period last year.

A total of 3,336 single round tickets as well as 120 daily, 68 weekly, 5 monthly, and 15 seasonal tickets, were issued for the golf course. The park annual golf tournament, known as the Lobstick Golf Tournament, was held early in August. Other sporting events of interest included the senior and junior tennis tournaments, the annual swimming meet, and the annual regatta, which included boat races of all descriptions. A lifeguard was employed during the summer season to supervise water sports.

PRINCE EDWARD ISLAND NATIONAL PARK

Prince Edward Island National Park was established in 1936 with an area of 7.6 square miles. It embraces a coastline strip, over 20 miles in length, on the north shore of Prince Edward Island, and includes some of the finest sand beaches in Eastern Canada. It is being developed as a recreational area in keeping with the National Parks standards.

An official record of attendance was not kept, but it is estimated that not less than 2,500 persons visited the park during the year. Although no recreational facilities have been provided as yet, the park beaches were very popular.

At Dalvay House shingling, replacing stucco, and repairing foundations were carried out. At Green Gables work was confined to re-shingling the roofs. Construction of new bath-houses at Dalvay and Cavendish was begun, but unfavourable weather made it necessary to suspend work before the buildings were completed. The beaches at Dalvay and Cavendish were kept clear of driftwood and debris. Approximately 10 miles of boundary fence was erected, but owing to early frosts this project was not completed. Roadwork was confined to the construction of a new road commencing at Dalvay Lake and following the shoreline in a northwesterly direction for a distance of approximately one mile.

Game in this area is limited practically to waterfowl, and it is gratifying to note that since the establishment of the park in 1936, the number of these birds has increased. No fires occurred during the past year. As a fire protection measure, areas of slash left in the vicinity of Dalvay House and Green Gables were cleaned up.

RIDING MOUNTAIN NATIONAL PARK

This park is a rolling woodland on the summit of the Manitoba escarpment, dotted with many sparkling lakes. It is a big game sanctuary, summer resort, and recreational area. Motor camp-grounds are provided and recreations include swimming, golf, tennis, bathing, and riding. A wild animal enclosure contains small herds of buffalo and elk. The total length of motor highways is 50 miles, and there are approximately 100 miles of trails. The park was established in 1929, and covers an area of 1,148 square miles.

Registration of visitors at the park entrance gates was as follows: Canadian motor vehicles, 28,973, carrying 113,867 passengers; United States motor vehicles, 891, carrying 3,386 passengers. Combined total, 29,864 motor vehicles, carrying 117,253 passengers, as against 26,498 motor vehicles and 101,013 persons during the previous year. This represents a large increase over previous years and establishes a new high record for the park. Registration was particularly heavy during July and August. The park continues to be a popular meeting place for conventions, many social and professional organizations holding their annual meetings in the park.

Camping permits issued totalled 1,618, an increase of 111 over last year. At the camp-grounds at Wasagaming, 6,774 persons registered, an increase of 1,396 persons over last year. These visitors spent 72,019 person days in residence, or an average stay of 10.6 days per person. Further additions were made to the water and electrical distribution systems in the camp-grounds and all kitchen shelters are now supplied with water and electric lights. The Lake Katherine camp and picnic grounds and the picnic grounds at Moon Lake were also well patronized throughout the season.

A total of 4,433 business licences and permits were issued during the year, as follows: business licences, 159; building permits, 17; camping permits, 1,618; lot rentals, 331; grazing permits, 159; hay permits, 383; timber permits, 1,262; and miscellaneous, 504.

With the exception of the completion of the Government incinerator, no new construction was undertaken. Minor improvements were carried out on the Superintendent's residence, staff quarters, Administration office, and museum. In the business section a new motion picture theatre was erected by private enterprise, and improvement work carried out on a number of business places. In the residential section little new building was undertaken, but considerable improvement work was done on some of the older cottages by owners in order to bring them up to the park standard. Further survey work was carried out on an addition to the townsite subdivision. There are at present 180 privately owned cottages and 22 business establishments within the townsite; Government-owned buildings number 86.

No new road construction was undertaken during the past year. Work consisted of additional gravelling on the Dauphin-Clear Lake and Norgate roads, widening and setting up grade and rebuilding of bridges on the Lake Audy road, and general maintenance over the entire system. New guard-rail was also erected in places on the Dauphin-Clear Lake and Glen Beag roads. Main roads and streets within the townsite and certain sections of highway were treated with oil. Work on park trails and telephone lines was confined to general maintenance.

The drought of 1936, followed by a dry summer in 1937, resulted in unusually high fire hazard conditions. A total of 36 fires occurred on park lands, and in addition park officials had to take action on two fires outside the boundary in order to prevent them entering the park. Fires in the park burned over a total area of 11,919 acres. Out of this total nearly half was grassland, 20 per cent old burn, and the remainder young growth and green timber (mostly poplar). Air patrols were carried out during the fall fire season and proved of great value in the detection of fires. During the summer a working-plan survey was carried out by the Dominion Forest Service, and as a result of their findings a preliminary plan to control timber-cutting operations was worked out. This plan was put into force for the first time in November and has resulted in a large reduction in the annual cut.

Early in May, 150,000 rainbow trout fry were received from the provincial hatchery at Fort Qu'Appelle, and transferred to the fish-rearing ponds. In October the fish were distributed in Clear Lake.

Moose, elk, and white-tailed and mule deer came through the winter in excellent condition and showed a normal increase in numbers. Among the smaller animals, several colonies of beaver have been seen in the vicinity of Lake Audy; coyotes appeared to be less numerous, and rabbits were scarce. The animals in the enclosure at Lake Audy have done very well, and at the end of March numbered as follows: buffalo, 58; elk, 58; moose, 6; mule deer, 9; white-tailed deer, 2. Over 5,000 people visited the enclosure during the season. To avoid overcrowding in the enclosure, 23 buffalo were slaughtered in the fall and the meat and hides disposed of by contract. Bird life in the park was normal, with a slight increase of grouse over the past few years. The number of migratory waterfowl showed a marked increase. As an added attraction ten Canada geese were obtained from Saskatchewan and placed in a 2-acre enclosure at Lake Audy.

Swimming and boating at Clear Lake were under the supervision of a life-guard. The fifth annual tennis tournament sponsored by the Wasagaming Board of Trade was held on the courts at Wasagaming and attracted over 200 players. The golf course was maintained in good condition and continued to be one of the chief attractions. A total of 5,750 single round tickets were sold, in addition to 117 daily, 80 weekly, 2 monthly, and 4 seasonal tickets. The Wasagaming Golf Club tournament was held in July and drew an entry considerably larger than in 1936.

ST. LAWRENCE ISLANDS NATIONAL PARK

St. Lawrence Islands National Park is composed of thirteen islands among the "Thousand Islands" of St. Lawrence River, together with a small mainland area at Mallorytown Landing, Ontario. The islands include Cedar, near Kingston; Aubrey, Mermaid, Beau Rivage, Camelot, Gordon, and Endymion, near Gananoque; Georgina and Constance, near Ivy Lea; Grenadier (portion), near Rockport; Adelaide, near Mallorytown Landing; Stovin, near Brockville; and Broder, near Morrisburg, Ontario.

These island parks form delightful recreational areas for campers and picnickers, and several of the large islands, notably Beau Rivage, are used extensively for summer camps by Girl Guides and similar organizations. Each island or group of islands is in charge of a caretaker, who is responsible for the care and maintenance of the docks, shelters, camp-stoves, and other conveniences that have been provided for visitors. The park was established in 1914, and contains 185.6 acres.

It is estimated that 22,000 persons visited the island parks during the year. This is an increase of 5,200 over the corresponding period in 1936. Improvements made during the year included the laying of a new cement floor in the pavilion on Broder Island and the shingling of the east pavilion on Stovin Island; other work performed was general maintenance.

WATERTON LAKES NATIONAL PARK

(Canadian Section, Waterton-Glacier International Peace Park)

Waterton Lakes Park is a mountain playground of unusual charm on the eastern slope of the Rockies. Its varied flora and fauna, and the opportunities for such forms of recreation as swimming, boating, climbing, hiking, riding, golf, and tennis make it extremely popular. There are 44.5 miles of motor highways and 236 miles of trails. It was established in 1895 and has an area of 220 square miles.

There was a slight decrease from the previous year in the number of persons visiting Waterton Lakes National Park. Motor vehicles to the number of 14,591 entered the park as compared with 14,032 during the previous year. Of these, 7,776 were Canadian and 6,815 from the United States and other countries. The number of persons to enter the park during the fiscal year 1937-8 was 59,520 as compared with 59,546 during the previous year. Of these, 32,044 were of Canadian origin, and 27,476 from the United States and overseas.

All streets received two applications of oil. The flagstone sidewalk extending for some distance along Cameron Falls drive was completed. The old dance hall which had been used for some years as a store was demolished and a new stores building is under construction. The erection of the new Customs and Excise building at Chief Mountain on the International Boundary and the remodelling of the Administration building were completed, and the townsite water system was enlarged.

The Information Bureau was open from June 16 to September 15. During this period 8,908 inquiries were dealt with in addition to numerous written inquiries received before the bureau opened.

Registration at the park camp-grounds totalled 310 cars and 1,422 persons, their combined stay being equivalent to 11,067 person days. The average stay was 8.17 days per person. At the main camp-site electric light is supplied to trailers. The number of campers at Cameron Lake and Red Rock Canyon showed an increase. At the close of the season shelters were erected at Alderson Lake, Crandell Lake, and Bertha Lake.

General maintenance work was carried out on all park roads, including oiling on certain sections, and repairing and resurfacing where necessary. The damage caused by rains in June to the Main road, International Highway, Akamina road, and Pass Creek road and bridge was repaired. Material has been assembled to replace the lower bridge across Cameron Creek which was washed out by the spring freshets. Improvements were made on the following trails: East Boundary, Crypt Lake, Bertha Lake, Alderson Lake, and Lakeshore. The Rowe Creek trail was extended for one mile. A telephone line extension was run from the Chief Mountain Customs building to the park system, and repairs were made on the Cameron Lake and Yarrow Creek lines. All warden's cabins were kept in good condition. The cabin at Little Prairie was dismantled and re-assembled at Hell Roaring Canyon.

A total of 1,584 head of stock were grazed under permit. This is a decrease of 627 from the previous season. Approximately 115 tons of hay were harvested, which will be used to feed Government stock.

Many good catches of fish were reported, one lake trout weighing 39 pounds being taken from Waterton Lake. Good catches also were reported from Cameron, Alderson, and Crypt Lakes. Fish dams built at Pass Creek last year were badly damaged by floods, only one dam remaining intact. The following distribution of fry and fingerlings was made from the Waterton Hatchery: in park waters—cut-throat trout, 242,845; salmon trout, 170,000; total, 412,845; in provincial waters—cut-throat trout, 236,840; rainbow trout, 177,000. Approximately 9,500 cut-throat trout and 9,200 salmon trout fry were kept at the hatchery during the winter.

Wild life flourished during the past year, and with the exception of Rocky Mountain sheep and snowshoe rabbits, have shown a decided increase in numbers. Pneumonia killed about 50 per cent of the sheep in the park during January, February, and March of last year. No recurrence of the disease has been noted recently, and sheep are now reported to be in good condition. A decrease has also been noted in all species of grouse. Beaver, marten, mink, muskrat, weasel, marmot, and coyote were plentiful.

No forest fires were reported, but three fires occurred in the townsite, resulting in the destruction of the dance hall and one residence, and damage to another residence.

The park golf course was extended to take in another nine holes and 18 holes were in play this season. The annual golf tournament, in which about 75 players competed, was held in August. The swimming meet for the Southern Alberta championships was held at the Crystal Pool in July. The four park tennis courts and the children's playground were in constant use. A new shelter and fence were constructed at the children's playground.

YOHO NATIONAL PARK

Yoho Park on the western slope of the Rockies contains the famed Yoho Valley with its numerous waterfalls, the Kicking Horse Valley, and Lakes Emerald and O'Hara. Motor highways have a total length of 44 miles and trails, 192 miles. Established in 1886, the park has an area of 507 square miles.

Tourist traffic showed a decrease from the corresponding period last year. Traffic from Banff by way of Kicking Horse Pass, which is not registered at the Leanchoil gateway, was recorded by an automatic registration device installed west of the park boundary.

Tourist figures for the past 2 years are given in the following table:

Route	Motor Vehicles		Passengers	
	1937-8	1936-7	1937-8	1936-7
<i>Eastbound</i> — Via Leancoil Gate.....	2,343	2,737	7,021	7,969
<i>Westbound</i> — Recorded automatically (estimated four persons per car).....	12,884	13,498	51,536	53,992
Visitors by rail (estimated).....			2,000	2,500
Totals.....	15,227	16,235	60,557	64,461

The number of persons making use of the public camp-grounds was slightly greater than last year. A total of 1,275 motor vehicles and 4,636 persons visited the various camp-grounds as follows: Kicking Horse camp-ground, 1,147 motor vehicles and 4,374 persons; Field camp-ground, 32 motor vehicles and 69 persons; Chancellor Peak camp-ground, 96 motor vehicles and 193 persons. The new caretaker's quarters and registration booth at Kicking Horse camp-ground, which was commenced in 1936, was completed in the spring of 1937. Mount Stephen bungalow camp opened on May 4, and Emerald Lake Chalet, and Wapta, Yoho, and Lake O'Hara bungalow camps on June 15. All camps were closed for the season on September 13.

A number of major improvements were carried out on the main highway such as widening narrow spots and improving curves. One new bridge was built over Boulder Creek and improvements made at the Hector railway crossing. No forest fires of any description occurred during the season.

Wild animals in the park are reported to be doing well, and most species appear to be on the increase. Due to the failure of the berry crop at higher altitudes, the bears were more numerous than usual around the camp-grounds. Fishing in the park was again very good, and many excellent catches were made. A total of 30,000 rainbow trout fry from the Banff hatchery were distributed in Emerald and Wapta Lakes.

The annual camp of the Alpine Club of Canada was held in Little Yoho Valley, from July 17 to 31. The total attendance numbered 140 and included visitors from many countries. The British Columbia Mountaineering Club held their annual camp at Lake O'Hara in July, and some 130 members of the Sierra Club of California also spent several days in the park. The activities of the Alpine Club of Canada are reviewed in the Appendix to this report.

Animal Parks

BUFFALO NATIONAL PARK

This enclosure near Wainwright forms the largest fenced wild animal preserve in Canada, and is the home of a large herd of plains buffalo and smaller herds of moose, deer, elk, yak, and hybrids segregated for experimental cross-breeding purposes. There are 2 miles of motor highway and 57 miles of trails in the park, which was established in 1908, and contains an area of 197.5 square miles.

A total of 9,830 persons visited the park during the year, as compared with 10,577 for the corresponding period in 1936. The bathing beach and picnic grounds at Mott Lake were not so well patronized as during the previous year. The years of drought have caused a fall in the water level which has lessened the attractiveness of the beach.

Approximately 425 acres were seeded to oats and returns from farming operations were as follows: oats, 8,404 bushels; straw, 175 tons; green feed, 67 tons; hay (cultivated), 211 tons (wild), 856 tons. An early spring with sub-normal rainfall seriously affected grazing conditions on the range. However, plentiful rainfall in late July and early August relieved the situation. The condition of the winter range was affected very slightly as grazing was not permitted on this area.

Permits for a total of 96 cords of dry wood and 3,500 green willow pickets were issued to settlers in the vicinity.

Following a survey of grazing and feed conditions, the buffalo herd was reduced by the slaughter of 2,020 animals. This work was carried out in the late autumn when the animals were in prime condition. Twenty carcasses were reserved for the use of the Department and the remainder placed on the market. At the close of the fiscal year the number of animals in the park was as follows: buffalo, 3,247; elk, 1,781; mule deer, 1,242; moose, 127; yak, 31; hybrids, 46. The cross-breeding experiment which has been carried on by the Department of Agriculture for a number of years was continued, and further information obtained.

The bath-house, pavilion, and yak shed at Mott Lake, and the barn, garage, and oil house at the Superintendent's quarters were painted. The new abattoir which was constructed last year was completed and the hasher, washer, and rendering tanks installed. A number of other buildings were also repaired and painted. A pump-house was erected over No. 1 well and pumping equipment installed. Maintenance and necessary repairs were carried out on 120 miles of 8-foot, and 10 miles of ordinary, fence. Repairs included replacement of 950 fourteen-foot posts, 75 eight-foot posts, and the re-setting of approximately 6,000 old posts. In addition 100 telephone poles were replaced and 40 old poles re-set. Work on roads and trails was confined to general maintenance of 2 miles of motor road and the repairing of old trails where necessary. No fires occurred in the park during the year. Two prairie fires started outside the park but were extinguished before reaching the park boundary. As a fire protection measure approximately 140 miles of 20-foot fireguard were ploughed.

As a result of the cycle of dry years recently experienced, the number of waterfowl nesting in the park has decreased, although considerable numbers of Canada geese, ducks, and swans were observed on the lakes during the spring and fall migration periods. There appears to be an increase in pintailed grouse (prairie chicken), but Hungarian partridge have not shown any recovery since the winter of 1935-6.

ELK ISLAND NATIONAL PARK

This park consists of a fenced enclosure near Lamont, containing buffalo, moose, deer, and elk. A recreational area has been developed and opportunities provided for golf, camping, bathing, and boating. Motor highways have a total length of 16 miles, and trails 4 miles. The park was established in 1911 with an area of 51.2 square miles. Although originally intended as a big game preserve, this park has in recent years developed into a very popular recreational resort.

During the year a total of 63,040 persons visited the park, as compared with 46,295 during the previous year. The total number of motor vehicles was 17,380. Approximately three-quarters of a section in the southeast part of the park was fenced off for cultivation. One hundred acres were brushed and broken and some 70 acres sown to oats; 160 tons of green feed and 400 tons of hay were produced.

In order to keep the number of animals within the grazing capacity of the park, a total of 403 animals was slaughtered for the Department of Indian Affairs, and included the following: 183 elk, 89 moose, and 131 buffalo. At

the close of the fiscal year the number of animals in the park were: buffalo, 2,000; elk, 1,000; moose, 350; mule deer, 261. Among the smaller mammals that have been observed in the park are the following: weasel, porcupine, muskrat, red squirrel, flying squirrel, chipmunk, snowshoe rabbit, gopher, and coyote. Bird life was abundant, a total of 190 species of birds having been observed in the park. For the purpose of obtaining migration information, 304 birds, including 28 species, were banded.

All park roads were maintained in good condition throughout the year; maintenance included resurfacing and repairing, and replacement of old culverts. Existing fences were kept in good condition and 2 miles of new fence was constructed around the farming area. The fairways on the golf course were widened and seeded to the extent of 6 acres, and some improvements made to the putting greens. A parking area at the club-house was also constructed. At Sandy Beach the lawns were widened, a board walk constructed, grounds for a trailer camp prepared, and a caretaker's office constructed. General repairs were carried out on the Superintendent's residence, including the removal of the office from the residence, construction of a new well, and installation of a new water system and 32-volt lighting plant. The golf course and picnic grounds at Sandy Beach and headquarters, and bathing and boating facilities were all used extensively.

One fire, originating in the Cooking Lake Forest Reserve immediately south of the park, crossed the park boundary, but was controlled before any serious damage was done. As a means of protection, fireguards were ploughed around the park boundary and around buildings and haystacks.

NEMISKAM NATIONAL PARK

Nemiskam National Park, Alberta, is a fenced reserve, covering an area of 8.5 square miles. It was established in 1932 for the protection of prong-horned antelope. At the end of the fiscal year there were approximately three hundred and twenty head. Visitors to the park during the year totalled twenty-one persons.

As a result of several years of drought, range conditions are reported to have been the poorest experienced in the last 30 years. A severe winter, general lack of water, and dry feeding, all combined against any increase in the herd. Coyotes are also reported to have been responsible for the loss of many animals.

Activities throughout the year included general maintenance of fences, and during the winter the drilling of an artesian well near the southwest boundary of the park. This well was completed in January, and at a depth of 475 feet came in with a very satisfactory flow.

WAWASKESY NATIONAL PARK

Wawaskesy National Park in southern Alberta, an unfenced reserve comprising 54 square miles, was established in 1922 as a sanctuary for prong-horned antelope, a species native to the region.

Owing to drought, grazing conditions in the park during the past year have been only fair; however, as there were very few animals in the park during the summer there was sufficient grass to carry over the winter. The park area being unfenced an accurate report on the number of animals is not possible, but just after the first snow observers reported having seen a herd of well over 1,000 antelope near the river. All animals seen are reported to be in good condition. An open hunting season was again established by provincial authorities and resulted in large numbers of antelope entering the park. Conditions remained favourable until the end of January, after which due to heavy snows many of the antelope left for other ranges. Coyotes were reported to be numerous in certain sections. Winter grazing permits were issued for approximately 400 head of stock.

Historic Parks

FORT ANNE NATIONAL PARK

This national historic park at Annapolis Royal is on the site of the early Acadian settlement of Port Royal. It contains a historical museum with a fine library. Established in 1917, the park has an area of 31 acres. Fort Anne National Park is one of the most notable of Canada's historic places. The fort today includes well preserved earthworks and a large building erected in 1797, during British occupation. The building was restored in 1935 and serves as a museum.

During the past year 12,029 persons visited the museum, an increase of 665 over the corresponding period of 1936. In addition, it has been estimated that 5,000 visited the grounds without going into the museum, making a combined total of 17,029 persons to visit the park. Several travel groups from the United States as well as teachers and pupils from Canadian schools were among the visitors. Interesting events celebrated during the year were the Coronation Day Ceremonies at Fort Anne, and the installation of His Excellency, the Governor General of Canada, Lord Tweedsmuir, as Grand Master of the Order of the Good Time. At the latter event the Grand Chief of the Micmac Indians was presented with the pipe of peace by His Excellency.

Among some of the interesting acquisitions to the park museum were the following: a photostat copy of Champlain's Map of Port Fortune; Coronation Medals of King George VI and Queen Elizabeth; the coat of arms of Lord Tweedsmuir; a number of Micmac Indian stone implements, one flint-lock Tower musket, an old military candle snuffer, and a considerable number of books and old documents.

Improvements carried out during the year included the addition of four new display cases to the museum and the weatherproofing of the chimneys. All other work undertaken was of a general maintenance character.

FORT BEAUSEJOUR NATIONAL PARK

This national historic park, near Sackville, New Brunswick, is situated on the Isthmus of Chignecto, and preserves the ruins of a French fort erected prior to 1755. The park contains an area of 59 acres and was established in 1926. The fortifications, which consist chiefly of earthworks, are in a very good state of preservation and hold much of interest to students of early Acadian history. During the year it is estimated that 20,000 persons visited the park.

An outstanding feature is the historical museum situated within the grounds, which contains many historical exhibits, both civil and military, relating to the Isthmus of Chignecto. Additional exhibits, many of great interest, were obtained for the museum during the year, and the total number of objects listed in the museum catalogue is now approximately 700. Nearly 15,000 visitors registered at the museum during the year.

Improvements effected on the grounds included draining, levelling, and seeding. Gravel paths leading to the museum building were also constructed, and a number of signs erected at different points in the grounds for the information and guidance of visitors.

HISTORIC SITES AND MONUMENTS

During the past year favourable progress was made with the restoration, preservation, marking, and administration of historic sites of national importance and the commemoration of outstanding personages and events connected with the early history of Canada. The National Parks Bureau, which is entrusted with this work, is advised in this phase of its administration by the Historic Sites and Monuments Board of Canada, an honorary body composed of recognized

historians, representing the various sections of the country. The personnel of the Board is as follows: Chairman, Brig.-Gen. E. A. Cruikshank, LL.D., F.R.S.C., F.R.Hist., Ottawa, Ont.; His Honour F. W. Howay, LL.B., LL.D., F.R.S.C., F.R.Hist., New Westminster, B.C.; J. Clarence Webster, C.M.G., M.D., D.Sc., LL.D., F.R.S.C., Shediac, N.B.; Professor Fred Landon, M.A., F.R.S.C., London, Ont.; Professor D. C. Harvey, M.A., F.R.S.C., Halifax, N.S.; Hon. E. Fabre-Surveyer, B.A., LL.M., B.C.L., F.R.S.C., Montreal, P.Q.; F. H. H. Williamson, Controller, National Parks Bureau, Ottawa.

The annual meeting of the Board was held in Ottawa from May 20 to 22, when a number of new sites were reviewed and a selection made therefrom for later action. Of the total number of sites considered by the Board since its inception 254 have now been suitably marked, and 89 additional sites have been recommended for future attention.

During the year restoration and development work was carried out on a number of the larger historic properties controlled by the National Parks Bureau, including the Fortress of Louisbourg near Louisburg, N.S.; The Prince of Wales Tower, Halifax, N.S.; Fort Beausejour National Park near Aulac, N.B.; Fort Chambly, Chambly Basin, P.Q.; Fort Lennox, Ile-aux-Noix, P.Q.; and the Murney Tower, Kingston, Ont. In addition, the following sites were marked:

Survey of the Gulf and River St. Lawrence, Charlottetown, P.E.I.—A cut stone monument with tablet was erected in front of the Provincial Legislative Building, by permission of the Provincial Government, to commemorate the distinguished services to navigation and science of Admiral Henry Wolsey Bayfield (1795-1885), whose work superseded the pioneer surveys of Admiral Durell, Captain Holland, and Lieutenant Des Barres. Between 1827 and 1856, he conducted a thorough survey of the Gulf and River St. Lawrence, the coasts of Anticosti, the Magdalen Islands, Prince Edward Island, Cape Breton, Sable Island, and parts of Nova Scotia and Labrador. The monument was unveiled by Lieutenant-Governor George D. DeBlois on September 17, 1937.

Thomas Chandler Haliburton, Windsor, N.S.—A cut stone monument with tablet was erected in King's Square by permission of the Department of Public Works and the Windsor Town Council to commemorate the publication, in 1836, of "The Clockmaker, or The Sayings and Doings of Samuel Slick, of Slickville," the first in that series of humorous and satirical works which won for Haliburton international fame in the world of letters. The monument was unveiled by the Honourable Angus L. Macdonald, Premier of Nova Scotia, on August 28, 1937.

Fort St. Louis, Port La Tour, N.S.—A cairn with tablet was erected a short distance from the Baccaro Point-Port La Tour Highway, on a site donated by the heirs of the late Orlando Taylor, jun., to mark the place where, in 1630, Claude de La Tour arrived with an Anglo-Scottish expedition and strove in vain to induce his son Charles to surrender this last foothold of France in Acadia. The unveiling of the memorial took place on September 6, 1937, under the auspices of the Cape Sable Historical Society.

Prehistoric Indian Portage, near Petitcodiac, N.B.—A cut stone monument with tablet was erected adjacent to the Moncton-Saint John highway, on a site donated by Mr. George O. MacMackin, to mark the point where the ancient route, later used by the French, from Acadia to the Upper Saint John and Quebec left the Petitcodiac. It crossed to North River, and continued to the Washademoak (Canaan) River.

First Canadian Hospital, Quebec, P.Q.—A tablet was affixed to the front of the Hotel-Dieu, Charlevoix Street, by permission of the Mother Superior, to mark the site of the first hospital established in America, north of Mexico. It was founded on August 16, 1637, by the Duchesse d'Aiguillon and the Augustines Hospitalières de Dieppe. The tablet was unveiled with suitable ceremonies on June 28, 1937.

Fort St. Louis, Caughnawaga, P.Q.—A tablet was affixed to the outer wall of the fort at Caughnawaga to mark the site of Fort St. Louis, built in 1725 by the French for the protection of the Christian Iroquois.

Robert Cavelier de La Salle, Lachine, P.Q.—A large stone monument bearing a medallion and tablet was erected on the Pere Marquette Promenade, by permission of the Department of Transport and the City of Lachine, to commemorate the achievements of Robert Cavelier de La Salle, who founded Lachine in 1667, rebuilt Fort Frontenac in 1675, and was the pioneer navigator on the Great Lakes.

Robert Cavelier de La Salle, Ville La Salle, P.Q.—A cairn with tablet was erected in front of the Novitiate Building of the Oblates, on a site obtained by the local Chamber of Commerce, which property formed part of the fief granted to Robert Cavelier de La Salle about 1666.

Pierre Le Moynes, Sieur d'Iberville, Montreal, P.Q.—A bronze plate was affixed to a building at the northwest corner of St. Paul and St. Sulpice Streets, by permission of the Viau Estate, to mark the birthplace of Pierre Le Moynes, Sieur d'Iberville. He was born on July 20, 1661. The tablet was unveiled with suitable ceremonies on April 11, 1937.

Louis Frechette, Levis, P.Q.—A bronze plate affixed to an iron pedestal was erected in front of the building at 230 St. Laurent Street, by permission of the Canadian National Railways, to mark the birthplace of Louis Frechette. He was born on November 16, 1839, and was the first Canadian poet honoured by the French Academy. The unveiling of the tablet took place on June 28, 1937.

Sir John A. Macdonald, St. Patrick, P.Q.—A bronze plate affixed to an iron pedestal was erected on the side of Highway No. 2, by permission of the Provincial Department of Highways, to mark the place where Sir John A. Macdonald, the first Prime Minister of Canada, spent many summers between the years 1873 and 1890.

Bridge Island, Mallorytown Landing, Ont.—A cairn with tablet was erected near the wharf in the Mallorytown Landing Park to commemorate the historical events associated with Bridge Island, which is visible from where the memorial stands. This island was fortified and garrisoned in 1814 for the protection of the vital line of supply by water from Lower Canada. The memorial was unveiled on September 11, 1937, under the auspices of the Brockville Historical Society.

Officers and Seamen of the Royal Navy, Barriefield, Ont.—A cairn with tablet was erected adjacent to Highway No. 2, at the entrance to Fort Henry, by permission of the Department of National Defence, to perpetuate the memory of the Officers and Seamen of the Royal Navy and Provincial Marine, and of the Officers and Soldiers of the Royal Marines, Royal Newfoundland, King's (8th), and 100th Regiments, who served on Lake Ontario in defence of Canada in 1812-14.

Yonge Street, Richmond Hill, Ont.—A cairn with tablet was erected adjacent to Highway No. 11, on a site provided by the Summit Golf and Country Club, to commemorate the events connected with the construction of Yonge Street. It was planned by Lieutenant-Governor Simcoe in 1793 as a military road and commercial highway between Lakes Ontario and Huron to promote settlement and was named in honour of Sir George Yonge, Secretary at War. The memorial was unveiled on October 16, 1937, under the auspices of the York Pioneer and Historical Society.

Glengarry Landing, near Edenvale, Ont.—A cairn with tablet was erected adjacent to Highway No. 26, on a plot of land donated by Mr. Z. Rupert, to mark the place where Lt.-Col. Robert McDouall, Glengarry Light Infantry,

built the flotilla of boats with which he effected the relief of the British Garrison at Fort Michilimackinac, in May 1814. He then organized a second expedition which, on July 19, captured Prairie du Chien, on the Mississippi.

Norway House, Man.—A cairn with tablet was erected at Norway House, by permission of the Hudson's Bay Company, to mark the site of Norway House, built on Jack River in 1812-13, by the above company. It was rebuilt where the cairn stands in 1825 and was a frequent meeting place of the Council of the Northern Department of Rupert's Land. Here the Rev. James Evans invented the Cree Syllable System, and, in 1875, Treaty No. 5 was made, whereby the Saulteaux and Swampy Crees ceded their rights to about 100,000 square miles in this vicinity.

Fort Maurepas and Fort Alexander, Fort Alexander, Man.—A cairn with tablet was erected on the Hudson's Bay Company's property to mark the sites of Fort Maurepas and Fort Alexander, the former being one of La Verendrye's trading posts. Both the Hudson's Bay Company and the North West Company located here in 1792. Only Fort Alexander, built by the former company, has survived.

Methye Portage, Fort McMurray, Alta.—A cairn with tablet was erected on the grounds of the Public School, by permission of the Board of School Trustees, to mark this important portage. It was discovered by Peter Pond in 1778 and used continuously for more than a century by fur-traders and explorers, including Sir Alexander Mackenzie, Sir John Franklin, and Sir George Simpson.

Great Fraser Midden, Vancouver, B.C.—A cairn with tablet was erected in Marpole Park, by permission of the Board of Park Commissioners, to mark the site of one of the largest prehistoric middens on the Pacific Coast of Canada. The bone and stone implements and utensils found in it have thrown much light upon the cultural status of prehistoric man in this vicinity.

PRESERVATION AND DEVELOPMENT WORK

Preservation and development work was carried out at the following larger historical sites:

Fortress of Louisbourg, N.S.—Situated 3 miles south of Louisburg, Cape Breton Island, and built by the French during the years 1720-40, the Fortress of Louisbourg was the scene of great struggles between the French and English. It has an area of 328 acres and was acquired in 1928. During the past year the main entrance road was resurfaced with a mixture of clay and beach gravel; the road culverts, ditches, and adjacent banks were cleaned out and the fences surrounding the French and English cemeteries at Point Rockfort were white-washed.

Prince of Wales Tower, Halifax, N.S.—It is situated in Point Pleasant Park and is the last of five such towers erected in Nova Scotia. It was acquired January 25, 1936, in view of its significance as a type of military architecture. Repairs were carried out to the roof in order to preserve the interior of this historic structure.

Fort Lennox, Ile-aux-Noix, P.Q.—Situated 13 miles south of St. Johns in Richelieu River, it formed a gateway to Canada and an advance post against the Iroquois and other invaders. The island was fortified by the French before 1759 and its defences were rebuilt by the British during the years 1812-27. It has an area of 150 acres and was acquired in 1921. During the past year the roof of the guardhouse was painted, the walls of the commissary, magazine, and canteen were repointed, and the arched ceiling of the latter building, which had become badly cracked, was repaired.

Fort Chambly, Chambly, P.Q.—It is situated 15 miles southeast of Montreal and was built of wood in 1665 as a defence post against the Iroquois. The fort was rebuilt of stone in 1709-11 to resist the advance of the British forces; was captured by United States troops in 1775 and the interior buildings were burned in 1776. It was restored in 1777 and abandoned in 1880. It has an area of $2\frac{1}{2}$ acres and was acquired in 1921. During the past year a new flag-pole was erected and two new doors were set, one at the powder magazine and the other at the entrance to the picnic grounds. The interior walls and ceilings of the powder magazine and dungeon were cleaned of old plaster and repointed. A portion of the flag-stone around the drinking fountain was removed and replaced with smooth stone taken from the river bed; and a section of the wall in the armouries, which had collapsed, was rebuilt.

Fort Wellington, Prescott, Ont.—This fort was constructed in 1812-13 as the main post for the defence of the communication between Kingston and Montreal. Here were assembled the troops that captured Ogdensburg on February 22, 1813. It has an area of $8\frac{1}{2}$ acres and was acquired in 1923. Work of a general nature was carried out during the year on the buildings and grounds.

Murney Tower, Kingston, Ont.—Situated in Macdonald Park, it is one of four similar towers at Kingston. It was leased to the Kingston Historical Society for museum purposes. During the past year the bridge leading to the tower was repaired and painted; the wooden frames to two air vent openings in the basement were renewed; temporary repairs were made to the roof; and the windows and screens were painted.

ACQUISITION OF SITES

Grand Battery, near Louisburg, N.S.—The site of this old battery, comprising approximately 9 acres, was purchased under Order in Council dated December 18, 1937. During the building of the Fortress of Louisbourg, the Grand Battery was equipped with thirty guns and garrisoned by two hundred men. It was captured by New England troops under William Pepperrell in 1745, and by British troops in 1758.

Birthplace of Sir Wilfrid Laurier, St. Lin, P.Q.—The house in which Sir Wilfrid Laurier was born was purchased by the Crown in order to ensure its future preservation.

First Lighthouse on the Great Lakes, Niagara-on-the-Lake, Ont.—Permission was obtained from the Niagara Parks Commission to affix a standard tablet to the outer wall of Fort Mississauga to mark the site of the first lighthouse on the Great Lakes. It was built of stone in 1804 by John Symington, under orders from Lieutenant-Governor Peter Hunter, and demolished in 1814 to make room for Fort Mississauga. Its materials, with debris from the ruined town of Niagara, are incorporated in the fort.

Sir John A. Macdonald's Grave, Kingston, Ont.—An agreement was executed between the Crown and the Catarqui Cemetery Company whereby perpetual care will be taken of the grave of Sir John A. Macdonald.

MIGRATORY BIRDS CONVENTION ACT

The National Parks Bureau is responsible for the administration of the Act based on the Migratory Birds Treaty which provides for the better protection of birds that migrate between Canada and the United States. During the year the regulations covering the shooting of migratory birds remained practically the same, continuing the restrictions that were first imposed in 1936.

MIGRATORY BIRDS CONVENTION ACT

(Chapter 130, Revised Statutes of Canada, 1927, and amendments)

On August 16, 1916, a treaty for the better protection of birds that migrate between Canada and the United States was signed at Washington, D.C. This treaty was made effective by Act of the Parliament of Canada in 1917.

The Minister is responsible to Parliament for fulfilment of Canada's obligations under the Treaty; under the Director of the Lands, Parks, and Forests Branch, the Controller of National Parks is responsible for the administration of the statute, and the Superintendent of Wild Life Protection is technical adviser and executive assistant.

By virtue of Order in Council, P.C. 2283, of October 14, 1932, responsibility for police work pertaining to the enforcement of the provisions of the Migratory Birds Convention Act and Regulations made thereunder, was transferred to the Royal Canadian Mounted Police; all other powers and responsibilities continuing to remain with the Department of Mines and Resources.

PROTECTION OF MIGRATORY BIRDS

The birds protected by this law which have suffered depletion of recent years and in which there is wide interest are the ducks and geese. Losses have been occasioned particularly by prairie drought, and conditions in the important southern prairie nesting grounds continued to be poor in 1937. The natural depletion is being offset in a measure by the restoration work done under the Prairie Farm Rehabilitation Act. The duck situation in British Columbia and from the Manitoba-Ontario boundary eastward continued to be fairly satisfactory with a definite increase of black ducks, the most important Eastern Canadian species.

The depletion of eel-grass still continues and no general improvement occurred in the Maritime Provinces or Quebec. Eel-grass is an important food plant for Canada geese, brant, and other waterfowl.

In 1937, the hunting restrictions imposed by the Migratory Birds Regulations were continued as in the previous year with minor adjustments. In 1936, in order to meet a serious depletion of the natural supply of migratory waterfowl of the continent, the hunting season for ducks and geese was limited to approximately 2 months, baiting of waterfowl with grain was prohibited, the use of live decoys in hunting these birds was barred, and strict daily and seasonal bag limits imposed. Also, sale of waterfowl was prohibited, except in the far north where special conditions govern, and, in addition, no open season was provided for hunting wood ducks, or for hunting brant on the Atlantic coast.

The United States continued the severe hunting regulations which it imposed under the Treaty in 1935, and to put it very briefly these are about twice as restrictive as the Canadian regulations.

There is some evidence that the combined effect of reduced hunting of these birds, and increased effort to provide them with sanctuaries and suitable habitat has been to slightly increase their numbers. However, if considered for a period of the past 10 or 20 years, the reduction in waterfowl as a whole, and particularly of some species, has been most alarming and it may be necessary to continue indefinitely the strictest possible hunting regulations and to devote increasing attention to the provision of water habitat for these birds if some kinds of them are not to become extinct.

New bird sanctuaries were established as follows: Ile au Heron, Mille Isles, and Upnorth in the Province of Quebec.

The field administration of the Migratory Birds Convention Act continued under the supervision of four District Migratory Bird Officers, who operated under the direction of the National Parks Bureau. In addition to their main duties they were able to pay attention to the scientific study of the relation of mergansers to fishing interests on the Pacific coast; the observation of waterfowl conditions on the important waterfowl nesting grounds in the Prairie

Provinces, and the incidental inspection of bird sanctuaries and other reserves; the annual boat patrol of the north shore of the Gulf of St. Lawrence; and general activity in lecturing to the public and co-operating with game conservation societies and other organizations.

Permits and licences issued under the Migratory Birds Convention Act, valid during the year 1937, were as follows:

322	permits	for scientific purposes.
169	"	" banding purposes.
155	"	allowing the destruction of certain birds when found injuring agricultural or fishery interests.
585	"	to possess birds for propagating purposes.
6	"	to take birds for propagating purposes.
24	"	allowing the collecting of eider-down.
3	"	to possess firearms on bird sanctuaries.
3	"	to collect gulls' eggs on bird sanctuaries.
6	"	" " in Saguenay County, P.Q.
1	"	to erect a temporary cabin on a bird sanctuary.
48	"	to destroy gulls.
56	taxidermist's	licences.

In Alberta, at the request of the Province, sale of birds held under Propagating Permit is permitted only from a recognized game farm, and all persons taking out permits are required to furnish a bond.

In Ontario, in compliance with the request of the Provincial Game Department, Propagating Permits issued under the Migratory Birds Convention Act do not permit sale of migratory birds raised in captivity except for propagating purposes.

If proper steps are to be taken towards the conservation or control of native wild birds, which constitute a resource of very great economic importance, it is necessary that certain exact data be available relative to the migration, range, flyways, abundance, mortality rate, and concentration points peculiar to wild bird life. The only satisfactory and practical way in which much of the required data may be obtained is by means of numbered metal leg bands which are being placed on wild birds by voluntary co-operators operating under permit throughout Canada and the United States. The Official Canadian Bird-Banding Records are kept by the Wild Life Unit of the Bureau.

The calendar year 1937 yielded the most satisfying results of any year since this work was undertaken by the Bureau some 15 years ago, and it is interesting to note that during the year 1937, 39,066 records of newly placed bands were added to the files as compared with some 35,000 similar records in 1936, and the number of records of banded birds recovered that were completed in 1937 has increased in proportion. This has, of course, added much new and useful information to the exact scientific data on wild bird life in the official records. It is very gratifying to note that the bird-banding investigation in Canada has continued to expand and progress so rapidly and favourably.

Because of the migratory habits of most species of native wild birds, the bird-banding work in North America is being conducted in the fullest co-operation between this Bureau and the United States Bureau of Biological Survey at Washington, D.C. Success in bird banding depends to a very large extent on the voluntary co-operation of the public in reporting each and every banded bird that may be recovered to the Controller, National Parks Bureau, Ottawa. Reports on banded birds addressed to the Controller require no postage, except when forwarded via certain air-mail routes. Every banded bird recovered should be reported because the record is built on facts, and every item may have an important bearing on the status of a particular species. The Bureau gratefully acknowledges the co-operation of hundreds of citizens, as well as Provincial Governments, Royal Canadian Mounted Police, fur trading companies, missionaries, and branches of the different Dominion Departments, which have assisted with bird banding by sending in reports concerning banded birds.

The following printed material was distributed during the year: Consolidations of the Migratory Birds Convention Act and Regulations, 7,770; abstracts of the Act, 17,100; posters 48,600; pamphlets 32,300.

One hundred and eighty-eight lectures were given by officers of the Bureau, and lecture material, including motion pictures and lantern slides, was lent freely to voluntary assistants.

The National Parks Bureau was represented at the following conservation and scientific conferences relating to wild life:

The Fifty-fifth Stated Meeting of the American Ornithologists' Union, Charleston, South Carolina, November 1937.

The Third North American Wildlife Conference, Baltimore, Maryland, February 1938.

ADVISORY BOARD ON WILD LIFE PROTECTION

In connection with problems relating to the conservation of caribou in the Northwest Territories, it was brought to the attention of the Board that an excessive number of these animals were being killed by certain Eskimos in the Western Arctic, and that these Eskimos were now equipped with high-powered rifles and an unlimited supply of ammunition. Discussion showed this to be a problem of unusual complexity. There was no intimation that caribou were being wasted. These natives have increased their possessions, and, consequently, the number of dogs to haul them about, and at the same time had adopted an inland life for which they needed more caribou meat for dog feed.

The Board's suggestion respecting exploration of the problem on the lines of the possibility of restricting high-power and repeating rifles, and restricting the use of wild life resources in the Northwest Territories to natives is being acted upon.

Changes in the personnel of the Board were as follows: Colonel S. T. Wood, Commissioner, Royal Canadian Mounted Police, appointed a member of the Board ex-officio, vice Sir James MacBrien, deceased; Superintendent T. B. Caulkin, O.C. "G" Division, Royal Canadian Mounted Police, appointed a member of the Board, vice Superintendent G. F. Fletcher, and Mr. A. E. Porsild, Botanist, National Museum of Canada, was added to the membership.

On the north shore of the Gulf of St. Lawrence in Quebec, the co-operative plan for development of an eider-down industry has continued between the Quebec Departments of Lands and Forests, and Game and Fisheries, and the migratory birds protection service of the National Parks Bureau. Twenty-four leases were in effect in the season of 1937. As a result of the inauguration of this industry the conservation of the American eider duck among the extensive archipelagos that fringe the north shore of the Gulf of St. Lawrence has been advanced. The lessees of the eider-down production areas, in order to induce as many eiders as possible to nest on their leases, do their utmost to protect these areas against poaching and thus become auxiliaries of the wild life protection service. This industry, in addition to preventing waste of a useful natural resource, is providing additional revenue to people whose possible sources of income are limited.

The Honorary Migratory Bird Officers appointed under the Act—794 in all—gave the usual valuable assistance.

The Migratory Birds Regulations are adjusted annually in conjunction with the Provincial Game administration. All of the provinces co-operated in the enforcement of this law and thus helped to conserve a national resource.

Mr. Charles Elton, Director of the Bureau of Animal Population, Oxford University, Oxford, England, continued scientific analysis of data relating to

abundance and scarcity of snowshoe rabbits in Canada. The facts are gathered by volunteer observers; the study of these facts has been made at Oxford, and the results have been published in Canada.

The Royal Canadian Mounted Police continued to co-operate in enforcement of the Migratory Birds Convention Act. The force has also afforded valuable assistance in connection with important reports concerning wild life in Canada, including data concerning banded birds and the abundance or scarcity of waterfowl.

An expansion of scientific mammal conservation work in both the National Parks and the Northwest Territories was made possible by the employment of a scientist to investigate existing problems.

APPENDIX

THE ALPINE CLUB OF CANADA

(From the Report of the Chairman of the Club-House Committee)

The club-house at Banff opened for the season on Saturday, June 26, 1937. Registrations at the club-house were lower than during the previous season.

The total registration during the season was 245, provinces and countries being represented as follows:

Alberta	52	United States	79
British Columbia	33	England	10
Manitoba	14	Scotland	6
Ontario	25	Australia	3
Quebec	2	New Zealand	2
Saskatchewan	18	China	1

(General Report compiled from the Gazette of the Alpine Club)

The thirty-second annual camp was held from July 17 to 31, 1937, in Little Yoho Valley, in Yoho National Park, on the site of the 1914 and 1927 camps. Due to the late season, the weather was uncertain during the construction of camp, but was fairly settled for the first 10 days of camp, and a full climbing program was carried out. Unfortunately, the weather broke towards the end of the second week and many left without undertaking some of the more spectacular climbs.

A total of 140 persons, including the staff, were placed under canvas, representatives attending from the Alpine Clubs of England, America, France, and Switzerland; the Royal Geographical Society, Appalachian Mountain Club, B.C. Mountaineering Club, Kamloops Outdoor Club, the Mazamas, the Montana Mountaineers, the Mountaineers and Sierra Club. A new feature of this camp was the bivouac camp on the snow-slopes of Mount Collie at an altitude of 9,500 feet. Three parties made use of this camp, thirty persons in all. Mounts Collie and Des Poilus were climbed, and the round trip to Simpson's Camp at Bow Lake made by seven members of the first party.

Peaks climbed from the main camp were: Marpole, Balfour, Kerr, McArthur, Des Poilus, Isolated, Pollinger, Kiwetinok, and Barometer. The mountaineering school was held on the lower slopes of the latter. A hearty vote of thanks was extended to the National Parks authorities for their co-operation and help on the trails. The annual meeting of the Club was held at Upper Yoho Valley on Wednesday, July 28, 1937.

DOMINION FOREST SERVICE

The Dominion Forest Service is primarily a fact-finding and advisory organization. Through its Forest Experiment Stations and Forest Products Laboratories it studies problems connected with forest management and the utilization of wood, and devises methods for their solution. Forest protection problems and the economic aspects of forestry are also investigated. The policy of this Service is to secure new knowledge and develop new methods, and to turn over their findings to provincial administrators and to industry for practical application.

Approximately nine-tenths of the forest resources of Canada are under the direct control of the provinces, and each provincial government frames its policy of administration in the way that seems best to it. Hence similar wood-using industries supplying identical markets are compelled to operate under regulations that differ widely as between provinces. The need for correlation is becoming increasingly evident if the general prosperity of forest industries is to be achieved.

The development of a satisfactory policy requires an accurate appreciation of local conditions, which the provincial administrators are in the best position to supply. It also needs a thorough knowledge of the natural laws governing forest growth, a scientific and practical approach to the utilization of forest products, and an understanding of the broad economic aspects of the situation. In these last fields the Dominion authorities are in a position to offer valuable assistance.

Our forests supply the raw materials for some of our greatest industries. They constitute a primary attraction for our immensely valuable tourist trade. They are essential for proper maintenance of stream-flow and for provision of conditions favourable to wild-life development.

It is estimated that two-thirds of the annual depletion of Canada's forest is due to cutting and one-third to fire, insects, and decay. Fifteen per cent of the annual depletion is due to forest fires which, though in a large measure controllable, continue to take a heavy toll each year.

Further strengthening of public opinion for forest preservation is urgently required. No government in Canada can afford the expenditure necessary for adequate protection so long as human carelessness comprises such a large factor in our fire losses. It must be brought home to every citizen that he has a personal responsibility which he cannot evade, otherwise the future prosperity of the forest industry will be jeopardized.

SILVICULTURAL RESEARCH

The five forest experiment stations represent five different forest regions. The primary purpose of research at the several forest experiment stations is to determine the most satisfactory method of treating existing young stands to produce the greatest quantity of wood of the highest quality in the shortest time at the least cost. Second only to this problem is the study of practical methods of cutting mature stands that will provide for a return cut of desirable species in the shortest possible time. Supplementary to these basic projects are the fundamental problems pertaining to soil, climate, genetics, and mensuration which must also be prosecuted. Related investigations in timber types and operating conditions not represented on the respective stations are conducted on areas outside the station boundaries, in co-operation with provincial authorities and with the industries.

are concerned with Siberian larch, Douglas fir, Scotch pine, Norway spruce, and *Pinus Armandi*. This last gives promise of resistance to blister rust. Use of zinc sulphate solution was very successful in control of weeds and moss. Methods of winter protection are under investigation. Seeding in drills instead of broadcasting is recommended to facilitate weeding, and raising of stock from the beds. Scotch pine from Finland and white spruce from Alberta wintered well, but *Picea ajanensis* and *Pinus peuce* were not winter-hardy. Some progress was made with the propagating of Norway and black spruce from cuttings. Improvement has been made in methods of preparing poplar cuttings, and in methods of propagating them. More difficulty, however, was encountered in the vegetative propagation of basswood, but the experiments are being continued. Investigations with hybridization of poplars to yield stock of better fibre and strains suitable for windbreaks yielded promising results.

Co-operative Studies.—The Entomological Division of the Science Service of the Department of Agriculture is co-operating with the Forest Service in studying the spread of insect pests and appropriate control measures at the station, and now has its own field laboratory there. The red pine sawfly has caused considerable injury to red pine plantations. Methods of control by spraying are under investigation. The white pine weevil is another serious pest that is receiving the attention of the entomologists.

Numerous pathological problems occupy the attention of the plant pathologists of the Botanical Division of the Science Service of the Department of Agriculture, who also are co-operating with the Forest Service. Of major importance are white-pine blister rust and rots of poplars. Attention is given to the relationship of poplar rots to site-types.

ACADIAN FOREST EXPERIMENT STATION

The Acadian Forest Experiment Station, 78 square miles in area, situated near Fredericton, N.B., represents hardwood, mixedwood, and softwood cover-types of white and wire birch, maple, spruce (red, white, and black), balsam fir, and some white pine. The age-classes are almost entirely less than 60 years; the most important is 20 to 40 years. Research work for the Acadian Station was about equally divided between projects on the station itself and projects elsewhere in the Province of New Brunswick, in co-operation with the Provincial Forest Service and the industries.

Thinning Studies.—On the Station area an experimental thinning area of 54 acres was established to study the value of intermediate cuttings made to improve the growth and quality of wood in mixedwood and softwood cover-types in age-classes from 21 to 60 years. After detailed survey, trees to be removed were marked by an experienced forester. The material was removed as pulpwood and fuel-wood by labourers. To record the development a series of four permanent sample-plots was established.

Another series of six sample-plots was made with the object of recording the effect of releasing conifers from suppression by wire birch on extensive areas from which the hardwoods were removed for fuel-wood as an unemployment relief project in 1934. Some benefit has already been recorded.

In a stand of dense young white pine a pair of permanent sample-plots were made in order to study the benefit of thinning. A stand of 2,200 trees per acre was reduced to 1,200 trees. Of these, 200 trees that seem desirable for the final crop were marked and will be favoured in future treatment.

Nursery and Plantations.—In the nursery thirty samples of seed, principally species of spruce and pine, were sown to study their adaptability for local conditions. Twenty-five hundred red pine and white and red spruce transplants were set out in experimental plots, and these made good progress during the summer.

The taking of phenological records was continued for the third year; from these records much valuable information pertaining to the characteristics of seasonal growth of trees, shrubs, and herbaceous plants have already been obtained. It seems apparent that the growing season for balsam fir is from one to two weeks longer than that of spruce. Height-growth of fir, however, appears to culminate about the third week in June, and that of spruce about the second week in July.

Experimental Cutting Areas.—The Bathurst experimental cutting area, 500 acres, established in 1920, was remeasured this year. The original purpose of this experiment was to determine the relative value of various silvicultural cutting methods in upland black spruce cover-type. The area, however, was later clear-cut of all merchantable material, so that the study resolved into one of conditions resulting from clear-cutting. In addition to remeasurement of seven permanent sample-plots, a transect sample-plot of ninety-five one-square-chain sections running completely across the area was established. It was found that most of the saplings left after the cut were wind-thrown. The few that withstood the wind failed to respond to release, so that the next crop is dependent entirely upon the seedling advance-growth and reproduction. Reproduction is now complete—mostly black spruce layering—and is now growing at a very satisfactory rate.

In 1927, a series of four permanent sample-plots was located in cut-over lands of the Miramichi drainage area for the purpose of studying growth conditions and the effect of the budworm attack of the previous decade. Although the data have not yet been compiled and analysed, the growth condition of the main stand on these plots seems to be very unsatisfactory. Mortality due to wind-throw has been high. Reproduction of spruce and balsam fir seems to be ample for future needs.

The Cains River experimental cutting area (200 acres), established in 1924, is somewhat similar to that of the Bathurst experiment, but the site-type is poorer-drained swamp. It is essentially a clear-cut operation. The one-square-chain sample-plots, eighty-one in number, were remeasured; on this area the saplings have failed to respond to release and are being wind-thrown. Regeneration appears to be ample for future needs, but of somewhat patchy nature, and of much poorer growth-rate than the reproduction at Bathurst. Evidence of the devastating work of the spruce sawfly was found in this area.

An interim report covering the development of the Salmon River experimental cutting area for the period 1924-33 has been prepared. On this area cutting was done in clear-cut strips to 8-inch and 12-inch diameter-limits, and by the selection method. Although good increment and ample reproduction have resulted, data on the relative values of the cutting methods are yet inconclusive. A marking system which would include the best features of all three systems is recommended for experiment. Open conditions favour spruce reproduction, more closed conditions favour balsam fir.

Short Course in Woodlot Forestry.—A short course in forestry was given in November and December to twenty-two young men from Prince Edward Island under the Youth Training Scheme. The purpose of the course, sponsored co-operatively by the Prince Edward Island Government and the Dominion Forest Service, was to provide the youths with such training as would enable them to manage and care for woodlots intelligently and profitably. The course included a series of lectures and practical field training.

On behalf of the Department of National Defence, a detailed stock-taking and valuation survey was made of the timbered lands being acquired for the proposed Debert Airport.

VALCARTIER FOREST EXPERIMENT STATION

The principal research work of the Valcartier Forest Experiment Station, which comprises $7\frac{1}{2}$ square miles, with headquarters at Valcartier, near Quebec City, was conducted on the Lake Edward experimental area in Champlain County, where thirty permanent sample-plots, established at various dates since 1918, were measured, and the data were compiled. The Lake Edward area is a tolerant hardwood & spruce & balsam fir cover-type from which the merchantable conifers were removed about 1910. The sample-plots were made with the object of studying the development of coniferous advance-growth and reproduction. In a few plots the overmature and wolf hardwoods were girdled to release conifers and the better hardwoods. Some plots were established to study the effect of thinning dense young conifer stands. It has been found that the spruce and balsam fir are returning surprisingly well, and that the spruce is gaining ascendancy over the fir, although the latter still predominates. There appears to be ample coniferous reproduction established.

A site-type classification based on soils and vegetation has been prepared for the Lake Edward area, and these have been correlated with cover-type growth.

DUCK MOUNTAIN FOREST EXPERIMENT STATION

Dominion forest-research projects in the Provinces of Manitoba and Saskatchewan are conducted through the Duck Mountain Forest Research Station.

Work on the station itself consisted of establishment of eleven permanent sample-plots, and the remeasurement of five others established in 1921. Seven of the new plots were made in order to study various methods of thinning overcrowded jack pine & black spruce sapling stands. Four other plots were made to study thinnings in the aspen cover-type. The remeasured plots were studies of thinnings in jack pine and white spruce polewood stands.

Working Plan of Riding Mountain Park Forest.—The major project in Manitoba was a working-plan survey of the Riding Mountain National Park, the forests of which are being put on a sustained-yield management basis. By combining aerial and ground methods this working-plan survey of 765,000 acres was completed in a single season. Sufficient data were compiled upon which to base cutting regulations for the past winter, and a working plan is in course of preparation. The area was covered by aerial survey in 1927 and again in the spring of 1937; thus detailed information pertaining to stand composition, distribution, and changes due to cutting and fire during the interval was provided. It only remains for a field party to check the volumetric estimates and to determine the increment, age-classes, reproduction, and other ground-cover conditions.

Study of Saskatchewan Spruce Lands.—A field party was placed in northern Saskatchewan to study conditions on both cut-over and young uncut white spruce lands. The areas examined were along the Carrot, Saskatchewan, and Sipanok Rivers. Information was obtained regarding the condition of the present stand, reproduction and stump tallies on the cut-over area, and description of vegetation, soil, and nature of disturbances. This work is supplementary to the similar study of the previous year and provides material upon which to base a management plan.

KANANASKIS FOREST EXPERIMENT STATION

The Kananaskis Forest Experiment Station (62 miles west of Calgary, Alberta) is the centre for Dominion forest research in the Province of Alberta. Considering the rugged nature of the topography, good progress was made with the working-plan survey started last year. Two series of transect sample-plots

were established to record the development of the areas thinned as a relief project in 1934-5. Two other transect sample-plots and six permanent sample-plots were made in the fire-killed and logged-over area of 1936 to record the progress of reproduction. Several experimental studies in control of mistletoe blight were instituted. Phenological records of trees, shrubs, and herbaceous plants, started last year, were continued.

Spruce Reproduction Study.—A survey of cut-over lands at Nordegg was made to determine the conditions of reproduction following cutting. It was found that severe cutting was followed by reduction of the moss covering from 2 to 6 inches, but spruce reproduction still fails to become established. Any reproduction observed was on patches where the mineral soil had been exposed by fire or other means.

OTHER PROJECTS

Improvement-cutting Methods.—An important investigation was undertaken in co-operation with the Singer Manufacturing Company on their cut-over hardwood lands near Thurso, P.Q. To study the value of practical improvement-cutting methods as a means of increasing the growth-rate and improving the quality of tolerant hardwoods, three 10-acre permanent sample-plots were established. One was cut over by the jobber in the ordinary way; the second was marked by a research officer and cut by the jobber; the third (designed as a control plot) was left uncut. Remeasurements will be made at 5-year intervals.

Relation of Balsam Fir to Site.—A reconnaissance survey was carried out on the Upper Gatineau watershed by two research officers who made preliminary observations on the occurrence of rot in balsam fir in relation to site; these were to serve as a basis for project plans for more intensive survey of this vital problem. Indications were found that a relationship may exist between rot in balsam fir and climatic and soil site-types, and that intensive investigation should be made.

Miscellaneous.—Technical officers of the field staff of the Forest Service made inspections of forest conditions in western national parks. Outbreaks of insects and disease were checked up and arrangements made for further study by entomologists and forest pathologists of the Dominion Department of Agriculture.

A brief summary statement has been prepared of all permanent sample-plots established by the Dominion Forest Service between 1918 and 1937, stating the results to date. Of 291 plots established in the eastern provinces, 160 are studies of intermediate cuttings, 85 of cut-over lands, 9 of natural forestation, and 35 of artificial forestation. In softwood types, medium to heavy thinnings are beneficial, but information on the economic feasibility awaits large-scale practical demonstrations.

A new series of eight form-class volume tables for merchantable cubic volume has been issued in mimeographed form.

Research Notes.—Tables of stand and increment as determined from the rate-of-growth surveys have now been issued as Research Note No. 51 for the foothills of Alberta, and as Research Note No. 52 for the mixedwood section of the Boreal Forest Region (Manitoba and Saskatchewan). These complete the series of stand and increment tables.

Research Note No. 53, "The Correlation of Tree Species and Growth with Site-Types," is a discussion of tree growth at Lake Edward as related to vegetation site-types.

FOREST ECONOMICS

The function of the Division of Forest Economics is to assemble all available information relative to the national inventory of the forest resources; to supervise surveys conducted in that connection by the Forest Service; to compile data in regard to the depletion of these resources due to cutting, fire, and other causes, and to estimate the extent to which depletion is being replaced by growth; and to compile information in regard to the forest industries and the trade in forest products for the information of the Government, the industries, and the public.

RESOURCES

The estimate of the forest resources must be revised from time to time as new information becomes available and the supplies are depleted by cutting, fire, insects, and disease, or increased by growth. The last compilation was published in Dominion Forest Service Bulletin 92 (1938), which showed that the total forest area was 1,223,522 square miles, 35.3 per cent of the total land area. The total stand of timber of merchantable size is estimated at 273,656 million cubic feet, of which 170,144 million cubic feet is considered accessible at present. The accessible supply consists of 245,313 million feet board measure of saw timber (10 inches in diameter at breast-height) and 1,107 million cords of smaller material suitable for pulpwood, fuel-wood, etc.

DEPLETION

The amount of timber cut in 1936 totalled 2,703 million cubic feet as compared with an average of 2,191 million cubic feet during the previous 5 years, 1931-5. The amount destroyed by fire in 1936 was equivalent to 843 million cubic feet, as compared with an average of 240 million cubic feet during the previous 5 years. In 1937 the loss was reduced to 569 million cubic feet. In addition to the merchantable timber destroyed, 2,224,215 acres of young growth and cut-over land were burned in 1937, as compared with an average of 880,000 acres during the 10 years 1927-36. The depletion due to insects and fungi cannot be determined with any satisfactory degree of accuracy, but it is estimated that it amounts to at least 700 million cubic feet annually.

The average annual gross depletion of the forest resources during 1927-36 is estimated to have been as follows:

	Million cu. ft.
Merchantable timber cut	2,550
" " burned	304
Young growth burned equivalent to	264
Destroyed by insects and fungi	700
Total	3,818

INCREMENT

Though the Forest Service has conducted a number of surveys to determine the rate at which the forests are growing, the information available is still insufficient to provide even a basis for an estimate of the annual increment. The problem is so complicated by the great variety of conditions that a very large amount of data is required to provide a basis for forest management.

FOREST INDUSTRIES

The industries using wood as their principal raw material provide approximately 10 per cent of the total value of production of all kinds in Canada.

Summary Statistics of Forest Industries, 1936

	Capital Invested	Number of Employees	Salaries and Wages	Value added by Manufacture
	\$		\$	\$
Woods operations.....	95,000,000	90,000	54,000,000	134,804,228
Lumber industry.....	78,294,341	28,760	21,357,038	35,982,667
Pulp and Paper industry.....	539,350,001	30,054	40,063,852	87,150,666
Wood-using industries ⁽¹⁾	95,307,734	28,713	23,184,941	37,027,889
Paper-using industries ^(1, 2)	45,518,155	10,047	10,798,158	12,119,859
Total.....	853,470,231	187,574	149,403,989	307,085,309

(¹) Preliminary figures.

(²) Exclusive of the printing trades.

Costs of materials, fuel, and electricity used have been subtracted from the sale value of products in computing value added by manufacture; hence there is no duplication of values.

The employment in the woods operations is indicative of the activity of the industries using wood as a raw material. The following indices of employment in the woods during the past 10 years, based on the year 1926 as 100, show a remarkable recovery from the low point in 1932:

1928.....	114.5	1933.....	66.5
1929.....	125.8	1934.....	124.7
1930.....	108.0	1935.....	126.9
1931.....	61.1	1936.....	138.7
1932.....	42.5	1937.....	189.3

LUMBER INDUSTRY

The value of the products of the lumber industry in 1936 was \$80,343,291, as compared with \$65,905,132 in 1935, an increase of 22 per cent. This was still below the average value of \$135,272,090 during 1926-30, but represents a distinct gain as compared with \$52,287,632 during the depression years 1931-5.

PULP AND PAPER INDUSTRY

The value of the products of the pulp and paper industry as marketed, including the pulpwood and wood-pulp exported and the paper manufactured, was \$187,377,770 in 1936, as compared with \$164,860,585 in 1935. This does not include a certain amount of pulp used in Canada for the manufacture of artificial silk, fibreware, and other pulp products.

The apparent total production of pulpwood in Canada in 1936 was 7,002,057 cords, an increase of 907,041 cords over that of 1935. Of the total cut, 17.6 per cent was exported and 82.4 per cent was used in Canada. In addition, 9,591 cords were imported.

TRADE IN FOREST PRODUCTS

In 1937 the exports of wood products and paper, exclusive of books and printed matter, were valued at \$261,986,296, which showed an increase of \$52,694,551 over that of 1936, and comprised 23.6 per cent of the total exports of Canadian products.

The imports of these forest products were valued at only \$19,509,990, so that the trade in forest products provided a favourable balance of \$242,476,306, as compared with the total favourable balance of trade of \$316,063,687.

The value of the exports of the various classes of forest products, exclusive of books and printed matter, in 1937 was as follows:

Raw material (logs, bolts, and pulpwood)	\$ 17,106,941
Products prepared in woods (poles, hewn ties, etc.).....	3,517,643
Sawmill and planing-mill products (lumber, shingles, plywood, etc.)	58,885,801
Manufactured wood products (doors, furniture, cooperage, etc.)	4,496,012
Pulp and paper and manufactures of	177,979,899
Total	\$261,986,296

On the basis of value, 68.3 per cent of the exports of wood and paper products in 1937 went to the United States, 17.0 per cent to the United Kingdom, 4.3 per cent to Australia, 2.5 per cent to Japan, and 1 per cent to Argentina and to British South Africa.

AERIAL FOREST SURVEYS

During the fiscal year 1936-7 forest-cover maps and volumetric estimates of the timber were made for 3,514 square miles from air photographs; 1,290 square miles in Nova Scotia were surveyed in connection with the forest inventory in that province, 860 square miles in Saskatchewan in co-operation with the Provincial Government, 132 square miles for the Bureau of Northwest Territories and Yukon Affairs, 36 square miles for the Indian Affairs Branch, and 1,196 square miles in the Riding Mountain National Park in Manitoba for the purpose of establishing a working plan for the forests in the park.

For this last survey a topographic base-map was prepared from summer verticals taken from an altitude of 10,000 feet 6 to 11 years previously, but as they did not furnish sufficient forest detail and the conditions had changed considerably since they were taken, the area was rephotographed with steep obliques in March, while the snow was still on the ground. A comparison of the two sets of photographs revealed that cutting, fire, and growth had made a considerable change in the forests. The forest types were mapped, and the volume of the stand was estimated on each subdivision and supplied to a ground-survey party, which checked the estimates and made growth measurements. The whole survey was completed by autumn at a cost of less than \$9 per square mile. Surveys of this intensity, dependent on ground entirely, formerly cost about \$70 per square mile.

The double-vision projector designed by this Service for the transfer of data directly from photographs to a map has proved to be of such practical value that nine instruments have now been made for Dominion and Provincial forest services and companies using air photographs. Efforts are being made to have a more precise instrument constructed on this principle.

In co-operation with the Royal Canadian Air Force and a prominent firm manufacturing photographic equipment, experiments were conducted to find some way to alleviate the loss of detail produced by the extreme contrasts encountered in winter photography for forestry purposes. It was found that by using a special orthochromatic film with a pronounced green sensitivity, the light reflected from the green softwood trees was relatively intensified, with the result that the contrast was greatly moderated.

The Saskatchewan Government and two pulp and paper companies sent members of their staffs to this office for tuition in the use of air photography.

Exhibits illustrating the use of air photography for forestry purposes were displayed at meetings of eight organizations and in four provinces.

FOREST PROTECTION

The Dominion Forest Service carries on research in forest-fire protection at the forest experiment stations and also in co-operation with some of the provinces and with the National Research Council. The outstanding contribution in recent years has been the development of a system for the daily measurement and forecasting of forest-fire hazard for the guidance of protective agencies. Experimental work is carried on to improve methods, equipment, and technique for detecting and suppressing forest fires. The Forest Service compiles annual statistics of forest-fire losses for the whole of Canada from information furnished by the provincial authorities.

The forest-fire season of 1937 in Canada was an average one, considering the country as a whole. British Columbia experienced a very favourable season, but the other western provinces suffered heavily. From the Great Lakes eastward the fire season was about average, although the losses were considerably below the normal of the past 10 years. A total of 5,949 forest fires was reported in Canada during 1937, compared with the past 10-year average of 6,008. Fourteen per cent of the fires in this year were caused by lightning, and 86 per cent by human agencies. The total loss and damage, including cost of fire-fighting, for all fires amounted to \$4,341,300, compared with the past 10-year average of \$4,877,871. Detailed comparative statements of losses and causes during the 10-year period of 1928-37 will be found in Tables 1 and 2. A description of the fire season by regions follows:

BRITISH COLUMBIA

The year 1937 was one of the most favourable for forest-fire protection in the history of British Columbia. Rains were frequent throughout the summer in all districts, and the relative humidity remained high. Most of the lightning storms that occurred were accompanied by ample rains, and less than the usual damage arose from this source.

Camp-fires, lightning, and smokers, in the order given, were the most frequent causes of fires, and July was the most dangerous month.

	1937	Average 1928-37
Total number of fires.....	1,193	(1,779)
Proportion caused by lightning, per cent.....	22	(25)
Merchantable-timber area burned, acres.....	2,647	(76,698)
Young-growth area burned, acres.....	4,640	(102,956)
Cut-over area burned, acres.....	40,816	(246,062)
Non-forested area burned, acres.....	6,740	(35,969)
Total area burned, acres.....	54,843	(461,685)
Damage.....	\$155,764	(\$951,496)
Cost of fire-fighting.....	\$28,301	(\$208,199)
Total damage and costs.....	\$184,065	(\$1,159,695)

ALBERTA

In Alberta drought conditions extended farther north than in any other year on record, and the province again experienced one of the most severe fire seasons in its history. Uncontrolled spring burning by settlers caused some bad fires in the southern half of the Province, and in the north serious fires occurred in many places. Uncontrolled fires burned throughout the area between

the mouth of Little Buffalo River and Township 105 on the west side of Athabaska River during a period when all available staff were employed fighting fires around McMurray and along the railway to Lac la Biche.

	1937	Average 1927-36 1928-37
Total number of fires.....	376	(331)
Proportion caused by lightning, per cent.....	2	(4)
Merchantable-timber area burned, acres.....	192,838	(61,484)
Young-growth area burned, acres.....	461,733	(96,873)
Cut-over area burned, acres.....	25,618	(9,712)
Non-forested area burned, acres.....	155,071	(83,177)
Total area burned, acres.....	835,260	(251,247)
Damage.....	\$1,088,465	(\$467,885)
Cost of fire-fighting.....	\$32,878	(\$43,101)
Total damage and costs.....	\$1,121,343	(\$510,986)

SASKATCHEWAN

Saskatchewan passed through one of the most severe fire seasons in its history in regard to climatic conditions. The previous winter's snowfall was light, and, in the absence of rain and with the high temperatures that prevailed, the forest had dried out to a condition of extreme hazard by May 5. From that date for a period of over four and one-half months the absence of any general rain kept the forest at "high to extreme" hazard. The lowest water-levels in the northern part of the province and the longest period of high temperature and extreme fire-hazard on record were experienced. All swamps and smaller streams were dry, and as a rule no water was available for fire-fighting. In some cases difficulty was encountered in keeping the men supplied with drinking water. The absence of extremely high winds was the only factor that prevented a general conflagration.

	1937	Average 1927-36 1928-37
Total number of fires.....	578	(280)
Proportion caused by lightning, per cent.....	10	(5)
Merchantable-timber area burned, acres.....	252,874	(65,930)
Young-growth area burned, acres.....	1,414,061	(242,077)
Cut-over area burned, acres.....	30,279	(13,158)
Non-forested area burned, acres.....	831,912	(177,090)
Total area burned, acres.....	2,529,126	(498,255)
Damage.....	\$836,491	(\$331,702)
Cost of fire-fighting.....	\$314,970	(\$62,025)
Total damage and costs.....	\$1,151,461	(\$393,727)

MANITOBA

The western and northern districts of Manitoba experienced a bad fire season, although conditions were more favourable in the remainder of the province. A bad spring fire season occurred between April 25 and May 19 in the western and interlake districts. From June 1 to the end of August very little rain fell, and the extremely hazardous conditions that arose spread eastward to the Ontario boundary. Numerous dry electrical storms occurred with their usual sequel of forest fires.

	1937	Average 1927-36 1928-37
Total number of fires.....	446	(374)
Proportion caused by lightning, per cent.....	18	(14)
Merchantable-timber area burned, acres.....	73,348	(56,316)
Young-growth area burned, acres.....	67,230	(69,188)
Cut-over area burned, acres.....	3,486	(4,827)
Non-forested area burned, acres.....	319,818	(448,626)
Total area burned, acres.....	463,882	(578,957)
Damage.....	\$266,693	(\$240,376)
Cost of fire-fighting.....	\$39,742	(\$39,371)
Total damage and costs.....	\$306,435	(\$286,947)

ONTARIO

With the exception of the extreme northwestern section of the province, Ontario experienced a comparatively favourable fire season. Rainfall was fairly well distributed throughout the summer, and only a few periods of high hazard developed. There were also fewer lightning fires than in the previous year. Camp-fires were the leading cause in the past year.

	1937	Average 1927-36 1928-37
Total number of fires.....	1,453	(1,593)
Proportion caused by lightning, per cent.....	21	(18)
Merchantable-timber area burned, acres.....	101,333	(192,730)
Young-growth area burned, acres.....	56,709	(99,486)
Cut-over area burned, acres.....	27,770	(33,300)
Non-forested area burned, acres.....	38,934	(128,846)
Total area burned, acres.....	224,746	(454,362)
Damage.....	\$773,228	(\$1,465,200)
Cost of fire-fighting.....	\$240,824	(\$296,945)
Total damage and costs.....	\$1,014,052	(\$1,762,145)

QUEBEC

Although the fire season in Quebec was less favourable than that of the previous year, it was less severe than the average of the past 10 years. The spring hazard period was most intense in the eastern part of the province, which remained comparatively dry until August, when rains became more plentiful. At this time, however, the western part of the province experienced its first really dry month. The autumn period was about normal with no section of the province becoming really dangerous. Settlers clearing land were the leading cause of fires, contributing 33 per cent of the total.

	1937	Average 1927-36 1928-37
Total number of fires.....	1,033	(932)
Proportion caused by lightning, per cent.....	8	(5)
Merchantable-timber area burned, acres.....	27,135	(36,781)
Young-growth area burned, acres.....	8,123	(34,201)
Cut-over area burned, acres.....	48,803	(100,162)
Non-forested area burned, acres.....	6,225	(19,476)
Total area burned, acres.....	90,286	(190,620)
Damage.....	\$269,862	(\$459,731)
Cost of fire-fighting.....	\$81,698	(\$92,958)
Total damage and costs.....	\$351,560	(\$552,689)

NEW BRUNSWICK

The forest-fire season in New Brunswick was slightly worse than the previous year, but much more favourable than the average of the past 10 years. May, as usual, was the most hazardous month, with more fires than any other two months combined. An exceptionally dry period occurred in the southern part of the province in midsummer. Smokers and settlers, in the order named, were the leading causes of forest fires during the past season.

	1937	Average 1927-36 1928-37
Total number of fires.....	328	(253)
Proportion caused by lightning, per cent.....	7	(3)
Merchantable-timber area burned, acres.....	1,683	(5,447)
Young-growth area burned, acres.....	1,517	(6,941)
Cut-over area burned, acres.....	5,784	(10,462)
Non-forested area burned, acres.....	4,282	(24,285)
Total area burned, acres.....	13,266	(47,136)
Damage.....	\$25,956	(\$74,958)
Cost of fire-fighting.....	\$13,777	(\$24,011)
Total damage and costs.....	\$39,733	(\$98,969)

NOVA SCOTIA

A marked increase in the activity of the lumber industry and in the number of people travelling in the forest, coupled with an exceptionally dry period in the latter part of the summer, gave rise to a larger number of fires than normal.

These fires were, however, effectively controlled, only 1 per cent reaching a size of over 500 acres, so that the total damage inflicted was below normal. Smokers and settlers were the leading causes of fire.

	1937	Average 1927-36.....1928-37
Total number of fires.....	404	(371)
Proportion caused by lightning, per cent.....	less than 1	(less than 1)
Merchantable-timber area burned, acres.....	161	(1,506)
Young-growth area burned, acres.....	5,598	(6,006)
Cut-over area burned, acres.....	276	(1,558)
Non-forested area burned, acres.....	7,000	(12,388)
Total area burned, acres.....	13,035	(21,459)
Damage.....	\$14,703	(\$28,122)
Cost of fire-fighting.....	\$21,479	(\$24,733)
Total damage and costs.....	\$36,182	(\$52,854)

DOMINION LANDS

In addition to the fires in the foregoing summary, which is based upon reports by the provinces, fires occurred on certain widely scattered areas where organized fire protection is administered by the Dominion Government. Particulars of fires on these are as follows:

	1937	Average 1927-36.....1928-37
<i>Indian Lands</i>		
Total number of fires.....	52	(37)
Proportion caused by lightning, per cent.....	6	(12)
Merchantable-timber area burned, acres.....	6,796	(2,060)
Young-growth area burned, acres.....	5,628	(1,766)
Cut-over area burned, acres.....	1,550	(586)
Non-forested area burned, acres.....	5,000	(1,779)
Total area burned, acres.....	18,974	(6,179)
Damage.....	\$43,937	(\$10,489)
Cost of fire-fighting.....	\$3,107	(\$4,106)
Total damage and costs.....	\$47,044	(\$14,595)
<i>National Parks of Canada</i>		
Total number of fires.....	80	(77)
Proportion caused by lightning, per cent.....	10	(10)
Merchantable-timber area burned, acres.....	3,277	(2,699)
Young-growth area burned, acres.....	6,091	(6,453)
Cut-over area burned, acres.....	4,003	(648)
Non-forested area burned, acres.....	8,515	(7,151)
Total area burned, acres.....	21,886	(16,950)
Damage.....	\$48,955	(\$40,150)
Cost of fire-fighting.....	\$10,019	(\$12,512)
Total damage and costs.....	\$58,974	(\$52,662)

DOMINION FOREST EXPERIMENT STATIONS

Only one fire on experiment station areas did any damage. This fire occurred in Manitoba at the end of August after a prolonged dry period. It started outside the station area from lightning during a dust-storm, and owing to the poor visibility it was not observed until it gained large proportions, and, driven by a gale, it swept into the station area.

	1937	Average 1927-36.....1928-37
Total number of fires.....	6	(6)
Proportion caused by lightning, per cent.....	17	(9)
Merchantable-timber area burned, acres.....	700	(577)
Young-growth area burned, acres.....	4,500	(1,100)
Non-forested area burned, acres.....	927	(924)
Total area burned, acres.....	6,127	(2,612)
Damage.....	\$26,700	(\$7,921)
Cost of fire-fighting.....	\$3,541	(\$736)
Total damage and costs.....	\$30,241	(\$8,646)

FOREST-FIRE STATISTICS TABULATIONS

Table 1 shows by years the fire losses in Canada for the 10-year period 1928-37, and the average for the period. In studying these statistics several points should be kept in mind. The basis used for valuing merchantable timber destroyed is the stumpage value of the standing timber or the dues, royalties, etc., that would have accrued to the various governments had the timber been utilized. Young growth destroyed has been more or less arbitrarily valued at from 25 cents to \$5 per acre, this valuation depending on age, quality, and accessibility. Cost of fire-fighting represents money spent on the individual fires

only, and does not include overhead operating costs of the protective services. No attempt has been made to place a value upon the very real losses arising from damage to soil, loss in scenic value, or the loss to industries dependent upon the forests, directly or indirectly.

Table 2 shows the number and proportion of fires attributable to each cause in each year for the 10-year period 1928-37 and the average for the period. It will be observed that the proportion of fires attributed to lightning varies from year to year and (by reference to the provincial summaries) with the region. The provinces of British Columbia, Ontario, and Manitoba, in the order named, are the heaviest losers from lightning fires. For Canada as a whole, the average annual proportion of lightning-caused fires is 15 per cent. The remaining 85 per cent are caused by human agencies.

The statistical data on forest fires in Canada collected from all sources and compiled by the Dominion Forest Service date back to 1918. Prior to that year the records were insufficiently standardized or reliable to be of practical use for Canada as a whole. This mass of data covering the 20-year period 1918-37 has been submitted to statistical treatment, and general trends for the period were computed. It was found that the trend increase in the annual number of forest fires between 1918 and 1937 is 10 per cent. In spite of this tendency for the number of fires to increase, there has been a marked decrease in the damage trends during the 20 years as follows:

Trend decrease in total area burned per year, 51 per cent.

Trend decrease in merchantable-timber area burned per year, 37 per cent.

Trend decrease in total acres per fire, 51 per cent.

Trend decrease in merchantable-timber acres per fire, 64 per cent.

FOREST-FIRE RESEARCH

The system of fire-hazard measurement developed by the Dominion Forest Service from studies begun in 1929 at the Petawawa Forest Experiment Station is now in wide use in the province of Quebec, and has been introduced in New Brunswick. As a result of studies during the past year, improved fire-hazard tables have been published, covering the major forest types in Eastern Canada, with the exception of pulpwood forests. By means of these tables, together with the necessary weather records, it is possible for forest officers to compute each day the degree of hazard that exists in their territory and plan protective action accordingly. A mimeographed bulletin has also been issued for forest officers for use with the fire-hazard tables to assist them in forecasting fire-hazard—or 2 days ahead.

At the Petawawa Forest Experiment Station, in addition to the study of fire-hazards and the measurement of evaporation, work was carried on leading to the improvement of fire-fighting methods and equipment.

At the Valcartier Forest Experiment Station, and in co-operation with the Quebec Forest Protection Service at their Duchesnay Forest Experiment Station, studies of fire-hazard in pulpwood forests were continued.

In New Brunswick research work on fire-hazard was begun in co-operation with the New Brunswick Forest Service and the University of New Brunswick at headquarters established by the Province near Fredericton.

In co-operation with the National Research Council, work was continued on the development of equipment for measuring the intensity of test fires and the moisture content of forest litter in the field in connection with fire-hazard studies. Work was begun on the testing of various types of fire-hose nozzles, the determination of friction losses in linen fire-hose, and the susceptibility to burning by forest fires of linen hose in use in the field.

During the year five mimeographed research notes were published dealing with forest-fire research. These comprise two on the solution of multivariable statistical problems, one on forecasting weather and fire-hazard, one on the oven-drying of forest-fire fuels, and the new forest-fire hazard tables for Eastern Canada.

TABLE 1

Statement of Forest Fires in Canada by Years for the 10-year Period 1928-37, with the Average for the Period

Item	Year										Totals	Average
	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937		
Total number of fires.....	4,243	6,712	6,805	6,965	6,298	6,298	5,911	4,955	5,946	5,949	60,082	6,008
Total area burned..... Acres	1,346,026	6,028,551	2,670,188	2,093,922	2,463,923	1,008,558	1,475,117	856,183	3,026,646	4,271,431	25,240,545	2,524,054
Merchantable timber—												
Area burned..... Acres	217,350	663,574	746,129	394,824	708,085	204,405	321,414	172,592	919,764	662,792	5,010,929	501,093
Timber burned..... M ft. B.M.	77,360	540,900	779,081	538,551	569,126	255,383	899,545	98,971	2,077,584	408,942	6,245,443	624,544
Timber burned..... Cords	485,817	2,178,434	2,043,142	1,241,647	2,705,374	650,318	836,554	785,552	3,524,493	4,354,820	18,806,151	1,880,615
Estimated stumpage value.. \$	610,726	2,803,952	4,452,046	1,715,113	5,063,577	1,199,305	1,754,882	1,254,981	4,646,726	2,082,018	25,583,326	2,558,333
Young growth—												
Area burned..... Acres	374,180	1,092,086	577,980	590,234	586,141	220,620	242,101	191,940	739,701	2,035,830	6,650,813	665,081
Estimated value..... \$	539,518	2,004,050	1,456,135	1,215,682	1,209,063	454,648	573,455	326,423	1,284,102	1,161,861	10,224,937	1,022,494
Cut-over land—												
Area burned..... Acres	101,297	720,912	427,285	535,418	772,625	331,614	562,446	258,964	303,348	188,385	4,202,294	420,229
Estimated value..... \$	64,169	338,434	275,578	219,776	615,605	187,303	246,031	262,725	66,253	155,276	2,431,150	243,115
Non-forested area burned.... Acres	653,199	3,551,979	918,794	573,442	397,069	251,918	349,156	232,687	1,063,833	1,384,424	9,376,501	937,650
Other property burned, value \$	147,304	301,499	506,779	363,516	264,769	162,075	149,923	355,541	84,560	151,809	2,487,775	248,777
Total damage..... \$	1,361,717	5,447,935	6,690,538	3,514,087	7,153,014	2,003,331	2,724,292	2,199,670	6,081,641	3,550,964	40,727,189	4,072,719
Actual cost of fire-fighting... \$	201,439	1,237,689	1,135,909	931,504	683,650	509,939	827,451	526,743	1,206,863	790,336	8,051,523	805,152
Total damage and costs . \$	1,563,156	6,685,624	7,826,447	4,445,591	7,836,664	2,513,270	3,551,743	2,726,413	7,288,504	4,341,300	48,778,712	4,877,871

TABLE 2

Statement of Forest Fires in Canada by Causes for the 10-year Period 1928-37

Cause	Year																				Total No. Fires	Average	
	1928		1929		1930		1931		1932		1933		1934		1935		1936		1937			No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%					
Camp-fires.....	798	19	1,347	20	1,265	18	1,481	21	1,329	21	1,202	19	1,111	19	875	18	1,185	20	1,235	22	11,828	1,183	20
Smokers.....	522	12	856	13	790	12	998	14	809	13	893	14	971	17	985	20	947	16	890	14	8,631	863	14
Settlers.....	598	14	769	11	954	14	1,097	16	1,385	22	1,265	20	946	16	1,143	23	567	9	973	16	9,697	970	16
Railways.....	989	23	1,014	15	731	11	625	9	354	6	312	5	255	4	192	4	176	3	232	4	4,880	488	8
Lightning.....	473	11	1,167	17	1,483	22	880	13	651	10	940	15	957	16	331	7	1,529	26	832	14	9,243	924	15
Industrial operations.....	159	4	222	3	137	2	133	2	91	1	94	1	198	3	123	2	132	2	190	3	1,479	148	3
Incendiary.....	226	5	387	6	522	8	674	10	746	12	511	8	349	6	400	8	608	10	383	6	4,806	481	8
Public works.....	27	1	80	1	98	1	97	1	47	1	56	1	104	2	35	1	42	1	88	1	674	67	1
Miscellaneous known.....	191	5	239	4	266	4	368	5	243	4	300	5	365	6	324	6	288	5	528	9	3,112	311	5
Unknown.....	260	6	631	10	559	8	612	9	643	10	725	12	655	11	547	11	472	8	628	11	5,732	573	10
Totals.....	4,243	100	6,712	100	6,805	100	6,965	100	6,298	100	6,298	100	5,911	100	4,955	100	5,946	100	5,949	100	60,082	6,008	100

WHITE-PINE BLISTER RUST

In the fight against the destructive tree disease known as white-pine blister rust (*Cronartium ribicola* Fischer), all currant and gooseberry bushes (i.e., the botanical genus *Ribes*) wild or cultivated, growing within infection distance of the pines must be uprooted. There is no other certain or practical way of combating it, so far as known at present.

Wind-borne spores from the leaves of the cultivated black currant can transmit the disease to healthy pines standing a full mile distant, though from any other currant or gooseberry the limit of infection is not over 300 yards. The cultivated black currant is also specially susceptible, and a much more dangerous and effective rust-spreader than any other species of ribes; hence in any rust-control project the first and most urgent step is the locating and uprooting of all cultivated black currants growing within one mile of the pines to be protected. The blister rust attacks all five-needle pines, including the white pine (*Pinus Strobus*), of Eastern Canada, and the western white pine (*Pinus monticola*) of British Columbia.

In Canada the work done so far towards combating the blister rust has been largely investigative and experimental in nature, with the object of demonstrating the feasibility, effectiveness, and average cost per acre of protecting white pine from this disease. Field-work has been carried on over a period of 4 years at the Petawawa Forest Experiment Station, with the result that practically all the better stands of white pine on the station area—some 21 square miles in all—have been given ribes-eradication treatment. These selected areas will be given a second treatment after a 10-year interval, which will serve to protect them to the end of the rotation. On this first rust-control project of this nature in Canada, the cost incurred per acre was found to agree very closely with figures received from the United States. In that country, in recent years, from 15,000 to 20,000 men have been employed each summer on rust-control projects. Thus some 20,000,000 acres of their best pine lands have now been given primary—and in part secondary—protective treatment, by ribes-eradication methods. In the eastern states it has been found that the cost of full protection runs around \$1 per acre of pine treated.

The remaining stand of our eastern white pine is largely centred in Ontario and western Quebec. Here the problem of rust control, as compared with conditions existing in the pineries of the Atlantic seaboard or the Pacific slope, is simplified by a number of factors. The Ontario climate is drier, hence the wild ribes (being water-loving plants) are fewer both in species and number per acre. The Ontario-Quebec pinery is largely unsettled Crown land, containing few or no domestic black currants. In Ontario the ribes are virtually confined to stream valleys and sweet-water swamps or to limited areas opened up by fire or cutting, and are almost absent in the naturally drained forest of normal density which covers the greater part of the land. Thus in the initial treatment, at any rate, most of the forest does not require the attention of ribes crews. Upon the whole, therefore, it is believed that the carrying on of blister-rust control work in eastern white-pine areas will be found feasible, and also comparatively inexpensive when the unique value of white pine for purposes of both utility and beauty is considered. The estimated stand of eastern white pine in Canada includes 8,000 million feet board measure of saw-material and some 10 million cords of pole timber. The present value of this stumpage, plus the potential value of oncoming young growth, is such as to render its preservation a matter of real concern to both Government and industry.

PUBLICATIONS

The following publications were issued during the year:

- Bulletin 90, Review of Reports of Growth and Regeneration Surveys in Canada, 1918-36.
- Bulletin 92, Economic Aspects of the Forests and Forest Industries of Canada.
- Circular 49, Ocean Shipment of Seasoned Lumber.
- Circular 50, Vegetable Glues for Plywood and Veneers.
- Circular 51, Comparison of the Mechanical and Physical Properties of the Heartwood and Sapwood of Yellow Birch.
- Circular 52, The Changes in Moisture Content of Yard-piled Softwood Lumber in Eastern Canada.

A French translation of Circular 47 was issued under the title, "L'Usage du bois et du charbon de bois comme combustibles à moteur."
Tree Pamphlet No. 2, White Spruce, was reprinted.

FOREST PRODUCTS LABORATORIES OF CANADA

The Forest Products Laboratories are engaged in the study of technical and scientific problems which arise in the manufacture and marketing of the products of the forest. Investigations having in view the curtailment of waste in the woods, at the mill, and in the wood-fabricating industries are of principal concern. A great deal of the work of the laboratories is, however, conducted at the request of, and in co-operation with, industry, and has to do with the solution of processing difficulties which arise in the manufacture and marketing of pulp, paper, lumber, rayon, ties, poles, piling, furniture, doors, shipping containers, planing-mill products, plywood and veneers, wood-distillation products, and other commodities derived from wood.

On account of Canada's large export market for lumber and pulp products, such products must enter into world competition. It is, therefore, highly essential that definite data be available regarding the relative properties of Canadian and foreign competing woods. It is also most important that Canada's goods be of high and consistent quality, and that they be marketed in attractive condition. For this reason, co-operation with Canadian lumber and trade commissioners in other countries, as well as with manufacturers and exporters, is closely maintained.

The laboratories have been in operation for twenty-five years. In that time a great mass of data has accumulated from their own researches as well as from those of similar organizations in other countries. This accumulation of information becomes each year more valuable, as is shown by the extent to which it is used in setting up industrial specifications and standards. One of the most notable features in the work of the laboratories during the past year has been the amount of work which officers of the staff have been called upon to do on committees of the Canadian Engineering Standards Association, Lumber Associations, the Woodlands and Technical Sections of the Canadian Pulp and Paper Association, the National Research Council, the Canadian Government Purchasing Standards Committee, the American Society for Testing Materials, the National Building Code Committee, the American Wood Preservers Association, Marine Associations, and other similar bodies.

The main laboratories are located in Ottawa, where all phases of wood utilization are dealt with excepting those problems relating particularly to the manufacture of pulp, paper, and related products. Such work is carried out in

the Pulp and Paper Laboratory in Montreal, which works in close co-operation with the Canadian Pulp and Paper Association and McGill University. A branch laboratory is maintained in Vancouver to deal with special problems that can be dealt with more competently and expeditiously than is possible in the main laboratories, on account of the long distance that intervenes.

In addition to the current work involved in looking after technical trade inquiries, attention was given to 93 specific projects. The following is a brief description of the work performed on the more important of these:

OTTAWA LABORATORIES

DIVISION OF TIMBER MECHANICS

Testing of Small Clear Specimens.—Testing was completed on the air-dry shipments of beech from New Brunswick, yellow birch from Nova Scotia, and balsam fir, jack pine, and white birch from Saskatchewan, and the results incorporated in the table giving the values for the physical and mechanical properties of Canadian woods.

Logging Sleighs.—Tests were carried out on various types of beam-runner connections to determine their strength, particularly with reference to their ability to resist side loads. A suitable dynamometer was supplied by the Woodlands Section of the Pulp and Paper Association for measuring hauling resistance. Runners of various designs were constructed, and hauling tests were made on sleighs fitted with these runners.

Eastern Canadian Spruce Structural Timbers.—The final report of this investigation, undertaken at the request of the Eastern Canadian Timber Commissioner to the United Kingdom, in co-operation with the Canadian Lumbermen's Association and the Provincial Governments of Quebec, New Brunswick, and Nova Scotia, was prepared.

Strength of Dowel Joints.—Canadian dowel manufacturers exporting to the United Kingdom supplied birch and maple dowelling for the purpose of investigating the effect of methods of gluing, moisture content, imperfections in manufacture, and other variables upon the strength of dowel joints. Tests were carried out and a new technique in dowelling based on results of tests was tried, which gave indications of proving satisfactory.

Holding Power of Nails.—From an analysis of the results of tests on cement-coated and bright nails used in the construction of wooden containers, it was apparent that their comparative holding power was greatly affected when subjected to impact forces. The tests were extended to include withdrawals under both static and impact loads.

Logging Chains.—The pulp and paper companies have selected chains, representing various periods and conditions of service, for testing. A sub-committee of three, consisting of a representative chain manufacturer and appointees of the National Research Council and of these laboratories, was appointed to supervise the actual testing of the chains.

Effect of Zinc Chloride Preservative Treatment on the Strength of Woods.—Previous investigations have indicated that in concentrated solutions zinc chloride may have an injurious effect on the resistance of wood to impact stresses. The purpose of this investigation is to determine whether the subsequent drying of timbers that have been treated with zinc chloride solution in concentrations suitable for preservative purposes has the effect of concentrating the solution sufficiently to cause a reduction in their strength. Preliminary tests indicate that subsequent drying of wood treated with zinc chloride does lower its resistance to impact-bending stresses, but does not affect its resistance to compression loads.

Cheese-boxes.—A survey was made by officials of the Department of Agriculture of the condition of cheese shipments arriving in the United Kingdom. As a result of this survey the laboratories were requested to carry out an investigation with the view of improving and standardizing the Canadian export cheese-box. Results indicated improvement in design which would strengthen the box.

General.—An increasing proportion of the work of the Division results from technical inquiries. The following list of tests carried out indicates the scope of this work: tests for the Aircraft Inspection Department of the Royal Canadian Air Force of woods to be used in aircraft construction and repair; tests on a poplar hybrid to determine its suitability for the manufacture of match-splints; tests for the Royal Canadian Mounted Police of woods for use in construction of high-speed motor boats; control tests for glue, plywood, and furniture manufacture on casein, animal, and vegetable glues; tests on corrugated fibreboard, and wooden containers for manufacturers and shippers of boxes; tests on the holding power of nails in plywood for house construction; tests to determine suitability of white birch from the Laurentians for use as spoolwood.

DIVISION OF WOOD PRESERVATION

Service Tests on Red-stained and Red-rot Jack Pine Ties Treated and Untreated.—This test covers ties installed in 1925. The test track was examined in 1937. To date the renewals of untreated ties through decay amount to 81.9 per cent for the ties infected with small pockets of red rot and 83.8 per cent for the clear ties. The creosoted ties are in good condition with no renewals for decay to date.

Protection of Timber from Marine Borers.—Untreated timber structures erected in sea-water on the Atlantic and Pacific Coasts are subject to the attack of *Teredo* and *Limnoria*. The question of the effectiveness of different preservatives in preventing attack is of importance. Creosote used 30 or 40 years ago contained a large percentage of naphthalene. Creosote produced today contains much less naphthalene. A comparison of the effectiveness of the older type of creosote, which protected timber in the older structures for many years, with the newer type now available is of value.

Test timbers treated with (1) standard creosote, (2) creosote containing 40 per cent naphthalene, and (3) an ammoniacal solution of copper carbonate and paris green, and installed in 1929 were inspected. The creosoted timbers were found to be in good condition. The timbers treated with copper carbonate and paris green had been attacked by *Teredo* but not by *Limnoria*.

Service Tests of Treated and Untreated Timber.—In continuing the work referred to in the 1936-7 report, 22 additional tests were set up. This brings the number of tests now recorded and under observation to 449.

The timber under test includes railway ties, telephone poles, piling, caps, stringers, and wharf decking. These tests embrace different species of Canadian woods used in actual service under a great variety of conditions, in areas extending from Vancouver to Halifax.

Toxicity and Resistance to Leaching of Mixtures of Preservative Salts.—Laboratory tests were started to determine the relative value of (1) zinc chloride, (2) a mixture of zinc chloride and sodium dichromate, (3) lead fluosilicate, and (4) zinc fluosilicate. Petri dish tests indicate that the toxicity of the fluosilicates is below 0.1 per cent compared with 0.35 per cent for zinc chloride.

The lead and zinc fluosilicates are of interest as they could be produced as a by-product from certain mines in Canada. Resistance to leaching of water-soluble preservatives is of importance for many conditions of service, including the use of treated timber in mines. By the use of perchloric acid, the time required to digest wood samples for analysis has been reduced from 4 hours to less than 1 hour.

Service Tests of Treated and Untreated Fence-posts and Untreated Saplings.—The treatment of the posts mentioned in the 1936-7 report was completed. Seventy-five posts, of 20 species of timber (a total of 1,500 posts) were installed for service tests at the Petawawa Forest Experiment Station. Twenty-five posts of each species are untreated, and 50 are treated with creosote by the open-tank process. The jack pine saplings under test to determine the durability of timber cut at different seasons of the year were inspected.

Laboratory and Service Tests of Sodium Fluoride and Mixtures Containing Sodium Fluoride as Wood Preservatives.—A report on the above work has been prepared. The contents include a summary of service records, tests on the zirconium-alizarin reagent for the determination of the penetration of sodium fluoride, leaching tests on sodium fluoride, and tests on the preservative treatment of 52 ties and 66 two-inch planks sawn from 33 ties, by the application of a thin paste of (1) sodium fluoride and dinitrophenol and (2) sodium fluoride, dinitrophenol, and sodium dichromate to the surface of the green timber. The timber was then close-piled under waterproof paper for 9 months, and then tests were made to determine the penetration, absorption, and toxicity of the preservative. It was found that:

- (1) For three ties examined, at least 50 per cent of the sodium fluoride applied in the form of paste penetrated more than approximately one thirty-second of an inch below the surface. The average depth of the penetration of sodium fluoride for these three ties, as determined by the zirconium-alizarin reagent on cross-sections at the centres of the ties, was 1.34 inches.
- (2) In sections cut from the centre of the ties examined, the treated area when divided into 2 or 3 layers showed considerably lower concentrations of sodium fluoride in the inner layers than was found in the outer layers. In toxicity tests the inner layers showed less resistance to decay than the outer layers.
- (3) In ties treated with sodium fluoride, dinitrophenol, and sodium dichromate the precipitation of insoluble or slightly soluble chemicals was practically confined to the outer layers, and only 26.4 per cent of the fluorine in these layers as determined by the thorium nitrate method of analysis was not removed by the leaching method of analysis. In order to determine the effectiveness in preventing decay of the precipitated insoluble or slightly soluble chemicals and such other soluble chemicals as would remain in the timber, the 2-inch planks sawn from 33 ties, mentioned above, have been set up for service tests in the yards at the laboratories.

Mine Timbers.—At present approximately \$5,000,000 worth of timber is used by mines in Canada each year and the expansion of the mining industry is accompanied by an increased demand for timber. The rapid decay of untreated timber in the deeper metal mines is of particular concern. Depth complicates so many engineering problems in connection with mining operations that this is sometimes considered to affect the decay of timber. The only factors involved, however, are the moisture content of the timber and the temperature. In the metal mines, where water sprays must be used to keep down dust, decay is accelerated by depth. In the coal mines in Nova Scotia increased depth is not accompanied by accelerated decay. Inspections were carried out in representative mines in each district. The preservative treatment of mine timbers is of more importance in the metal mines than in the coal mines. In the metal mines creosote or zinc chloride is used for the pressure treatment of shaft timbers, and zinc chloride is used for drift timbers. Three of the larger metal mines have installed the necessary equipment to treat timber with preservatives under pressure, and other mines are dipping or brushing the timber with creosote.

Most of the treated timber has been installed since 1934, and information on the effectiveness of the different treatments under the conditions found in the deep metal mines is not yet available.

In coal mines in Nova Scotia pit props treated by boiling in a 4 per cent solution of common salt have been used for many years in the return airways where decay is very rapid near the surface. These props were inspected. Reliable records on service life could not be secured. It would seem that the increased life of the peeled, salt-treated props, as compared with unpeeled, untreated props, is due as much to the peeling as to the small quantity of salt present, and sterilization by heat during treatment prevents quick rotting of props infected with interior decay. Where the increase in life is more than $1\frac{1}{2}$ times the life of untreated, unpeeled props, it would appear that conditions in that part of the mine are now less favourable to decay. Severe checking of the salt-treated props was noted in drier parts of the mines.

Minor Investigations.—The use of common salt (sodium chloride) for the treatment of timbers by steeping in saturated solutions prior to air-seasoning or kiln-drying is under test by the Division of Lumber Seasoning. Tests were carried out to determine the quantity of salt absorbed. In white pine timbers, with a surface moisture content of 17 per cent, the quantity of salt absorbed in 24 hours was negligible.

In timbers treated by dipping in creosote, it was found that the quantity of creosote absorbed by 2-inch by 4-inch timber was 70 pounds per thousand feet board measure, and one-third of this could be recovered in a ten-minute drip.

The use of creosoted white birch ties by railways in the United States was investigated with a view to advocating the use of this species in Canada.

DIVISION OF LUMBER SEASONING

Kiln-drying Studies.—A semi-commercial dry-kiln of a capacity of 6,000 feet board measure of 1-inch lumber, internal-fan cross-circulation type, was put into operation. With this kiln all sizes of lumber in amounts comparable to commercial practice may now be dried.

During the year drying charges were confined to white oak billets for gun-wheel spokes and 1-inch birch lumber. The oak billets are being dried for the Department of National Defence, and serve also as research material in determining the most efficient kiln schedules for 3-inch and 4-inch oak. The seasoning of white oak in such thicknesses constitutes one of the most difficult drying problems in the lumber industry.

Drying of 1-inch birch is of great importance to practically all wood-using industries, and to the furniture industry in particular.

Shrinkage in Commercial Sizes.—A record has been kept of progressive shrinkage of all sample pieces in kiln charges. In weighing sample boards for moisture content, measurements were made of thickness and width of the boards in order that shrinkage values for all stages of drying may be made available.

Equilibrium Moisture Content.—Periodical weighings of sample boards in the laboratory buildings were made. Work was begun in checking the moisture content of interior woodwork, including flooring and furniture, to determine the changes brought about by the varying temperature and humidity condition of buildings during the summer and winter seasons. Inquiries relating to the shrinking and swelling of woodwork following the installation of air-conditioning equipment has made this work valuable for reference purposes.

Air-seasoning Studies.—The possibility of undertaking a study of stickering hardwood lumber in air-seasoning to prevent crosser stain was considered. Hardwoods, particularly when intended for the manufacture of "blonde" or natural-finish furniture, suffer greatly through stains caused by the stickers or crossers used to separate the courses in the pile. Penetration of this stain is sufficiently deep to prevent its removal through surfacing.

Chemical Seasoning.—Seasoning of lumber with the aid of various salts has attracted considerable attention. The water near the surface of green lumber immersed in a salt solution will absorb a sufficient quantity of the salt to bring it into equilibrium with the solution. With the decreased vapour pressure of the chemical, drying of the cores of the pieces will be hastened, and surface checks and warping prevented. A beginning was made in the application of this practice to the drying of white pine deal, and this work will be continued in both white pine and 3-inch maple.

Five papers were published in trade magazines as part of a series dealing with the seasoning of lumber; these dealt with (1) Changes in moisture content of yard-piled softwood lumber in Eastern Canada, (2) Moisture content determinations, (3) Use of sample boards in kiln-drying, (4) Piling of lumber for kiln-drying, and (5) Determination of seasoning stresses.

DIVISION OF WOOD CHEMISTRY

The work of this Division was commenced on December 1. Since that time attention has been devoted principally to a study of the possible increased fields for chemical utilization of forest and mill waste.

Wood Distillation.—This industry is in operation in the Provinces of Ontario and Quebec. The value of the products has decreased from over \$7,000,000 during the Great War to a present figure of about \$900,000. This decrease is not only because the products were in high demand in war time but is owing in considerable part to the fact that several of the important products of wood distillation are now produced from other sources. A study was commenced of recent trends in the uses of products of the wood-distillation industry with a view to instituting studies that might assist in establishing the industry on a more satisfactory basis.

Alcohol from Wood Waste as Motor Fuel.—Canada, like all other countries producing large quantities of lumber and other forest products, is vitally interested in the disposal of large amounts of wood waste. In Germany today there are two commercial processes in operation for the conversion by chemical means of wood waste to sugars, which are subsequently fermented to produce ethyl alcohol. Furthermore, in Germany, France, Italy, and other countries, alcohol-gasoline blends are being used as motor fuels.

A study was commenced of available quantities of wood waste and of the information from other sources pertaining to the possibility of the production in Canada of alcohol for motor fuel from wood waste. As Canada is largely dependent on imported petroleum and gasoline, it would obviously be an advantage if a reduction in these importations could be effected by utilizing a waste product of Canadian forests.

Wood Plastics.—The ideal disposal of wood waste would be a cheap method of bonding together wood particles—say, of the fineness of sawdust—so as to produce a material that could be used as lumber is now used. This material would have to be produced at a price not very different from lumber. Since it is believed that the lignin content of woody material is the bonding substance that cements the wood fibres together, thus giving wood its mechanical properties, it does not seem that such a result is impossible. A study of available information on this subject has been carried nearly to completion.

Wooden Tanks.—A working plan has been drawn up which calls for an investigation of the resistance of the wood of Canadian species to attack by various chemical liquids. It is proposed to collect a sufficient quantity of data to draw up a list giving in order of merit species suitable for the manufacture of wooden tanks to contain liquids.

Miscellaneous problems submitted by industry include the utilization of tar obtained from a producer-gas engine operating on wood waste, mostly Douglas fir; an investigation of Douglas fir showing a mineral stain developed

in shipping; the use of producer-gas for internal-combustion engines; and the manufacture of charcoal by farmers and other small operators in small or portable kilns.

DIVISION OF TIMBER PATHOLOGY

Reference Collection of Pathological Material.—The object of this study is to assemble fruit bodies and cultures of fungi that cause stain and decay in wood, together with representative specimens of wood infected with these fungi.

The re-examination and re-arrangement of standard cultures was continued and the necessary transfers were made to maintain the collection. A refrigerator for storage of standard cultures and culture materials has been installed.

Red Stain in Jack Pine; Its Development in Creosoted and Untreated Railway Ties Under Service Conditions.—Red stain is the early stage of decay caused by the fungus *Fomes Pini* (*Trametes Pini*). This fungus attacks jack pine and other softwood trees; its continued growth reduces the firm red-stained wood to a stage known as red rot, in which condition the strength of the wood has been completely destroyed.

A study is being conducted to determine whether *Fomes Pini* continues to develop in red-stained wood and to produce the red-rot stage under conditions obtaining in railway ties in service. Forty-nine ties (20 creosoted and 29 untreated) were removed from the test track and brought to the laboratories for analysis. These ties were manufactured and tested in connection with this study in 1926. They were retested in 1927 and placed in track in 1929. A cultural analysis of the ties, involving the preparation of some 4,000 cultures, was made. The cultures were examined, and the wood-destroying fungi were segregated for further study.

Blue Stain in Softwoods.—It was reported to the laboratories that considerable losses are being experienced in the Maritime Provinces and Quebec because of the development of mould and stain in spruce, especially during ocean shipment. Thirty-two producing companies in the three provinces were visited in order to obtain a true picture of conditions. A general report on the survey with recommendations regarding stain and mould control was prepared and sent to mills and companies included in the survey.

Laboratory Tests.—The effect of santobrite in controlling sapwood stain in white pine, red pine, and birch was tested in comparison with the effect of lignasan and dowicide H. The effect in controlling sapwood stain of dowicide P (regular and special), dowicide H in different concentrations, permatox, and santobrite was tested on white pine and red pine sapwood.

During the laboratory tests *Trichoderma* sp. was found to have penetrated some sticks treated with dowicide P, and a brown mould was found developing on the piles treated with dowicide H and with santobrite. Toxicity tests are in progress to determine the resistance of these two fungi to the stain preventives under study.

General.—Specific problems presented for consideration included stain development and its control; decay in buildings; protection from decay of logs in storage; protection of pulpwood in storage, and utilization of decayed wood for pulp; decay in poles, and decay in mine timbers. Others were concerned with specific cases of decay in elm, ash, poplar, and spruce.

¹*Decay in Buildings.*—The modern practice of increasing the insulation of buildings with a view to conserving heat and reducing the consumption of fuel tends to prevent the escape of moisture from the interior. Coupled with this is the increase in relative humidity which accompanies air-conditioning, and which is recommended as a means of improving health and comfort. Moisture thus confined in a warm interior tends to pass out through the walls, but condenses

¹ A paper was published on "Decay in Relation to Conditions Induced by Improper Installation of Insulating Materials."

at that point in the wall where contact with cold outside air produces the dew-point. When this point falls in a layer of material susceptible to the attack of fungi, decay is practically inevitable.

Creosoted Hardwood Containing Rot.—Creosoted hardwood sticks that had contained rot before treatment were submitted by the Division of Wood Preservation for examination as to the viability of the rot-producing fungi. Of some 300 cultures made, all turned out blank. Thus, if the rot fungi were alive at the time of treatment, they were killed in the process of creosoting.

DIVISION OF TIMBER PHYSICS

Variability of Pulpwood.—This investigation is a study of the variation in density of the wood of the common pulpwoods, spruce and balsam fir, in softwood and mixed stands of Eastern Canada from Nova Scotia westward to Lake Superior. During the past year tests have been recorded on wood from upwards of 900 trees from 35 different stands, completing the work of recording the density of wood from 70 stands in all. The tests indicate that the average density of wood from each type of stand may be predicted from measurement of the rate of growth of the trees. As the density of wood is a good indication of the yield of pulp which the wood is capable of producing, the appraisal of density from the rate of growth offers a simple method for planning a mill's annual cut of pulpwood with improved accuracy. The findings were summarized in a paper presented at the Annual Meeting of the Canadian Pulp and Paper Association, in January 1938, and the final report of this project is in preparation for publication.

Reference Collection of Wood Sections.—Under this project microscopic preparations of the various timbers of the world are prepared and filed for permanent record. Sections of 20 species were prepared and added to the collection. Photomicrographs showing structural details of 18 foreign woods were added to the collection.

Appraisal of Foreign Timbers.—Forty boards of foreign woods were obtained for comparison with Canadian species.

Fibre Dimensions of Wood.—Wood from several native aspens (*Populus tremuloides* and *P. grandidentata*) from various sites, were tested for maximum length of fibres produced, and variation in the density of the wood. Wood of foreign species of *Populus* (*P. canescens* and *P. alba*) of local growth was also examined for length of fibres, as was the wood of a hybrid (*P. alba* × *grandidentata*). The length of fibres from the young, fast-growing hybrid was about equivalent to that of the mature *P. grandidentata* and considerably exceeded those of local *P. alba*, indicating that such fast-growing hybrids probably have fibres as long as, if not longer than, those of the parent trees.

Identification of Wood Material.—Samples of timber and pulpwood were received for identification from dealers in wood, pulpwood operators, paper mills, engineers, contractors, Government departments, and wood-users in general. Many samples of foreign timbers were submitted for appraisal of their quality and their suitability for specific uses.

Examination of Defective Timber and Timber Products.—Articles of furniture, sash, doors, and other manufactured products which had shown deterioration were submitted for an opinion regarding the reason for failure.

An address on "The Structure and Identification of Wood" was given to lumbermen in Toronto, as one of a course of lectures under the auspices of the White Pine Bureau.

MARKETS AND EXHIBITS

Survey of the Uses of Wooden Tanks in Industry.—This survey comprised the visiting of a hundred and forty industrial plants in thirty separate industries,

in order to obtain information on present trends in tank usage, records of different wood species as containers for different chemicals at various temperatures, and the position of Canadian woods in the matter of tank construction.

The project originated in an increasing number of inquiries, particularly from overseas, concerning the suitability of certain Canadian woods for exacting tank purposes.

Markets.—Inquiries usually pertain to sources of supply of lumber and lumber products, grades of different species, possible products from available woods, etc. Inquiries emanate from trade commissioners, provincial governments, boards of trade, industrial commissions, and all branches of the lumber industry.

Typical examples of problems submitted follow: Poplar plywood in quantities of 500,000 superficial feet for the South African market; possible wood-working industries to use white birch and poplar; the properties, uses, and origin of oriental walnut and pecan; the most suitable woods for and method of construction of bicycle tracks; sources of hickory billets for ski manufacture in China; suitable wood in Fort Fraser, B.C., district for lining of wells; comparative value of Douglas fir and southern pine for tanks to contain sulphuric acid of a strength of 3 to 8 per cent at an average temperature of 160°F.; species and country of origin of woods used by a firm in Eastern Canada in the manufacture of doors exported to the United Kingdom under Empire tariff preference.

Exhibits.—On request, an exhibit showing recommended practice in various phases of wood utilization was displayed at the annual meeting of the Ontario Retail Lumber Dealers Association in Toronto in February 1938. Exhibit material was supplied the Canadian Pacific Railway for display in Western Canada, Toronto, France, and Belgium. An exhibit was loaned to the White Pine Bureau of Toronto for display at the Produced-in-Canada Exhibition, Montreal. A pulp and paper exhibit was prepared at the request of the Exhibition Commission of the Department of Trade and Commerce, for display in the Paris Exhibition of 1937.

WOOD UTILIZATION

Use of Yellow Birch and Hard Maple for Spokes and Felloes of Artillery Wheels.—Experimental artillery wheels made of yellow birch and hard maple were constructed under the supervision of these laboratories in 1934, and placed in service by the Department of National Defence. Some of these wheels were given a preservative treatment, and others were not. Examinations which have been made at intervals show that up to the present time no defects of sufficient importance to impair the strength of the wheels have developed.

The Use of Wood for Fuel.—The purpose of this project is to determine whether it is possible to increase the use of wood for fuel in Canada, thereby improving wood utilization and the practice of forestry, and at the same time to enlarge the market for a domestic product that at present competes with imported fuels. The investigation has been divided into two major sections: (1) a study of wood-burning equipment and (2) a survey of present conditions in the wood-fuel trade.

In Canada, relatively little attention has been given to improved design of wood-burning equipment as compared with the advances made in other lines of heating apparatus in recent years. Accordingly, a number of European wood-burning stoves and hot-water furnaces of recent design, as well as several types of Canadian wood-burning equipment, were obtained. Arrangements were made with the Fuel Research Laboratory to conduct tests on these in order to determine their relative efficiency. The investigation was not completed at the end of the year, but tests indicated that European stoves embodied certain features of construction that permit better control of the rate of burning than do many Canadian stoves.

A survey of the fuel-wood trade in Quebec and Ontario showed that woodlands in the thickly settled areas are being impoverished through over-cutting, but that the great densely forested areas are not being cut as extensively as their best interests require.

General.—A large number of requests for information regarding the use of wood as a fuel were dealt with, as well as some concerning the uses to which sawdust and shavings can be put, especially for house insulation.

Lumbermen's Class.—In order to promote co-operation between the laboratories and industry, a 4-day course of lectures and demonstrations was given for members of the woodworking industries. Thirty-eight representatives attended the course, from different branches of industry.

Committee Work.—Members of the staff served on the following: Logging Chains and Wood Poles Committees of the Canadian Engineering Standards Association; the National Building Code, Advisory, Administrative, Construction, and Fire Regulations Committees of the National Research Council; the Shipping Containers, Timber, and Fibre Containers Committees of the American Society for Testing Materials; the Permanence of Paper, Chemicals, Creosote, and Paints Subcommittees of the Canadian Government Purchasing Standards Committee; the Logging Sleighs Committee of the Woodlands Section, Canadian Pulp and Paper Association; and the Wood in Pulp and Paper Mills Subcommittee of the Engineering Committee of the Canadian Pulp and Paper Association.

PULP AND PAPER DIVISION (MONTREAL)

The chief activities of the Division during the past year were the study and development of methods for the analysis and testing of pulp and paper; mechanical pulping studies; chemical pulping studies; printing studies; fundamental scientific studies; the calibration and inspection of instruments for testing pulp and paper; routine testing and analysis of samples of woods, pulps, and papers submitted by commercial firms and individuals; and the furnishing of information on a variety of problems related to the manufacture of pulp and paper. A detailed description of the activities of the Division follows:

METHODS OF ANALYSIS AND TESTING OF PULP AND PAPER

The final design of the Larocque oil-absorbency tester was approved, and arrangements made with the Canadian Pulp and Paper Research Corporation and a Canadian manufacturer for its manufacture and distribution in Canada and elsewhere. Work on this instrument has been completed; several commercial instruments have been calibrated and are now in use in industrial establishments.

Preliminary results from the use of the Steele reflectance tester indicate that it gives reliable determinations of contrast ratio and printing opacity, but that its light source is not satisfactory for measurement of colour.

In response to requests from manufactures of paper board, studies have been undertaken to determine what properties of pulps are desirable for folding box-boards and also what is the relation between yield and finish of different boards. While a satisfactory specification for sulphite pulp for folding box-boards has not yet been defined, it would appear that degradation of fibres by over-cooking should be avoided. The correct relation between pulps used for liner and filler stocks, respectively, may be of greater importance than the quality of either alone, as satisfactory folding was found to depend upon buckling and separation of the inner plies of the fold. Moisture content and the atmospheric humidity in the folding-box plant exert an important influence on folding operations. Present indications suggest that the glossiness of boards may be a better measure of finish than smoothness tests. Finish is an important factor in grading boards.

The experimental work on permanence of paper for government use has been completed. A report is in course of preparation for submission to the Subcommittee on Paper Quality of the Canadian Government Purchasing Standards Committee.

MECHANICAL PULPING STUDIES

A suggestion from the industry that the quality of groundwood pulp might be maintained at a more uniform level if the grinding were carried out at a constant rate was studied. The quality of groundwood pulp produced at a fixed rate of grinding was found to depend upon the condition of the pulpstone surface. The rate of production of groundwood from a given stone face under standard conditions of wood, pit temperature and consistency, grinding pressure, and surface speed can be used as a measure of the sharpness of the stone face, and has been termed the "sharpness factor." The relation between the sharpness factor and groundwood quality has been determined over a wide range of grinding rates. This information should be useful in the control of commercial grinding operations.

A study has been made of the behaviour of longleaf, loblolly, and slash pines, respectively, when ground on a miniature grinder. The pulps exhibited physical properties very inferior to those obtained from spruce.

Investigation showed that freshly sharpened artificial pulpstones produce inferior pulp, but as the stone face wears the pulp quality improves. Reversing the direction of rotation of the stone causes the pulp quality to fall to its initial value.

The loosening of fibres by the explosive action of steam raised by heat generated from grinding friction has not been established, but the temperature of the stone face plays an important part, high temperatures giving long-fibred, strong stocks. Wood softened with hot water and ground while hot gives much greater strength, freeness, and fibre-length than either untreated wood or softened wood that has cooled. Mild chemical treatment gives even more striking results, suggesting that substantial improvements in mechanical pulping methods, both as to quality of product and cost of production, are possible of attainment.

CHEMICAL PULPING STUDIES

At the request of the Pulp and Paper Industry a comparison between domestic and foreign sulphite pulps was carried out at the Division. Foreign pulps have been favoured as against Canadian pulps by some paper-makers, and it appeared of interest to ascertain to what extent this prejudice was founded on fact. Although a few foreign pulps appear to exceed Canadian pulps in quality, there would seem to be no reason why domestic mills should not be capable of producing pulps that can compete with most of the foreign pulps on the open market.

A comprehensive study has been made of the effect of variations in the composition of sulphite liquor on the rate of cooking and the yield of pulps. Both calcium and magnesium base liquors were examined. An important practical conclusion from this work is that the bleach requirement of pulp depends only on the time and temperature of digestion and the concentration of free sulphur dioxide in the cooking liquor. On the other hand, the yield of pulp does depend somewhat on the concentration of lime or magnesia in the liquor as well as on the other factors mentioned. Magnesia-base liquors were found somewhat more effective as pulping agents than calcium-base liquors, a factor that has some bearing on current proposals for the use of magnesia-base liquors in Canadian mills. As in the case of sodium- or ammonium-base liquors, a recovery problem would accompany the decision to use a magnesia-base liquor.

Variations in the rate of sulphite pulping caused by varying the temperature of the reaction over a range from 50°C. to 130°C. have been accurately determined. Contrary to established opinions, pulping goes on at a measurable rate at temperatures below the boiling point of water; this accounts for some empirical mill practices.

Wood has been pulped by a new process involving both chemical and mechanical treatment. The yield of pulp varied from 57 per cent to 90 per cent, whereas the yield in sulphite pulping seldom exceeds 50 per cent of the weight of wood pulped. Many of the pulps were equal or superior to sulphite pulps in strength, and all were superior to mechanical pulp. This method of pulping should not be expensive to operate, and by its large saving in wood cost offers correspondingly great economies in the manufacture of certain types of paper.

PRINTING STUDIES

A technique was developed for evaluating the printing quality of paper by means of a proof press under standard conditions, and it was shown that a suitable combination of smoothness, softness, and oil-resistance tests could be used to control the printing quality of paper. A method was developed for measuring wettability to oil of paper. This is an important and hitherto undemonstrated factor affecting the drying of printing ink.

The mechanism of the drying of printing ink on paper was studied. The influence of calendering, furnish, wet-pressing, and sheet density was determined. A new hypothesis as to the mechanism of drying of printing ink on paper was formulated.

Further experience with the oil-resistance test both at this Division and in commercial establishments indicates that this test gives a reliable indication of the resistance of paper to printing ink.

Existing methods for estimating the moisture content of paper were subjected to critical examination and found to be unreliable. The multitude of the errors introduced by variations in atmosphere humidity and drying temperature were determined in the case of board paper. The economic significance of this work may be judged from the daily requests for information received from paper-makers in Canada and elsewhere.

FUNDAMENTAL SCIENTIFIC STUDIES

Dry cellulose was found to pick up less moisture from water vapour than is retained by saturated cellulose allowed to dry out in the same atmosphere. Small amounts of air did not affect the result. This is of importance in vacuum-drying of paper-insulated cables.

The heat of mercerization of various pulps has been measured and correlated to other pulp properties. The heat of wetting of special pulps obtained from the Forest Products Laboratory at Madison, Wisconsin, has been determined. This series of investigations is of importance in evaluating the resistance of paper to ink in printing.

The dielectric constants of pure cellulose and sulphite pulp have been measured. This work is of value in the control of paper-making operations and in the manufacture of insulated cables for high-tension circuits.

Vapour pressure of the system magnesium oxide-sulphur dioxide-water have been measured over a concentration range 0.025 per cent to 1.25 per cent magnesium oxide and up to 6 per cent sulphur dioxide over a temperature range from room temperature to 130°C. This work enables calculations concerning magnesium-base cooking to be made in the same manner as is now possible for lime-base cooking.

An experimental technique has been devised for measuring the density of pulps in a series of liquids ranging from water to benzene in which pairs of adjacent liquids are miscible, without intermediate drying of the cellulose. This is of importance in predicting the behaviour of paper made in water and immersed in some other fluid for processing or protection.

The specific heats of pulp containing various amounts of absorbed water have been determined by a new method. An adiabatic technique was developed for the measurement of heat-insulating properties of paper, and proved to be highly successful for this purpose. The boundary effect was investigated; it was shown that the heat conductivity depended on fibre distribution in the paper. The influence of adsorbed water up to 15 per cent was determined, and it was shown that this adsorbed water had surprisingly little effect on heat-insulating properties, a fact of interest to the manufacturers of insulating boards. It might prove of interest to extend these measurements to insulating boards impregnated to protect them against bacterial action, the attack of termites, and fire.

GENERAL

Testing of Pulp and Paper.—Four thousand two hundred and twenty-one tests were made during the year.

Industrial Investigations.—An industrial investigation of pulping fruit-tree prunings was carried out by a paper consultant using the semi-commercial equipment of the Division.

The Pulp and Paper Industry in the Southern United States.—A number of woods operations and pulp and paper mills in the southern part of the United States of America were visited. Present indications are that this development is unlikely to affect adversely the manufacture of newsprint in Canada, although some temporary dislocation of markets for chemical pulps and paper board may persist during the prevailing business recession in the United States.

REPORTS

The following articles were prepared and appeared in technical and trade publications:

Pre-treatment of wood in aqueous solutions.

A study of cuprene formation.

The heat content of water sorbed on cellulose.

The Johnston Screen Classifier, action on various pulps.

The oil-paper relationship in the printability of paper.

The measurement of the moisture content of pulp and paper and its relation to printability.

The pulping of hardwoods by the sulphite process. I. A survey of the literature.

An investigation of process variables using a miniature pulp-grinder.

Hysteresis of water vapour on cellulose—influence of air.

The heats of wetting of cellulose by alcohols and their aqueous solutions.

The effect of sulphite liquor composition on the rate of delignification of spruce wood and yield of pulp.

The delignification of wood by strong alkaline solutions.

Data for grinding control.

Analyses of the grinding action.

Laboratory methods for measuring the printing quality of paper.

General laws governing the oil-resistance of paper in printability.

VANCOUVER LABORATORY

Changing conditions in the export markets for British Columbia timbers and extension of these markets have affected the nature of the work of this laboratory. These continue to stress the importance of western hemlock and secondary species; new uses for wood products; market extension, particularly as affecting lower grades; and waste utilization, but in addition have raised many questions affecting problems arising in export markets. Progress made during the year on projects and other activities of major importance is indicated in the following report:

DIVISION OF TIMBER MECHANICS

Standard Tests for Mechanical and Physical Properties.—Tests were completed on two shipments of green Douglas fir of the Interior wet belt and the Mountain types, and tests on one shipment of green western white pine are in progress. Studies were continued to determine whether a definite relationship exists between rate of growth, specific gravity, and strength of Sitka spruce, which might be incorporated in specifications for aeroplane timber. Investigations were completed for Sitka spruce and Douglas fir on the effect of the shape of the test-piece upon its strength in compression parallel to the grain, under the standard Royal Air Force specifications. Results showed the hour-glass test-piece to have approximately 11 per cent greater average strength for green material of both species and 7.3 per cent and 1.7 per cent greater strength for air-dried Sitka spruce and Douglas fir, respectively.

The Influence of Coloration Upon the Strength of Douglas Fir.—Tests were completed upon one shipment of stained Douglas fir from the Fraser Valley in an effort to determine whether the stain, sometimes found in Douglas fir heartwood, has any effect upon the strength of the wood.

The Strength of One-piece and Two-piece Box Ends.—Preliminary tests have been made to determine the most satisfactory manner of preparing one- and two-piece box ends for testing their relative suitability for box construction.

Tests on Two-ply Wood Springs for Use in Apple Boxes.—Based upon the success attained from the preliminary tests carried out in 1937 to determine the possibility of devising some type of wooden spring which will keep apples tight in the box at all times, plans have been made for a further study of the problem.

The Strength of Glued Joints.—Tests were made on glued-up door sections, manufactured in New Zealand, having western red cedar cores, in an effort to determine the cause of failure after manufacture. Tests were also made on glued joints of red alder, as a result of which trouble experienced by some furniture manufacturers has been corrected.

Tests of Structural Timbers.—All structural-size timbers previously tested were re-graded on the standard specifications of the Canadian Engineering Standards Association covering structural timbers.

Miscellaneous Tests.—Many minor investigations were made to meet demands for special information, some of the more important including tests on Sitka spruce aeroplane material for the Department of National Defence; western hemlock ladder stock; sections taken from fractured diving boards of Sitka spruce; scaffold plank; the effect of a new pattern of tie-plate on creosoted ties; tests of barrel bungs to determine possible substitute species; the holding power of roofing nails in Douglas fir.

One hundred and sixty customs tests, covering a wide range of materials of construction, were carried out.

Assistance was given the Department of Chemistry of the University of British Columbia in preparing sections of a Douglas fir pile for leaching tests. This had been treated with a special soluble toxic salt by an adaptation of the Boucherie process.

DIVISION OF TIMBER PRODUCTS

Seasoning

The Absorption of Moisture by Seasoned Lumber in Storage and in Service.—A study was initiated on the absorption rate of British Columbia commercial hardwoods in unheated storage, and of Western hemlock 3 and 4 inches thick. Three hundred fire-hazard sticks were prepared for the British Columbia Forest Branch.

Shipment of Lumber: Factors Affecting Quality and Moisture Content.—Studies of the effect of exposure to rain on seasoned lumber awaiting shipment indicate that planed lumber is more affected by rain than is rough lumber. Selected shipments of green Douglas fir and Western hemlock lumber from British Columbia were examined upon the dock and in storage at London and Liverpool, and results indicate that the method of shipment raises problems that will require careful study. An investigation of the effect of type of case (whether wood or fibre) on the rusting of canned goods during shipment was initiated. Co-operation was continued with the Research Committee of the Marine Underwriters Association of British Columbia.

Air-seasoning.—A study was initiated to determine the feasibility of partially seasoning green Western hemlock lumber in carrier loads, while awaiting shipment, by separating the courses with laths to permit air circulation. The test piles of 2-inch, 3-inch, and 4-inch hemlock erected for the study of the air-drying rate of that species during the winter months were dismantled and test material analysed. Douglas fir, specially selected for durability studies at the Forest Products Research Laboratory, England, was air-seasoned and conditioned prior to shipment.

Kiln-drying of Lumber.—Investigation of the effect of rate of circulation on the kiln-drying of lumber was continued, eight charges of 1-inch Western hemlock being dried in the experimental kiln. Four special charges of 2- by 4-inch Western hemlock were dried in the experimental kiln, to determine the feasibility of surface drying as a means of improving its appearance and shipping condition. Three special runs were made in a small kiln to determine a satisfactory method of drying 2-inch air-dried Sitka spruce to a moisture content of 8 to 10 per cent. One charge of 1½-inch Western hemlock door stock was kiln-dried to determine drying conditions necessary to bring it to a uniform moisture content for doors for exhibit in the United Kingdom. After discussion of the seasoning of Western hemlock with local lumbermen, a visit was paid to certain kiln-installations in Washington, Oregon, and California, in order to determine if seasoning methods used in those areas could be satisfactorily applied to this hemlock problem in British Columbia. An illustrated report embodying the information assembled was prepared and distributed to hemlock manufacturers as a basis for further discussions.

The second of two runs of 4- by 4-inch plain oak was dried in the experimental kiln. A co-operative study was carried out with a local mill to determine the causes of heavy losses during seasoning and planing of wide Douglas fir clears.

A 6-day course in kiln-drying was held at the laboratory during March, with twenty-three lumbermen in attendance.

A few of the more important consultation visits made to assist sawmills and wood-working factories with their seasoning problems included:

- (a) Drying 3-inch by 3-inch Douglas fir to a moisture content of 6 per cent;
- (b) Kiln-drying air-dried cottonwood for furniture cores;
- (c) Seasoning red cedar for use as door cores in Australia;
- (d) Conditioning yellow cedar Venetian-blind slats;
- (e) Kiln-drying red alder for furniture manufacture and for export;
- (f) Kiln-drying air-dried spruce for special cheese-boxes;
- (g) Piling and drying short Douglas fir flooring blocks;

- (h) Minimum moisture content commercially feasible for 3-inch to 4-inch pine pattern stock;
- (i) Cause of defects and degrade in various charges of lumber.

Kiln-drying Shingles.—Periodic examinations were made of 26 panels assembled in 1929, to determine the effect of kiln-drying upon the serviceability of Western red cedar shingles.

Tests of the effect of drying red cedar 5 X shingles, piled loosely on racks, indicate that more rapid drying can be obtained than when the shingles are tightly bundled, but that this is accompanied by degrade due to twisting and cupping.

Moisture Content of Western Red Cedar Shingles in Service and Its Relation to Roof Decay.—Moisture determinations were made to test the effect of different weather conditions on shingles in service, selected shingles in the eight prepared panels being used. A panel was set up to test the effect of weather and moisture content changes on a thin copper surface obtained by use of a special copper paint on red cedar shingles.

Effect of Seasoning on Insects Injuring Lumber.—A special kiln-run was made on a 10-inch by 16-inch low-grade swamp oak timber to determine the possibility of using kiln treatment to kill insects infesting it and at the same time to measure the rise of temperature within the timber.

Application of Chemical Seasoning to British Columbia Woods.—In order to study the effect of unheated sodium chloride on the seasoning of 3-inch and 4-inch Western hemlock, test piles covering three conditions have been erected: (a) hemlock soaked in a concentrated salt solution prior to air-seasoning, (b) sprinkled with salt and bulk-piled prior to air-drying, and (c) sprinkled with salt during piling for air-drying.

Utilization

Sawmill Waste and Its Utilization.—A study of available information was made and a memorandum prepared for the use of local lumbermen, outlining recent developments in wood-waste utilization and their possible effect on mill-waste utilization in British Columbia.

The Use of Wood and Charcoal as Motor Fuel.—A complete producer-gas plant was donated to the laboratory and has been installed on a gasoline motor for experimental and demonstration purposes. Marked interest has been shown in this subject during the year; and one sawmill is now driven by producer-gas power. A local plant is manufacturing charcoal-gas producers and uses one such unit for operation of a locomotive crane.

Utilization of British Columbia Hardwoods.—Information was assembled on the seasoning, manufacture, and marketing methods applied to red alder, broad-leaved maple, and Western birch by sawmills and furniture factories producing and using these hardwoods in British Columbia. The possibility of obtaining madrona and cascara for certain uses in the United Kingdom was investigated.

Wood Pathology and Wood Structure

Streaky Heart of Douglas Fir: Its Relation to Physical Properties and Commercial Value.—Studies were continued to determine the cause of colour in the heartwood of Douglas fir and its possible influence on strength. Cultures were also made to determine the possible relationship between coloration and wood-inhabiting fungi.

Microscopic Anatomy of Important Woods.—Species identification was made of sixty-nine wood specimens and a number of sawdust samples. Twenty-two microscopic slides of the rarer imported woods were added to the reference collection.

Relative Durability of British Columbia Woods.—A careful examination, to ensure its absolute freedom from decay, was made of each piece in a shipment

of Douglas fir sent to the United Kingdom for comparative-durability studies to be carried out by the Forest Products Research Laboratory at Princes Risborough, England.

A study was made of the decay-resistance of a special product manufactured from Sitka spruce excelsior and Portland cement. The annual inspection of durability installations, in connection with the survey of wood structures in service, was made.

Reference Collection of Pathological Material.—Several new specimens of wood-destroying fungi were obtained from the Forest Products Laboratory at Madison, Wisconsin, U.S.A. Ninety-four specimens were examined to determine the extent and cause of decay and defects of an unusual character.

GENERAL

Some of the more important problems of a general nature, not coming within the scope of regular project work, that were submitted to the laboratory for special attention, are noted below. The relative merits of certain British Columbia woods for butter boxes has become a problem of major importance, because of developments in Australia affecting supplies of suitable shock, as a result of which the market for hemlock has expanded rapidly; at the request of several local producers, assembly has been made of a large amount of information relative to this problem. The rapid extension of the market for British Columbia woods to include tropic areas has brought new problems to producers; one of marked importance is the destruction of wooden buildings by the ravages of termites. At the request of the British Columbia Lumber and Shingle Manufacturers Association a preliminary draft of a proposed circular, giving an assembly of information on the subject, was prepared, in co-operation with a representative of the Entomological Division of the Science Service of the Dominion Department of Agriculture.

Information was supplied to a representative of the National Research Council regarding the properties of yellow cedar that affect its value in the manufacture of battery separators.

Following several requests for information as to the efficacy of dynamiting in the control of teredo attack on piling, a survey of available information indicates that charges fired at suitable intervals will reduce the intensity of attack. However, it cannot be considered as an efficient means of control.

A set of 23 display panels of the more valuable Malayan timbers was added to the laboratory's collection.

Assistance was extended to the manager of the Vancouver Exhibition Commission in planning the layout of a display of forest products for the Vancouver Exhibition.

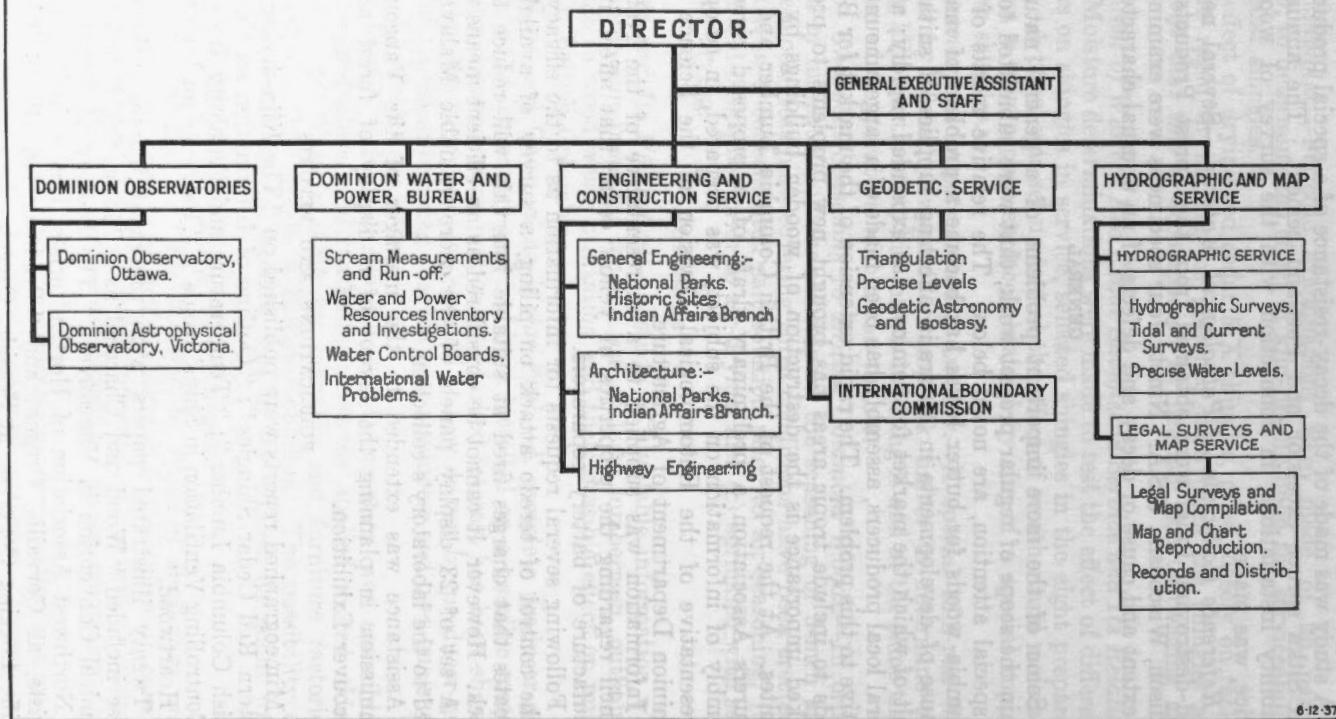
PUBLICATIONS AND REPORTS

Mimeographed reports were published on "The Kiln-drying and Storage of Western Red Cedar Shingles"; "Outline of Information on the Kiln-drying of British Columbia Lumber"; "Temperature and Humidity Instruments for Use in Controlling Ventilation in Ships' Holds"; "Iodine as an Indicator of Sapwood and Heartwood."

Twenty illustrated papers were presented before various organizations. These included "Wood and Charcoal as a Motor Fuel," before the Canadian Chemical Convention in Vancouver; "The Biology of *Trametes Pini*," before the Northwest Association of Horticulturists, Entomologists, and Plant Pathologists, at Corvallis, Oregon, and "Producer Gas Possibilities," before the Pacific Logging Congress, at Seaside, Oregon.

Eight special reports were prepared for different lumber manufacturers' organizations and for laboratory reference; three articles were published in trade journals, and a review was made of a bulletin for the British Columbia Lumberman.

SURVEYS AND ENGINEERING BRANCH



Organization Chart, Surveys and Engineering Branch.

SURVEYS AND ENGINEERING BRANCH

J. M. WARDLE, DIRECTOR

The Surveys and Engineering Branch undertakes certain scientific survey and engineering work throughout the Dominion that is a responsibility of the Department of Mines and Resources. The activities of the Branch cover a wide range and, for convenience and efficiency, the Branch is divided into six units or services. These are as follows: the Dominion Observatories, the Dominion Water and Power Bureau, the Engineering and Construction Service, the Geodetic Service of Canada, the International Boundary Commission, and the Hydrographic and Map Service, which comprises two main divisions, namely the Hydrographic Service and the Legal Surveys and Map Service.

The activities outlined above are undertaken by the various services through funds provided in the votes of the Surveys and Engineering Branch, the expenditure provided in such votes for the fiscal year under consideration being \$1,768,230.65. A large amount of engineering work for other branches was undertaken by the Engineering and Construction Service, necessary funds for such work being made available through transfers. The following schedule gives the totals of transfers made to the Surveys and Engineering Branch from other branches:

*To Engineering and Construction Service
from*

	Regular Votes	Special Votes	Total
Lands, Parks, and Forests.....	\$521,152 11	\$487,332 33	\$1,008,484 44
Indian Affairs	20,073 77	52,139 72	72,213 49
Department of Labour.....	....	29,954 64	29,954 64
	\$541,225 88	\$569,426 69	\$1,110,652 57

*To Legal Surveys and Maps
from*

Indian Affairs	\$ 5,727 98	\$ 5,727 98
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DOMINION OBSERVATORIES

The Dominion Observatory, Ottawa, and the Dominion Astrophysical Observatory, Victoria, conduct scientific research in astrophysical and allied sciences, comprising such subjects as radial velocities of stars and orbits of spectroscopic binary stars, studies of stellar spectra and problems connected with variable stars, the physical nature of novae, the rotation of the galaxy, and the distribution of matter in interstellar space.

At Ottawa, research in purely scientific work also includes the measurement of star positions, problems connected with solar rotation and wave-lengths, paths followed by earthquake waves and their bearing on the constitution and nature of the earth's crust, and the laws governing terrestrial magnetism and gravity throughout the country. In problems of everyday application, investigations and services include the furnishing of basic time within a small fraction of a second for the whole of Canada, the correlation of cycles of variation in solar radiation with weather conditions and with fluctuations in animal and vegetable life, studies of the effects of Canadian earthquakes and their relation to quake-resistant construction in seismic areas, accumulation of data on the variation of the compass across Canada for surveys, navigation, etc., and determinations of the applicability of several of the newer methods of prospecting to conditions in Canada. Many of the problems are international in character, and are carried on as co-operative investigations with other observatories and scientific institutions, or through various scientific unions and societies.

DOMINION OBSERVATORY, OTTAWA

Observing conditions were considerably below normal, and, consequently, the preparation of data overdue for publication was considerably advanced. The annual inspection of the Observatory at Victoria and outside magnetic and seismic stations was made by the Dominion Astronomer.

The Observatory was represented, and papers presented, at the annual meetings of the Royal Society of Canada, the Royal Astronomical Society of Canada, and the Eastern Section of the Seismological Society of America. A conference of the officers of the Seismological Society of America was held in Washington, and attended by an observatory official. The Dominion Astronomer was elected a Vice President of the American Association for the Advancement of Science and Chairman of the Section of Astronomy, and collection of papers, preparation of program, etc., were carried out for the meeting of the Association at Ottawa, in June 1938.

A short program of meteor observations was carried on in August as weather conditions permitted. A photographic record of one bright meteor was obtained, and its position computed.

Lectures, both technical and popular, were given to various societies and clubs, and a university lecture was delivered before the Science Association of Dartmouth College, Hanover, N.H., on "Earth Structure as Revealed by Seismology." Also a number of articles were written for journals, including a paper on "Novae" for the Civil Service News, and one on "Meteor Plate Constants" for the Journal of the Royal Astronomical Society of Canada. As usual, the services of an astronomer were requested and provided for summer camps, six of which were visited during July and August and about 800 young people given instruction on general astronomy. In continuation of previous practice, the Observatory was open to visitors each Saturday evening, with several members of the staff in attendance to answer questions of general interest concerning astronomy and geophysics, and to give short lectures on one or another of the activities of the institution. Numerous day-time visitors, including several advanced school classes, were given information and instruction on the time service system, solar physics apparatus, and seismological, magnetic, gravitational, and other equipment.

Dr. C. L. Tung of China, Ph.D. of Cornell University, spent most of October and November at the Observatory studying current routine and investigational methods undertaken in astrophysical and geophysical research work. During January and February, three post-graduate students of the University of Toronto were given 6 weeks of practical training in seismology, gravity, and geophysical prospecting, with study of seismographs, pendulum apparatus, and torsion balances. As the students in return assisted in routine work and computations, the arrangement was mutually beneficial to all concerned.

In position astronomy, fundamental observations of star positions with the meridian circle were continued on the Backlund-Hough star list. Owing to unfavourable weather, reduction of the observing personnel, and other contributing factors, an unavoidable curtailment of the average number of star observations occurred, and only 1,613 readings for right ascension and declination of stars were obtained, as compared with 2,647 during the preceding year. In addition, 175 observations of the sun and planets and 645 readings of instrumental constants were made. The computation of these observations is being carried on as rapidly as possible. Observations for the determination of correct time were made with small reversible transit instruments on 99 nights. From the reduction of these observations, clock corrections and rates for the three primary sidereal clocks were obtained, the clocks being compared twice daily. The new time signal clock, designed by the Dominion Astronomer and built by the

Observatory instrument-maker, was put in operation and has provided a considerable improvement in the time service system. A duplicate is being built to provide uninterrupted service in the event of accident, repairs, additions, or alterations.

The synchronized time service in the various Government buildings in Ottawa has been maintained satisfactorily and is being extended to new buildings. At the Observatory, in addition to the minute dials, the various chronographs, relays, seconds, dials, and seismograph shutters used for timing purposes have been synchronized. Correct time has been given by telephone, and, when requested, the clock beats were put on the line. Time signals were sent continuously over the branch lines of the Canadian National and the Canadian Pacific telegraph companies. As formerly, the half minute beats of the Shortt primary clock were transmitted over special lines to the Engineering Branch of the Canadian Broadcasting Corporation and to the Monitoring Station of the Department of Transport for standardization of radio frequencies, and the rates of their crystal clocks were made available to the Observatory. Wireless time signals were transmitted directly from the Observatory on 3330 and 7335 kc. continuously, and through station CBO on 880 kc. each day at noon, except Sunday. Wireless time signals were received daily from Bordeaux, Rugby, Nauen, Monte Grande, Washington, and Rio de Janeiro. The times of reception of these signals for each month were forwarded to the International Time Bureau at Paris, and to other co-operating observatories.

During the year research work was carried on to improve the methods of receiving the time signals and of modulating the tone and increasing the strength of transmitted signals, so that they may be more readily accessible for scientific work. As in previous years, clocks, chronometers, watches, and other timing mechanisms were cleaned, repaired, and rated for the Observatory and other branches of the Department, as well as for other Government departments. Tables of the times of sunrise and sunset, moonrise and moonset, phases of the moon, and differences of standard time, were prepared and distributed on request.

In solar spectroscopy, 44 nine-strip spectrograms of the sun's centre, mid-way, and limb points, with iodine absorption spectrum, were obtained. The solar rotation observations of 1911 and 1914 at $\lambda 5600$ were re-examined to determine and eliminate the systematic micrometer-oil errors in the early measurements.

Sunspots reached an abnormally high maximum in July 1937, the 58 solar photographs taken during the year recording some very large groups. The effects of the sunspot cycle on many phenomena investigated at the Dominion Observatory in past years were outlined in a comprehensive article on Sunspot Influences, and the subject was discussed at two astronomical society meetings. Measurements of five tree-sections from Newfoundland were made to determine the influence of the sunspot cycle. The mean 11-year cycle in precipitation at three prairie stations was brought up to date; and also, on request, the mean effect associated with the sunspot cycle was determined in the precipitation of three Saskatchewan stations.

Apart from a few spectrograms of zeta Aurigae obtained early in the year, the observational work with the 15-inch equatorial was restricted to the photoelectric photometer. Observations were obtained of alpha Virginis, beta Lyrae, eta Aquilae, and zeta Geminorum. The light curve of zeta Geminorum is of special interest as the recent curves indicate a shift in phases compared with those previously recorded here. Tests were carried on throughout the year at various hours of the day in an effort to determine the cause of the variability of the dark current in the photometer. Results show this to be chiefly a temperature effect, the dark current increasing very rapidly when the temperature rises above 20°C . The complete optical system of the telescope was removed

and thoroughly cleaned. A new section was built for the spectrograph temperature case, the heating circuits were carefully overhauled, and several improvements made in arrangement and control. Mention was made in last year's report of an attempt to obtain lines of sharper focus with the Moll microphotometer. The adjustment of the lens was found to be inefficient and has been changed to allow the lens to be placed much nearer the recording drum. As a result, tracings are much superior to any previously obtained. Tracings made include those of Nova Lacertae, zeta Aurigae, and a series from spectra of different types. Some measurements were made from these and an attempt made to obtain radial velocity measures from the tracings. Although quite impractical where the values are small, the method appears to give fairly reliable results for the large velocities encountered in novae. A chart showing the position of Finsler's comet and a descriptive note were prepared for local distribution.

Observations with the photographic equatorial were continued on Cepheid variable fields both for the determination of magnitudes of comparison stars and for the determination of light curves. Some eighty plates were obtained of the following fields—RS Bootis, R Coronae Borealis, RZ Cephei, VV Cassiopeiae, Y Aurigae, RR Leonis, and the Pleiades. Preparations were made for the observing of the minimum of Z Aurigae with the triple camera, but poor seeing conditions, combined with the low altitude of the star, rendered all plates useless. Finsler's comet was located in July and photographed on several nights during July and August. The measurement of plates was continued with the Kipp photometer, the following fields being included—RT Scuti, VX Cassiopeiae, RZ Cephei, XY Cassiopeiae, VY Cassiopeiae, SY Aurigae, VX Persei, Y Aurigae, RR Leonis, and the Pleiades.

The seismological equipment at the central station, Ottawa, and at the outside stations of Saskatoon, Shawinigan Falls, Seven Falls, and Halifax, was continued in complete operation, but the Victoria and Toronto records were interrupted through shortage of staff. Seismic registrations have been reported through the medium of regular monthly bulletins distributed to the principal seismological stations of the world. Reports on the records obtained at the two Quebec stations were prepared each month and forwarded to the officers of the co-operating agency. The Bibliography of Seismology has appeared regularly each quarter; the system of collaboration with seismologists in most of the chief countries of the world continues.

The field work of the magnetic survey was carried on in two distinct parts of the country. In Eastern Canada, observations were made at eighteen stations between latitudes 42° N. and $46^{\circ} \cdot 5$ N., and longitudes 65° W. and $84^{\circ} \cdot 3$ W. As the object was primarily to secure secular change data, sixteen of these were re-occupations of Dominion Observatory stations. Two new stations were established, one where the old station was no longer available, and the other where its future appeared doubtful. In the other section, which comprised the Eastern Arctic between latitudes 54° N. and 67° N., and longitudes 62° W. and 101° W., thirteen stations were occupied. The work at these stations was carried on in co-operation with the Eastern Arctic Patrol and along the route followed by the Hudson's Bay Company's steamer *Nascopie* during the first part of the annual cruise in Arctic regions. Of these, three are new, eight are re-occupations of Dominion Observatory stations, and two are re-occupations of stations established by the Meteorological Service of Canada during the Polar Year Expedition of 1931-2, one being the magnetic observatory at Chesterfield. Results of observations at these stations are regarded as very important contributions to world records of magnetic values.

The usual spring and fall comparisons between the field instruments and the instruments adopted as secondary standards were made at Ottawa, and in addition one of the field magnetometers and the magnetometer used as a

secondary standard were compared with the standard instruments at the Magnetic Observatory at Agincourt. The publication of the report that was in course of preparation a year ago has been delayed owing to the inclusion of additional tabular matter. This is nearing completion and will include all the results obtained between 1927 and 1937.

The two permanent magnetic observatories at Agincourt, Ontario, and Meanook, Alberta, were maintained. Continuous photographic records of the magnetic elements, horizontal force, vertical force, and declination, were made. Control was secured through absolute observations made with precise instruments several times each week. Quarterly reports on the magnetic character of the day and numerical intensity are forwarded regularly to the International Commission of Terrestrial Magnetism and Electricity at De Bilt. In co-operation with the Meteorological Service of the Department of Transport, the results of observations for the years 1932-3 were revised and proof-read in preparation for publication and distribution by that department. Arrangements for publication of the results of 1930, 1934, and 1935 are on the same basis. The computation and reduction of these observations is now nearly complete. Publication for 1936 and following years becomes the responsibility of the Dominion Observatory.

Five gravity stations were occupied: Quebec and Gaspé in the Province of Quebec; Halifax in Nova Scotia; and St. John's and Corner Brook in Newfoundland. These were established with a high order of precision and are intended to serve as base stations in these areas when a more modern apparatus becomes available for gravity investigations. A report on the pendulum work of 1936 was completed and is ready for publication. A report on investigations of methods of geophysical prospecting was for the most part completed.

PUBLICATIONS

Five numbers of the regular series of publications of the Dominion Observatory were issued as follows: Vol. XII, Bibliography of Seismology, Nos. 12, 13, 14, 15, and 16. Of the usual reports and pamphlets, the following were issued in mimeographed form: Seismological Bulletin (monthly); Wireless Time Signals (monthly); Saturday Evening Program (quarterly).

DOMINION ASTROPHYSICAL OBSERVATORY, VICTORIA, B.C.

Observing weather for the year was about 10 per cent poorer than the average. Apart from the usual 2 hours that are reserved each Saturday night for the use of visitors, there were 1,092 observing hours with the 72-inch reflector on 185 nights, during which 1,086 spectra were secured. The averages over the 19 years of operation are 202 nights, 1,250 hours, and 1,335 spectra. Details of the year's research are listed below as "Publications." In addition to these regular purely technical issues, thirty papers on the progress of different research problems were prepared for scientific meetings; several articles of a more popular character were written for astronomical journals; twenty-six addresses on general astronomical topics were given before church societies, service organizations, and Canadian Clubs; and a half-hour coast-to-coast broadcast, descriptive of the activities of the Observatory, was arranged by the Canadian Broadcasting Corporation and sent over the national network in January.

Minor additions and alterations were made in equipment in consequence of which improvement in the spectra was secured. A second aluminium-on-glass grating, giving a very bright second order in the visual region, was ruled for the Observatory by Professor R. W. Wood and used with considerable

success. The eye-piece used for visual observations at the Cassegrain focus of the telescope was reconstructed and a more satisfactory field obtained. Apparatus for aluminizing the secondary mirrors was built locally, and both mirrors have been successfully aluminized.

All of the published radial velocities of Class A stars were used as the basis of a determination of the solar motion. These velocities total about 1,550, of which 917 were determined at this Observatory over a number of years. The resulting velocity is 16.5 km/sec. towards the point $\alpha = 265^{\circ}.0$, $\delta = +24^{\circ}.5$. This study is being continued with several hundred parallaxes derived at Victoria during the year.

Considerable time was spent in the determination of the orbits of spectrographic binaries. The triple system H.R. 5472 has been completed and shows that a close pair is in mutual revolution in a period of 101 days, while at the same time the close pair is in revolution about another body in a period of 3,320 days. The orbit of the eclipsing variable RZ Cassiopeiae was re-determined and compared with the orbit of 24 years earlier, and it is found that the line of apsides is rotating in a period of 18.3 years. A similar re-determination of the orbit of the eclipsing binary TW Draconis when compared with the results of 18 years ago shows that there is a secular increase in the period of 415×10^{-10} days per revolution. In both cases the better spectra secured gave new information of the second components, so that the absolute dimensions of both systems were deduced. A study of the rotation effect in such binaries has resulted in a formula for computing this quantity instead of having recourse to longer graphical methods. The orbit of H.D. 214652 mentioned in the last report has been published and orbits for H.D. 195986, H.D. 207826, and H.D. 110533 are nearing completion.

Work has continued on the study of P Cygni type spectra. The intensity relationships between emission and absorption observed in P Cygni have been shown to hold for other stars of similar type. With the aid of an aluminium-on-glass grating, the interstellar sodium lines of the stars zeta Orionis, epsilon Orionis, and rho Leonis have been shown to be complex, exhibiting structure similar to that of the corresponding CaII lines of the same stars. A study of the intensities of the interstellar lines in these spectra has given conclusive evidence that the intensity ratio Na/CaII is not constant for different regions of the sky.

The detailed results for Nova Lacertae 1936 were published during the year. An investigation was made of the spectra of the supernovae in the system IC 4182 and NGC 1003. It was not found possible to identify the broad emission bands, or any of the spectral features occurring, with those of normal nova spectra. A number of the bands, having widths corresponding to several thousand km/sec., were found to be complex in structure.

The central intensities and equivalent widths of 150 lines in the spectra of sun and moon, alpha Persei, gamma Cygni, and alpha Canis Minoris were studied on spectra having a dispersion of 8 angstroms per millimetre at H γ . The work is not complete.

PUBLICATIONS

During the year eight of the regular series of the Publications of the Dominion Astrophysical Observatory were printed and distributed, namely: Vol. VI, No. 17, the Victoria System of Radial Velocity Determinations; No. 18, the Orbits of the Spectroscopic Components of Boss 2142; No. 19, the Orbit of the Eclipsing Binary AR Aurigae; No. 20, Spectrographic Studies of Nova Lacertae 1936; No. 21, The Spectrographic Orbits of H.D. 109510; No. 22, The Spectrographic Orbit of H.D. 214652; Vol. VII, No. 1, The Radial Velocities of 917 Stars; No. 2, The Spectroscopic Orbits of H.R. 5472. Four further numbers of Vol. VII were sent to press; No. 3, The Definitive Orbit of the Spectroscopic

Binary Beta Arietis; No. 4, The Spectroscopic Orbit of H.D. 195986; No. 5, One Hundred and Thirty-two New Variables in Five Globular Clusters; and No. 6, The Calculation of Rotation Factors for Eclipsing Binaries. A six-page leaflet describing the Observatory and the work carried on was issued for the benefit of the numerous visitors, of whom there were approximately 24,746 during the year.

DOMINION WATER AND POWER BUREAU

The Dominion Water and Power Bureau investigates, analyses, and records the water and power resources of Canada in their Dominion, provincial, international, and interprovincial aspects and promotes water conservation and power development as a basis for the effective utilization of other natural resources, for the improvement of navigation, for irrigation, and for industrial and domestic requirements. This includes stream flow investigations, which are carried out from coast to coast with the co-operation of the provinces.

With the exception of the Yukon and Northwest Territories, the water resources throughout Canada are vested in the provinces, and investigatory work is carried on in co-operation with the respective provincial authorities charged with the administration of these resources. The co-operative water resources and hydrometric work is undertaken through district offices located as follows: British Columbia, at 739 Hastings Street West, Vancouver; Alberta and Saskatchewan, at Public Building, Calgary; Manitoba, at 532 Dominion Public Building, Winnipeg; Ontario, the local organization has headquarters at the Ottawa office of the Bureau; Quebec, at 680 St. Catherine Street West, Montreal; the Maritime Provinces, at Federal Building, Halifax. Investigatory work in Yukon Territory is carried out through the British Columbia district office and in the Northwest Territories through the district office at Calgary.

WATER AND POWER

Lake of the Woods Regulation.—During the fiscal year the run-off throughout the Lake of the Woods watershed was above normal. Excess water was discharged during the months of July, August, and September and the amount of storage in the reservoir was considerably increased. Lake level was at elevation 1056.48 on April 1, 1937, and rose to a peak elevation of 1061.52 on July 23. Surplus water was wasted to September 23, when the lake level had been lowered to elevation 1060.66, and the demand for water for power purposes resulted in a further lowering to elevation 1059.12 on March 31, 1938.

Lac Seul Regulation.—The direct regulation of Lac Seul is temporarily under the control of the Province of Ontario. During the fiscal year the run-off from the watershed was slightly above normal. Lake level rose from elevation 1166.34 on April 1, 1937, to elevation 1171.55 on July 15, and was drawn down to approximately elevation 1166.95 on March 31, 1938.

Snow Survey.—The tenth annual snow survey of Lake of the Woods and Lac Seul watersheds was carried out during the first week in March, in co-operation with the United States Engineer Office at Duluth, Minnesota. The results showed that the water content represented by the snow was slightly less than the 10-year average and was the lowest recorded in the past 6 years.

WATER POWER ADMINISTRATION

The Saskatchewan Government granted a concession, subject to the approval of the Dominion, to the Consolidated Mining and Smelting Company of Canada, Limited, to divert water from Tazin Lake to Lake Athabaska for the development of water power to be used for mining in the vicinity of Goldfields,

Saskatchewan. A report on the effect of the diversion was prepared for the Northwest Territories Council and approval was subsequently given by Order in Council.

Applications for water-power sites on Yellowknife and Snare Rivers in and near the Yellowknife area of Great Slave Lake, Northwest Territories, were received and reported upon.

TECHNICAL ASSISTANCE TO INDIAN AFFAIRS BRANCH

Evidence was prepared in support of an application for an additional 4,000 acre-feet of storage in Niskonlith Lake to supplement existing rights appurtenant to Niskonlith and Adams Lake Reserves in British Columbia. After a hearing before the Provincial Comptroller of Water Rights, a conditional water licence for the quantity applied for was issued. An application was filed for a conditional licence for irrigation purposes on Newport Creek to serve Okanagan Reserve No. 1, British Columbia. Investigations were made to determine the appropriate rental for water rights used in connection with leased lands in Kamloops Reserve No. 1. A conference with the Indian Commissioner of the Indian Affairs Branch and the Provincial Comptroller of Water Rights was held in January to consider certain licences, numbering sixty-six in all, held by the Indian Affairs Branch, which were liable to cancellation through failure to complete works by the end of the year. It was decided that thirty-seven of these should be replaced by final licences, extensions of time were granted for nineteen, seven are to be cancelled for inability to comply with conditions of use, and three were held for further consideration.

NATIONAL WATER RESOURCES INDEX-INVENTORY

Work was continued on the collecting and recording of data relating to the water resources of the Dominion.

Water resources data, accumulated in the district offices by direct field work and through co-operative effort with provincial and local authorities or interests, are transmitted to Head Office in Ottawa, where they are compiled and co-ordinated in accordance with the principles of the Index-Inventory system. All available data with respect to developed and undeveloped power and storage reservoir sites are collated, studied and summarized, and digests of the individual sites are prepared covering location, accessibility, head, water supply, storage capacity, regulation of flow, possible power, hydro-power installation, use of power, municipalities served, market, and sources of data. Summaries of the power and water resources of rivers and river systems as a whole are similarly analysed and compiled.

WATER POWER RESOURCES IN CANADA

According to the latest estimates of the Bureau, Canada's resources in rapids, waterfalls, and power sites, of which the actual drop or the head possible of concentration has been measured or carefully estimated, total 20,347,000 horse-power under conditions of ordinary minimum flow, or 33,617,000 horse-power ordinarily available for 6 months of the year, and will provide for a commercial installation of 43,700,000 horse-power. Total installation as at January 1, 1938, was 8,112,751 horse-power; only slightly more than 18½ per cent of the possible development.

The power resources and developed power are favourably distributed throughout Canada in proximity to our largest known mineral deposits, pulp-wood supplies, and centres of population. Sixty per cent of the total available power and 81 per cent of the developed power are located in the highly industrialized provinces of Ontario and Quebec, both of which are without known natural coal deposits.

Canada's present installation of 8,112,751 hydraulic horse-power is largely installed in central stations for the public distribution of electricity, 87.2 per cent of the total being so utilized. Pulp and paper mills maintain an installation of 8.4 per cent of the total and the remaining 4.4 per cent is utilized in various industrial plants, mines, municipal pumping plants, and similar enterprises. The central electric stations generate 98 per cent of all electricity produced for sale in Canada and for export, and much of the output of the lower grade mining products is made possible because of the ready availability of low-cost electricity from such stations.

CENSUS OF THE CENTRAL ELECTRIC STATION INDUSTRY

Canada's central station industry has expanded until, at the beginning of 1938, 7,074,641 horse-power or 87.2 per cent of the Dominion's total hydraulic development is installed for the development of electricity for distribution to the public. More than 27 billions of kilowatt hours were generated during 1937 by hydraulic power and the investment in hydro-electric generating stations and their distribution systems at the end of 1936, the latest for which figures are available, exceeded \$1,435,000,000. These figures represent more than 98 per cent of the electrical output and almost 97 per cent of the total capital investment of all central stations in Canada.

DOMINION HYDROMETRIC SERVICE

The work of securing and compiling stream measurement records throughout Canada was continued. Records obtained in the field are brought together in one central agency, which undertakes the compilation and dissemination of stream flow data. For a number of years this work has been carried on by the Dominion Government under co-operative arrangements with the various provinces and has operated efficiently both as regards field operations and office administration. The most important use of the records is in connection with water-power development and irrigation and water supply problems in general.

RUN-OFF CONDITIONS IN CANADA

The average run-off for the fiscal year was generally below normal. Several extremes of flow were recorded. In the Pacific drainage, typical stations showed a range in run-off for the fiscal year from 78 per cent of the long term mean in Kootenay River in the interior to 114 per cent of the long term mean in Capilano Creek in the Coastal area. In the Arctic and Western Hudson Bay drainage, typical stations showed a range in run-off from 11 per cent of the long term mean in Horse Creek in southern Saskatchewan to 106 per cent of the long term mean in English River at Sioux Lookout, in northwestern Ontario. A new maximum run-off was recorded in Belly River in southern Alberta in the month of June, and a new minimum run-off was recorded in Assiniboine River at Headingly, Manitoba, in the month of December. In the St. Lawrence and Southern Hudson Bay drainage, typical stations showed a range in run-off for the fiscal year, from 80 per cent of the long term mean in North Maganatawan River in the North Bay, Ontario, area to 117 per cent of the long term mean in Moira River in eastern Ontario. Exceptional floods were recorded on Thames River in southwestern Ontario in the month of April. In the Atlantic drainage, typical stations showed a range in run-off for the fiscal year, from 71 per cent of the long term mean in Lepreau River in southern New Brunswick to 95 per cent of the long term mean in St. Mary River in eastern Nova Scotia. A new minimum run-off was recorded in Lepreau River in the month of September.

POWER AND STORAGE INVESTIGATIONS

In the Northwest Territories a reconnaissance investigation was made of the power and storage possibilities of Yellowknife, Cameron, and Beaulieu Rivers, flowing into Great Slave Lake from the north in the area where gold discoveries have been made and in which considerable development work is now under way. Based upon the field investigation, a report was prepared for departmental administrative purposes outlining a scheme of development that would most advantageously utilize the power resources of the portions of the rivers studied. This report has proved helpful in the consideration of various applications received for water-power sites in the district.

In British Columbia hydraulic studies were continued in the Kootenay drainage in connection with the regulation of Kootenay Lake levels in the interest of both water power and reclamation. Close observation was kept of conditions on Columbia and Skagit Rivers and on Phillipps Creek where international problems may become active. Engineering studies were made for the Dominion Department of Agriculture in connection with irrigation problems at Kamloops and water supply at the Dominion Experimental Station on Windermere Creek. Assistance was given the Dominion Department of Public Works in a major hydraulic problem involving the development and maintenance of permanent ship channels in Fraser River from the city of New Westminster to the sea, and reports were prepared for the same department dealing with water supply in Queen Charlotte Islands. Special flow studies were continued in co-operation with the provincial authorities, the city of Vancouver, the greater Vancouver Water District, municipal and irrigation districts, and various hydro-electric power companies.

In Alberta the operation of the Lake Minnewanka storage reservoir during the filling season from May to October was undertaken by the Bureau.

The work being carried out under the Prairie Farm Rehabilitation Act in the building of impounding dams, dugouts, and irrigation projects has focused attention on the extent of the water run-off available for conservation and the staff in the Prairie Provinces has been called upon to secure and compile records of the surface waters essential to planning of the drought relief program.

In Saskatchewan and Manitoba a special study was made of Souris River, an international stream, in connection with the situation that has developed as a result of the construction of dams and water projects along its course.

In Ontario hydraulic investigations were continued on Nipigon River in connection with power plant discharge and on Niagara River with respect to river slopes and discharge. A close inspection was maintained of the work being carried out by the Canadian Niagara Power Company in the construction of a submerged weir at its intake on Niagara River above the falls. Following exceptional floods on Thames River, additional gauging stations were established throughout the watershed at the request of the Hydro-Electric Power Commission of Ontario. Snow surveys were also carried out for the Commission in the watersheds of Wanapitei, Sturgeon, South, and Frederickhouse Rivers, and special stream flow investigations were made of the last-named river in connection with the construction of a storage dam.

In Quebec special gauges were established on Richelieu River to provide hydraulic data in connection with the dam and channel improvement works being undertaken by the Dominion Department of Public Works under the approval of the International Joint Commission. Studies were continued of the hydraulics of Magog River with respect to international matters, and the checking of power station ratings was carried on in co-operation with various power organizations.

In New Brunswick an investigation was made of the international reach of St. Croix River and a report prepared for the International St. Croix Board of

Control covering conditions obtaining during the 1937 season. Data were supplied to the Biological Survey of Canada in connection with studies of the fisheries in Passamaquoddy Bay.

In Nova Scotia co-operation was afforded the Nova Scotia Power Commission in a study of the power possibilities of Bear River. Attention was also given to power developments on St. Croix River and Paradise Brook, and a special investigation was made of diversion possibilities from the headwaters of Meander River to augment the power available from the Falls site on Herbert River.

INTERNATIONAL WATERWAY MATTERS

Activity with respect to International Waterway matters was as follows:

Early in the fiscal year the Bureau co-operated in the preparation of the brief of the Government of Canada in support of its application to the International Joint Commission for the approval of remedial works to be constructed in Richelieu River. Following hearings at St. Albans, Vt., and Montreal, P.Q., on June 9 and 10, the Commission approved the proposal, subject, among other things, to the plans being approved by an international board to be appointed by the Governments of Canada and the United States.

Hydrometric records were systematically secured on Roseau River and its tributaries in connection with an international problem on this river referred by the Governments of Canada and the United States to the International Joint Commission for investigation and report.

Columbia River, with its principal tributary the Kootenay, crosses the International Boundary three times. Consequently, accurate records of flow and stage are of the greatest importance in the adjustment of any matters arising between Canada and the United States with respect to these waters. For this reason international gauging stations were completed during the year on Columbia River at Bichbank, some 9 miles north of Trail, British Columbia, and at Kuskanook, British Columbia, on the main highway at the southeastern end of Kootenay Lake.

The various International Waterway Boards have functioned as usual throughout the year.

The International St. Croix River Board of Control, set up in 1917 to supervise the operation of the dams at Grand Falls and Milltown and of the fishways on St. Croix River, continued its functions. During the year the levels above the Grand Falls dam and the Milltown dam were maintained to meet the requirements imposed by the orders of the International Joint Commission, and the flow of water on the lower river was maintained in a manner satisfactory to the power and other interests thereon. The Board's annual report was submitted to the International Joint Commission.

The International Lake Champlain Board of Control, set up in 1937 to supervise the construction and operation of the proposed dam on Richelieu River, reviewed and approved plans of the dam.

The International Massena Board of Control, set up in 1923 to supervise conditions obtaining with respect to the effect of the submerged weir in the South Sault Channel of St. Lawrence River and the diversion of water through the Massena Canal, New York State, continued its functions. Throughout the year the diversion and the weir were maintained in a manner to meet the requirements of the order of the International Joint Commission. The operations resulted in improved navigation conditions in the reach of St. Lawrence River above, and through, the Cornwall Canal. Hydraulic studies were continued. The Board's annual report was submitted to the International Joint Commission.

The International Niagara Board of Control, set up in 1923 to control the diversions from Niagara River for power purposes as permitted by Article 5 of the Boundary Waters Treaty, continued to exercise its responsibilities through the year. The Board continued its record of the daily discharge through the power units installed in the plant of the Niagara Falls Power Company on the United States side and in the plant of the Canadian Niagara Falls Power Company and in the plants operated by the Hydro-Electric Power Commission of Ontario on the Canadian side. The total aggregate daily discharge has been maintained within the Treaty limitations.

The International Lake Superior Board of Control was set up in 1915 to supervise the diversion of water from St. Mary River for power purposes and the construction and operation of control works at the outlet of Lake Superior in the interests of navigation and power. During the year the gates in the compensating works were operated in accordance with the orders of the International Joint Commission and with due consideration to the requirements of both upstream and downstream interests. The Board met the special requirements of navigation, power, and of the local fishing interests on both sides of the border during the low water months. The Board presented its annual report to the International Joint Commission.

The Lake of the Woods Convention of 1925 provided for two boards for the control of the lake level and the lake outflow—the Canadian Board and the International Board. The Canadian Lake of the Woods Control Board has continued the regulation of Lake of the Woods between elevations 1056 and 1061 sea-level datum. The International Lake of the Woods Control Board is called upon to exercise certain responsibilities whenever the lake rises above elevation 1061 or falls below elevation 1056. Lake level rose above 1061.0 on July 15 and the International Board exercised supervision until it fell below that elevation on August 26.

The International St. Mary and Milk River Board of Control continued to exercise its responsibilities for the measurement and apportionment of the stream flow of St. Mary and Milk Rivers and their tributaries in the Provinces of Alberta and Saskatchewan and in the State of Montana. The Sixteenth Annual Joint Survey of the snow conditions on the headwaters of St. Mary River, in connection with the apportionment procedure, was completed on May 5. The survey determined that the water content of the snow cover was practically the mean of the previous 15 years. The resultant run-off of 73,000-acre-feet from the snow-fields during May, June, and July was 106 per cent of that predicted.

The natural flow of 501,000 acre-feet of St. Mary River at the International Boundary was 84 per cent of the average for the 34 years of record. The river flow rose steadily from April 1 to its maximum of 8,500 second-feet on June 15, then receded gradually to the minimum of 242 second-feet on September 28. During October the river gradually rose to 500 second-feet. The maximum storage reached in Sherburne reservoir was 61,300 acre-feet on July 7; at the end of the season 2,300 acre-feet remained in storage. The Canadian share of the natural flow of St. Mary River during the season was sufficient to meet the requirements of the 75,300 acres irrigated in the Lethbridge section. The estimated natural flow of 83,000 acre-feet of Milk River at the International Boundary during the irrigation season was about 80 per cent of the average for the years of record and the total seasonal run-off from its tributaries in Saskatchewan was the lowest on record, being 20 per cent of the average.

Canada stored 5,700 acre-feet of the natural flow of Frenchman River to irrigate lands near Eastend and Val Marie and delivered 5,100 acre-feet to the United States. The natural flow of Frenchman River was the lowest on record,

being 14 per cent of the mean for the last 22 years. The joint report covering the year's operations has been prepared and was submitted to the International Joint Commission for review upon the occasion of its regular semi-annual meeting.

PUBLICATIONS

During the year the following Water Resources Papers were published, dealing with the surface water supply of Canada in the provinces named: No. 74, Ontario and Quebec, from October 1, 1931, to September 30, 1933; No. 75, Alberta, Saskatchewan, Manitoba, and Western Ontario, from October 1, 1933, to September 30, 1935; No. 77, New Brunswick, Nova Scotia, and Prince Edward Island, from October 1, 1932, to September 30, 1934. The regular annual bulletins, Hydro Electric Progress in Canada during 1937 and the Water Power Resources of Canada, 1938, were also issued.

ENGINEERING AND CONSTRUCTION SERVICE

ROADS

The Engineering and Construction Service acts as a general engineering service unit to the various branches of the Department. Its work includes the preparation of plans, estimates, and designs covering all construction activities, in addition to the undertaking of actual engineering and architectural work relative to both maintenance and construction.

The architectural work performed includes the preparation of plans, specifications, and estimates for buildings and landscaping work to be undertaken by the Department, as well as the examination and approval or revision of plans of buildings proposed to be erected by private individuals in National Parks.

The funds allotted to this Service were expended as follows:

GOLDEN-REVELSTOKE HIGHWAY

Work on this section of the Trans-Canada Highway was continued during the 1937 season.

Golden-Columbia River Bridge Section.—Maintenance between Donald and the Columbia River bridge, a distance of 78 miles, including the widening and improvement of 10.6 miles, a grade revision at Sullivan River necessitating 6,502 cubic yards of grading, and the resurfacing of 22 miles. New construction on the section between Golden and Donald—15 miles—included clearing 4.0 miles, grubbing 4.5 miles, grading 5.4 miles, 48 culverts, surfacing 5.6 miles, burning brush 2.5 miles, and trimming slopes 3.1 miles. This section of the road from Golden to the Columbia River bridge—93 miles—was completed and transferred to the Province in accordance with the terms of the agreement under which it was constructed by the Federal Government. Its maintenance is now a responsibility of the Provincial Government. The maximum crew during any one month was 174 in September.

Revelstoke-Columbia River Bridge.—Work on this section of the road was carried on from two bases, Donald for the northern end and Revelstoke for the southern. Maintenance of completed road included the removal of 10,916 cubic yards of mud slide. New construction included 35.3 acres of clearing, 30.6 acres of grubbing, 0.27 acres of brushing, 12.9 miles of grading, 2.5 miles of re-shaping, 20.5 miles of surfacing, 5.3 miles of ditching, 74 wooden box culverts built and 36 wooden box and 2 corrugated iron culverts extended, 6 miles of tote road and one tote road bridge, one trestle at Mile 17 and bridges at Mile

2.26 and over Potlatch Creek, over 36,000 feet board measure of timber for the latter being sawn by the Department's mill close to the site. Part of this section of the road from about Mile 3 north of Revelstoke to Goldstream River bridge at Mile 57.4 from Revelstoke post office was completed and transferred to the Province, which will be responsible for its future maintenance. The maximum crew during any one month was 264 in July.

BANFF-JASPER HIGHWAY

Banff Park Section.—Maintenance was carried on over the completed portion of the road from Miles 1 to 38 and it was oiled from Miles 1 to 32. New construction—2.92 miles of clearing, 5.27 miles of grubbing, 6.43 miles of grading, 5.11 miles of surfacing, 60 culverts, 3 common bridges, truss bridges over Noyes Creek (109 feet 6 inches span) and North Saskatchewan River (140 feet 3 inches span), 6.2 miles of tote road, and 15 miles of telephone line. The maximum crew consisted of 209 individuals in August.

Jasper Park Section.—Maintenance was carried on over the completed portion of the road from Miles 1 to 58. Repair work and maintenance of shoulders was done for 9.75 miles and also 6.5 miles of surfacing. New construction comprised 5.57 miles of clearing, 4.98 miles of grubbing, 7.75 miles of grading, 9.05 miles of surfacing, 93 culverts, 2 common bridges and 1 concrete slab bridge, 5 cribs, 7.06 miles of tote road, and 8.86 miles of telephone line. The maximum crew consisted of 203 individuals in the month of July.

CABOT TRAIL

The Cabot Trail is located for the greater part in Cape Breton Highlands National Park and extends northerly from North Ingonish on the east coast to Neil Harbour, thence westerly to Pleasant Bay on the west coast, and then in a southerly direction inland to French Mountain and from there along the coast to the park boundary north of Cheticamp. The total distance is about 55 miles, of which about 45 miles is within the park. During the past season the following work was accomplished: 9.2 miles of clearing, 6.3 miles of grubbing, 0.7 mile of new road under construction, 3.6 miles of new road completed, 3.0 miles of old road reconstructed, 2.7 miles of hub guard constructed, 5.8 miles of road surfaced, 3 bridges and 22 culverts constructed. In addition to this, 45 miles of existing road was maintained and 150 culverts and 10 bridges were rebuilt or repaired. Employment reached a maximum of 294 in October.

TOURIST ROUTE IMPROVEMENT

Kingsgate-Kootenay Park Highway.—In 1936 an agreement was completed between the Province of British Columbia and the Dominion, providing for the improvement and permanent surfacing of the main tourist route from the International Boundary at Kingsgate to the southerly entrance of Kootenay National Park. Under this agreement the Dominion contributes to such improvement and paving work as undertaken by the Province and approved by the Dominion to the extent of 50 per cent of the cost of such work, but not exceeding \$500,000 over a 3-year period. Periodic inspections are made by engineers of this Service to see that the work done is in accordance with plans and specifications, so that certificates covering the payment of the Dominion contribution may be issued. During the 1937 season about 14 miles of highway was reconstructed to standard section, involving the moving of 236,000 cubic yards of material, and, in addition to this, 22.45 miles of asphaltic pavement was laid. The Dominion contribution to this work totalled \$136,416.59.

Waterton Park-Calgary Highway.—In 1937 an agreement was completed between the Province of Alberta and the Dominion providing for surfacing of the road from Waterton Lakes Park through Pincher Creek and Macleod to Calgary, the Dominion agreeing to pay to the Province \$75,000, or 40 per cent of the expenditure by the Province during the ensuing fiscal year, whichever sum should be the lesser. The work was undertaken by the Province and periodic inspections were made by engineers of this Service to see that the work was carried out according to the plans and specifications. During the past season a blotter type of bituminous treatment was applied to 83 miles of road, involving the use of over 25,000 cubic yards of gravel and 178,000 gallons of asphaltic oil. The Dominion's contribution to this work amounted to \$60,063.67.

NATIONAL PARKS

Public services were operated and maintained and other work carried out in the National Parks as follows:

Banff National Park.—The following services or systems were operated and maintained: electric light and power generating and distributing systems; telephone systems; sewer system; water system. The streets and sidewalks in the townsite and all roads in the park, including the Banff Park section of the Trans-Canada Highway, and the Banff Park section of the Banff-Jasper Highway previously mentioned, were maintained, garbage from the townsite and camp-grounds was collected, and mosquito control was undertaken.

Jasper National Park.—The following services or systems were operated and maintained: electric light and power distributing system; automatic telephone system; sewer system; water system. The streets and sidewalks in the townsite and all roads within the park, including the Jasper Park section of the Banff-Jasper Highway previously mentioned, were maintained; garbage from the townsite and camp-grounds was collected; mosquito control was undertaken; the bath-house at Miette Hot Springs was completed, the development of Cottonwood Creek and Patricia Lake camp-grounds was continued, and a new camp-ground at Miette Hot Springs was begun.

Kootenay National Park.—The following services or systems were operated and maintained: electric light and power generating and distributing system; sewer system; water system. The Banff-Windermere Highway was maintained throughout the length of the park, a distance of 63 miles.

Waterton Lakes National Park.—The following services or systems were operated and maintained: electric light and power distributing system; water system. The streets and sidewalks in the townsite and all roads within the park, including the Chief Mountain International Highway, were maintained; toilets and kitchens at the camp-sites and a shelter and fencing at the children's playground were erected, and fish ponds and a caretaker's cottage were constructed at the fish hatchery.

Yoho National Park.—The streets and sidewalks in the town of Field, B.C., were maintained, as were also all roads in the park, including the Yoho Park section of the Trans-Canada Highway. A caretaker's cottage, begun the previous year, was completed and a warden's cabin was erected.

Mount Revelstoke National Park.—Mount Revelstoke Highway was improved and maintained throughout its length, a distance of 19 miles.

Prince Albert National Park.—The following services or systems were operated and maintained: electric light and power generating and distributing system; sewer system; water system. The streets and sidewalks in the townsite and all roads in the park were maintained, garbage was collected, a new pumping station and permanent intake pipe for the water system were constructed, two warden's cabins were erected, and a dam on Spruce River was built under the provisions of the Prairie Farms Rehabilitation Act.

Riding Mountain National Park.—The following services or systems were operated and maintained: electric light and power generating and distributing system; sewer system; water system. The sidewalks and streets in the townsite and all roads in the park were maintained, garbage was collected and disposed of in the incinerator completed during the year, and additional rearing ponds were constructed in connection with fish culture.

Point Pelee National Park.—The main road was maintained and 1½ miles of the East Beach road was constructed, also a system of groynes to protect the East Beach from erosion.

Prince Edward Island National Park.—Existing roads were maintained and 1.2 miles of new road constructed. Work on Dalvay House included repairs to roof, replacement of stucco, interior alterations, painting, repairs to stonework and foundations, and construction of a basement. At Green Gables the roof was repaired. Fencing along the southerly boundary of the park was completed under contract for a distance of 10.5 miles. Contracts were also awarded and construction undertaken of bath-houses near Dalvay and Cavendish.

Cape Breton Highlands National Park.—In addition to maintenance and construction work on the Cabot Trail, surveys were made for a road along the coast between Ingonish and Neil Harbour, on the MacKenzie Mountain section, on the west slope of North Mountain, and on the Cap Rouge section. Trails were constructed for 4.1 miles along the north bank of Cheticamp River. The construction of warden's cabins near Cheticamp and Pleasant Bay was commenced.

UNEMPLOYMENT RELIEF

Operations for the relief of unemployment were continued during the fiscal year and qualified permanent park residents with domestic responsibilities in Banff and Jasper Parks who were in urgent need, were provided with work on a quota basis from April 1 to the middle of May, and from mid-January to the end of March.

Banff National Park

Thinning growth on Sulphur Mountain and along Trans-Canada Highway,
Improving Tunnel Mountain camp-grounds,
Operation of gravel crusher,
Revision of Trans-Canada Highway,
Demolition of various old buildings,
Control of mistletoe blight,
Clearing along Healy Creek trail,
Removal of snow from Banff streets,
Replacement of crib at Mile 5 on Lake Minnewanka road,
Construction of portable grandstands for recreational areas,
Painting equipment, making signboards, concrete posts for guard-rails.

These items provided 6,684 man-days of work for 137 individuals with 309 dependants.

Jasper National Park

Clearing, brushing, and burning in townsite,
Improving Pyramid Lake road,
Clearing and burning brush at Cottonwood Creek camp,
Manufacture of concrete guard-rail posts,
Getting out pole rafters for Administration buildings,
Getting out round timbers for the construction of three warden's cabins,
Construction of caretaker's cabin,
Control of mistletoe blight,
Getting out firewood for camp-grounds,
Painting equipment, construction of benches, signs, etc.

These items provided 1,857 man-days of work for 42 individuals with 97 dependants.

HISTORIC SITES AND MONUMENTS

- Fortress of Louisbourg, N.S.*—Re-surfacing of main entrance road and maintenance of fences surrounding cemeteries at Point Rochfort.
- Fort Chambly, P.Q.*—Erection of new flagpole; setting of new doors at powder magazine and entrance to picnic grounds, and minor repairs.
- Fort Lennox, P.Q.*—Painting roof of guardhouse; repainting walls of commissary, magazine, and canteen; repairing ceiling of canteen; and painting bridge rails and cemetery fence.
- Martello Tower, Halifax, N.S.*—Repairs to roof.
- Thomas Chandler Haliburton, Windsor, N.S.*—Cut stone monument with tablet erected.
- Survey of Gulf of St. Lawrence, Charlottetown, P.E.I.*—Cut stone monument with tablet erected.
- Fort St. Louis, Port Latour, N.S.*—Cairn, tablet, and fence erected.
- Petitcodiac-Washdemoak Portage, Petitcodiac, N.S.*—Cairn, tablet, and fence erected.
- Fort St. Louis, Caughnawaga, P.Q.*—Tablet affixed to wall.
- First Canadian Hospital, Quebec, P.Q.*—Tablet affixed to wall.
- Glengarry Landing, Edenvale, Ont.*—Cairn, tablet, and fence erected.
- Yonge Street, Richmond Hill, Ont.*—Cairn and tablet erected.
- Officers and Seamen, Royal Navy, Kingston, Ont.*—Cairn and tablet erected.
- Bridge Island, Mallorytown Landing, Ont.*—Cairn and tablet erected.
- Norway House, Man.*—Cairn, tablet, and fence erected.
- Fort Maurepas, Fort Alexander, Man.*—Cairn, tablet, and fence erected.
- Methye Portage, Fort McMurray, Alta.*—Cairn, tablet, and fence erected.
- Great Fraser Midden, Vancouver, B.C.*—Cairn and tablet erected.
- Robert Cavalier de la Salle, Lachine, P.Q.*—Cut stone monument with tablet and plaque erected.
- Robert Cavalier de la Salle, Ville La Salle, P.Q.*—Cairn and tablet erected.

WORK ON INDIAN RESERVES

Work for the Indian Affairs Branch carried out by this Service comprised the following:

Buildings.—Day schools with teachers' quarters were erected at Restigouche, P.Q., Kinistino, Sask., and Port Simpson, B.C., by day labour, and at Christian Island, Ont., under contract. A cattle barn on the Blackfoot Indian Reserve at Gleichen, Alta., and an addition to the school at Cluny, Alta., were built under contract.

Roads.—Construction, improvement, and repairs to roads were carried out in the following Indian reserves: Chapel Island, Whycomoh, and Schubenacadie, N.S.; Richibucto and Tobique, N.B.; Maniwaki, St. Regis, Bersimis, Oka, Abenakis, Caughnawaga, Ouatouchouan, and Restigouche, P.Q.; Cape Croker, McIntyre Bay, Six Nations, Golden Lake, Parry Island, Tyendinaga, Sarnia, Kettle Point, Stony Point, Caradoc, Pic, Thessalon, Parmachene, Walpole Island, Oneida, and Rice Lake, Ont.; Norway House and Bear River, Man.; Kahkewistahaw and Fisher River, Sask.; Glen Vowell, B.C.

Bridges.—A new bridge was constructed over Cedar Creek on the Maniwaki Reserve, P.Q., and repairs were made to bridges on Indian reserves in Nova Scotia, Quebec, Ontario, and British Columbia.

Drainage.—Drainage work was continued in the Caughnawaga Reserve, P.Q.

Breakwaters.—The breakwater at Middle River, N.S., was repaired, and at McIntyre, Ont., the breakwater was extended.

Irrigation Systems.—Irrigation systems were constructed, improved, or repaired on Indian reserves in British Columbia as follows: Little Shuswap No. 5, Kamloops No. 1, St. George's School and Lytton Reserve, Cook's Ferry No. 9, Lower Nicholas No. 1, Lower Similkameen No. 9, Kootenay No. 2, Adams Lake, Lilloet No. 1, and Okanagan No. 1.

Water Supply Systems.—In British Columbia, portions of the water mains were replaced in the systems serving the Indian villages of Port Simpson and Skidegate; the system at the Indian village of Kitimat was completed, and the systems at the Indian villages of Ahousaht, Nesquiaht, and Nootka were repaired. A number of artesian wells were drilled in the File Hills Agency in Saskatchewan.

GEODETIC SERVICE OF CANADA

The Geodetic Service of Canada continued its work of undertaking triangulation surveys and precise levels. Geodetic triangulation is employed to determine the longitude and latitude of the triangulation station marks, and precise levelling is used to determine the precise elevation above mean sea-level of the benchmarks of this Service. The bronze tablets marking the triangulation marks are inscribed "Triangulation Station, Geodetic Service of Canada" and the precise levelling marks are inscribed "Bench Mark, Geodetic Service of Canada". The Geodetic Service also furnishes data which are important in the study of isostasy and in the determination of the size and shape of the earth.

Geodetic control data were supplied for surveying and engineering as required by federal and provincial departments and by the engineering and surveying public. These control data are made available by means of permanent marks set in the solid rock, or in concrete piers suitably designed and constructed for the purpose. Publications containing the final geodetic values and full descriptions of these marks are issued at intervals.

Special publications prepared by this Service are included in the triennial reports of the International Association of Geodesy, which is a section of the International Geodetic and Geophysical Union.

TRIANGULATION

Field work was carried on in two districts in 1937, namely, British Columbia and Newfoundland. Primary triangulation was continued in central British Columbia, and the triangulation of the Geodetic Survey of Newfoundland, for which the technical officers are supplied by the Canadian Geodetic Service, was extended.

TRIANGULATION IN CENTRAL BRITISH COLUMBIA

Operations were carried out in two areas in central British Columbia in 1937. One was the re-observing of the triangulation of the lower Fraser River from Vancouver to near Ashcroft, a distance along the net axis of 190 miles. The other was on the western end of the Williams Lake-Edmonton net and consisted of ground checking of aerial reconnaissance done in 1936, together with the preparation of the triangulation stations for observing in 1938. The area covered was from Williams Lake, B.C., towards the Yellowhead Pass, a geologically important and very rugged district with 10,000-foot mountains. A number of lakes make the stations reasonably accessible.

Results Obtained.—Ground checking of aerial reconnaissance—9 stations; axial length of net, 150 miles. Station preparation—8 stations permanently marked and prepared for observing in 1938. Angular measurements—13 primary stations re-occupied; axial length of net, 190 miles.

TRIANGULATION OF NEWFOUNDLAND

In 1935 the Government of Canada, at the request of the Natural Resources Commission of the Government of Newfoundland, agreed to assist in carrying out a geodetic survey of Newfoundland. The Dominion undertook to loan the technical officers for the operation, supply the instrumental equipment, and calculate and publish the mathematical data. The Commission undertook to bear all field and travelling expenses. The scheme consisted of a primary triangulation net some 350 miles in length along the west coast of Newfoundland from Cape Ray to the Strait of Belle Isle, and an east and west secondary net of approximately the same length, starting from the primary net and roughly following the Newfoundland railway as far as St. Johns, the capital.

Operations up to and including 1937 brought to completion the southern half of the primary net and the western half of the secondary net, the measurement of one primary base-line, as well as carrying ahead such preliminary operations as the ground checking of the aerial reconnaissance and the preparation of stations ready for the angular measurements.

Ground checking of aerial reconnaissance was carried on in two areas, first, on the primary net north of Bonne Bay on the west coast, including the selection of a primary base-line near Parsons Pond; and second, on the easterly half of the secondary net from Gander Lake nearly as far as St. Johns, including the selection of a secondary base-line near Terra Nova.

Station preparation, which included cutting of trails, permanently marking stations with bronze posts or cement monuments, and building tripods for light-keepers and observers, was carried on easterly from the junction of the primary and secondary nets nearly as far as Terra Nova.

A primary base-line was measured near St. Fintan. Angular measurements in this area had been previously completed. Angular measurements were also completed on a small gap at the southern end of the primary net near Port aux Basques and on the primary net northward from Corner Brook to the junction of the primary and secondary nets, thence eastward along the latter as far as Botwood and Gander Lake.

Results obtained.—Ground checking of aerial reconnaissance—5 primary stations and 19 secondary stations; axial length of nets, 150 miles. Station preparation—23 stations permanently marked and prepared for observing in 1938. Angular measurements—10 primary stations and 15 secondary stations completed; axial length of nets, 190 miles.

LEVELLING

Levelling operations were carried out in the Provinces of Ontario and Quebec.

ONTARIO

The precise level line along the Canadian Pacific Railway from Sudbury towards Franz, which had been carried to a point 4 miles southeast of Nemegos in the 1936 season, was completed to Franz. At the close of this work a line was run from North Bay to Pembroke, following the Canadian National main line through Brent.

QUEBEC

Secondary levelling for general control purposes was carried on in the area north of Ottawa River between Montebello on the east and Campbells Bay on the west, provincial highways and country roads being utilized as routes for the levelling. Lines were run from Montebello to Huberdeau, from Masson along the valley of Lievre River to Mont Laurier and Ste. Anne du Lac, and from Kazubazua station on the Gatineau line of the Canadian Pacific Railway to

Campbells Bay on Ottawa River. On the Lievre River line, benchmarks were set at the various power-houses and storage-dams, also certain benchmarks of the Quebec Streams Commission were tied in.

Fundamental benchmarks were established at Montebello, Buckingham, and Mont Laurier, these being tied in with previously established benchmarks nearby.

INSPECTION OF BENCHMARKS

In preparation for the issue of publications containing secondary benchmarks in the Province of Quebec an inspection was made of benchmarks on secondary level lines both north and south of St. Lawrence River run in the years 1926, 1927, 1929, and 1930.

Detailed Statement of Levelling Run in 1937

	Miles	Bench- marks
<i>Precise</i>		
Nemegos to Franz.....	99.0	46
North Bay to Pembroke.....	137.8	54
Fundamental and other benchmarks at Montebello, Masson, and Mont Laurier.....		4
Total precise.....	236.8	104
<i>Secondary</i>		
Montebello to Huberdeau.....	47.5	22
Masson to Ste. Anne du Lac.....	126.1	58
Kasubasua to Campbells Bay.....	38.2	18
Total secondary.....	211.8	98
SUMMARY		
<i>Precise Levelling</i>		
Prior to 1937.....	25,732	9,100
1937.....	237	104
Total.....	25,969	9,204
<i>Secondary Levelling</i>		
Prior to 1937.....	11,709	4,119
1937.....	212	98
Total.....	11,921	4,217

The total mileage of levelling, distributed by provinces, at the end of the year 1937, was as follows:

	Precise	Secondary	Public Works (prior to 1931)
Nova Scotia.....	729		300
New Brunswick.....	1,096		403
Quebec.....	3,418	1,107	2,231
Ontario.....	6,956	1,324	2,012
Manitoba.....	2,548	368	158
Saskatchewan.....	4,113	5,098	
Alberta.....	2,866	3,799	
British Columbia.....	3,690	225	
Yukon.....	458		
Minnesota.....	89		
Vermont.....	6		
Total.....	25,969	11,921	5,113

GEODETIC ASTRONOMY AND ISOSTASY

The field work of this division consisted in making seven Laplace determinations, six in British Columbia and one in Saskatchewan; measuring one base-line in connection with geodetic operations in Newfoundland, and observing the geographical positions of ten points along the coast of Baffin Island.

GEODETIC ASTRONOMY

The triangulation stations in British Columbia occupied for Laplace determinations were Parsons near Golden, Salmon Arm, Swakum just north of Nicola, Spokin near One Hundred and Fifty Mile House, Beaverley near Prince George, and Wilson near Fraser Lake. From Parsons the azimuth of the line to triangulation "D" was observed, from Salmon Arm that to Ida, from Swakum that to Missezula, from Spokin that to Big Camp, from Beaverley that to Prince George, and from Wilson that to Saddle. Some of these observations in British Columbia were repeated from the previous year, the re-observing being necessary to remove some uncertainty.

The Laplace observation in Saskatchewan was at Dilke, the azimuth of the line to Aylesbury being determined.

POSITION DETERMINATION OF BAFFIN ISLAND COASTLINE

During the 1937 field season, a small party continued the work of coastline position determination in the Eastern Sub-Arctic. The 30-ton motor schooner *Nannuk* was chartered for the season from the Hudson's Bay Company to provide transportation. Accurate determinations of position were made at intervals of about 40 miles along the coast. At each point of observation sufficient local surveys were made to permit of identification of the astronomical station from aerial photographs. The astronomical stations, carefully marked on the ground by bronze tablets cemented into the solid rock, are available as control stations for future aerial mapping or any other form of detailed survey.

Four astronomical stations were established in Frobisher Bay and six along the south coast of Baffin Island from Lake Harbour to Cape Dorset. The stations established were: Hudson's Bay Company post, Frobisher Bay; west end Frobisher Bay; Bates Island, Frobisher Bay; Ney Harbour, Frobisher Bay; High Bluff Island, Hudson Strait; Lake Harbour, Hudson Strait; Sahbowyah, Hudson Strait; Ayetinyook, Hudson Strait; Amadjuak, Hudson Strait; and Cape Dorset.

BASE-LINE

One base-line located in the Newfoundland triangulation net was measured in 1937 and will control the scale of the triangulation of this net. The invar base-line tapes used in measuring this base were standardized before and after the measuring was done.

TRIANGULATION ADJUSTMENTS

The work of this Division has been a continuation of the adjustments imposed upon this Service's triangulation structure due to the entire revision of the United States system. Published values exist for the regions of Eastern Canada which were based upon the North American datum values of stations near the International Boundary and to which the Canadian system was attached. The newer values now made available demand the present revision, as greater accuracy is obtained and a perfect correlation will then be possible between the stations of the Geodetic Service, United States Coast and Geodetic Survey, and the International Boundary Survey in the same or contiguous areas.

A similar revision is not necessary in Western Canada, as the equivalent information was available to this Service previous to any extensive adjustment system or publication of results.

A revised and enlarged Publication No. 7 has been printed during the last year and contains many useful geodetic tables, in addition to pertinent matter used in the calculation of geodetic co-ordinates.

Further field work in Newfoundland and in British Columbia has allowed several large areas to be controlled geodetically and the information regarding co-ordinates is now available for distribution.

An unusual problem dealing with the accuracy of air navigation has been referred to this Division for investigation and the result obtained indicates the practicability of the methods and instruments suggested for use by the Trans-Canada Airways.

LEVELLING ADJUSTMENTS

During the year two lines, levelled in the summer season of 1937, were adjusted to the published elevations of existing benchmarks. These were line 176 from Tophet to Franz in Ontario, a distance of 101 miles, thus completing the line Sudbury to Franz, and line 184 from North Bay to Pembroke, a distance of 138 miles. A tabulation of the recent adjustments obtained from the various United States tidal stations, with the combined United States and Canadian level net, has been completed.

GEODETTIC RESEARCH

During the past year the attention of this Division has been directed chiefly toward a solution of the problem of transferring the results of triangulation adjustments from the Clarke ellipsoid of 1866 to the International ellipsoid, which has been recommended for universal adoption by the International Union of Geodesy and Geophysics. A solution of the problem has been arrived at, and the necessary explanations pertaining thereto are now in manuscript form to be submitted to print as a publication of this Service.

INTERNATIONAL BOUNDARY COMMISSION

The function of the International Boundary Commission is to perform the treaty obligation of maintaining in a state of effective demarcation the entire International Boundary between Canada and the United States, and between Canada and Alaska.

The commissioners held a conference in Washington, D.C., between April 16 and April 23. At this conference their Eleventh Annual Joint Report for the calendar year 1936, required under the Treaty of 1925, was signed, and later submitted to the two Governments. The commissioners also agreed upon the inspections to be made and upon a program of field work for the field season of 1937. Consideration was also given to the necessary program of field work in 1938, with a view to the preparation of estimates for the fiscal year 1938-9.

At the request of the Department of Public Works, the Commission plotted the positions of 71 International Boundary reference monuments on Rainy River between the outlet of Rainy Lake and the Long Sault Rapids, on large-scale manuscript maps made from surveys of the Public Works Department.

At the request of the Department of National Revenue the Commission undertook to lay down the limits of Canadian waters on hydrographic charts of Canada's east and west coasts and progress was made on this work.

A joint report required by treaty upon the survey and demarcation of the 49th parallel International Boundary from the Strait of Georgia to the north-westernmost point of Lake of the Woods was printed. Further progress was made in the preparation of material for a similar report upon the Cape Muzon-Mount St. Elias section of the boundary.

INSPECTION

In July the Canadian Boundary commissioner made an inspection of the work being done by a Canadian survey party engaged in maintenance operations on the Alberta-Montana section of the boundary. He also inspected the boundary at a number of points on the British Columbia-Washington section. In August, the Canadian and United States commissioners jointly inspected the maintenance work being done by a United States survey party on Lake of the Woods, Rainy River, and Rainy Lake.

MAINTENANCE OF THE BOUNDARY

Survey parties of the Canadian section of the Commission worked on the Alberta-Montana, Saskatchewan-Montana, Saskatchewan-North Dakota, and St. Lawrence River sections of the boundary. On the Alberta-Montana section of the line, 17 miles of boundary vista were recleared, 14 monuments were inspected, and 1 monument was repaired. Six new monuments of a special ornamental concrete type were erected to mark the boundary on the shores of Waterton Lake, and in pairs at important highway crossings at Chief Mountain and Coutts. On the Saskatchewan-Montana boundary similar monuments, 6 in number, were erected at important highways at East Poplar, Big Beaver, and Regway, and 9 monuments were inspected. On the Saskatchewan-North Dakota boundary a pair of ornamental concrete monuments were erected at North Portal and 2 monuments were inspected. All the new monuments were located by survey from existing monuments and large-scale plans were made of the road in their vicinities. On the St. Lawrence River section of the boundary, surveys were made to determine the exact position of the boundary on the bridge being erected across that channel of the river known as the Rift. The boundary was marked on each side of the Rift bridge by a suitably designed bronze tablet built in the masonry railing and by a brass strip along the boundary set in the concrete surface of the roadway.

HYDROGRAPHIC AND MAP SERVICE

The Hydrographic Service conducts all charting of Canadian navigable waters, the investigation of tides and tidal currents, and the precise water-level recording and study of the St. Lawrence-Great Lakes waterway, which provides access from the sea to the heart of the continent. For over half a century the Hydrographic Service has been universally recognized as one of the great public navigational institutions of the Dominion. In providing standard navigational information to seamen, the Service takes its place as a link in the chain of similar services maintained in maritime countries throughout the world.

The Legal and Map Service conducts all legal surveys required by this and other departments, including those on Indian reserves, airports, national parks, ordnance lands, and all surface and mineral rights in the Northwest and Yukon Territories. It compiles and prepares aeronautical charts, electoral maps, general maps for the use of the various government departments, natural resources and railway maps, and general maps of Canada, and maintains a lithographic office for the reproduction of hydrographic charts and other maps prepared by the Department, within the capacity of the presses installed. It maintains a central office for indexing, filing, and recording survey returns and plans, and distributes all topographical and general maps of Canada.

HYDROGRAPHIC SERVICE

During the year the principal operations consisted of charting, the investigation of tides and tidal currents, the recording of fluctuations in the water-levels of the St. Lawrence-Great Lakes navigation system, the preparation of Coast Pilots and Sailing Directions, special marine investigations, and the supplying of diverse nautical data to the shipping trade. The development of Canadian aeronautical activities, frequently in outlying parts of the country, and the acceleration of naval defence measures, also resulted in enhanced demands for hydrographic services.

On the Atlantic Coast, charting operations were conducted with the use of the hydrographic steamers *Acadia* and *Cartier*, and on the Pacific by the *Wm. J. Stewart*. Smaller parties, equipped with motor launches, were also employed in hydrographic work on both coasts. To facilitate the investigation of currents affecting navigation in lower St. Lawrence River, the Service was afforded the use of the reserve lightship *No. 25* by the Department of Transport.

HEADQUARTERS DIVISION

This Division carried out, in addition to administrative work, the planning of new and special charting, investigations relating to chart revision, the preparation of Coast Pilots and Sailing Directions, and various hydrographic researches for navigational purposes.

During the year the available facilities of this Service were taxed to capacity in an endeavour to meet the ever-increasing demand for the charts and hydrographic data.

In addition, there were received a great many requests for special nautical information pertaining chiefly to depths, water-levels, tides, navigation routes, berthing accommodation, and harbour facilities.

International Exchange of Hydrographic Data.—Many new charts and hydrographic publications were received, examined, and filed for reference and library purposes, principally from the British Admiralty Hydrographic Department, the United States Hydrographic Office and the United States Coast and Geodetic Survey at Washington, and the United States Lake Survey Office at Detroit, and the International Hydrographic Bureau at Monaco. Related publications were also received from the Hydrographic Services of France, Germany, Italy, Japan, and other countries. On a co-operative basis, the Hydrographic Service of Canada furnishes these foreign Government services with copies of new or revised charts and new editions of Canadian publications dealing with the Dominion's coasts and waters. Extensive portions of Canadian coastal waters are still covered only by original Admiralty charts, and for the correction of these, information was supplied from time to time to the Admiralty.

Pilots and Sailing Directions.—The vast amount of navigational information contained in these books is supplemental to that shown on the marine charts, and new material for their revision was received and tabulated throughout the year. The volumes published in 1937-8 by this Service cover the following coastal and inland waters: Gulf of St. Lawrence, River St. Lawrence, Great Lakes, Saint John River, Hudson Bay Route, British Columbia Coast.

These standard nautical books describe the coasts, channels, shoals, banks, and reefs, and deal fully with the nature and location of the various aids to navigation installed on the routes. Recommended tracks and ships' courses are a most important part of the Sailing Directions and are given after a full consideration of all the navigational factors involved. In these volumes much other useful data are also set forth, including Pilotage Regulations, Fees, Special Rules of the Road, Descriptions of Harbours, Harbour Facilities, Harbour and

Sick Mariners' Dues, Depths at Wharves, Anchorage Regulations, and such general information pertaining to marine transport as is required by the navigator.

Emergency Surveys.—Numerous emergency surveys and field investigations in connection with reported dangers to shipping, such as ice, and changes in aids to navigation, were carried out as occasion arose. This work is always urgent and frequently of vital importance to shipping. Reports are included in the following record of charting operations conducted by the Hydrographic Service during the year.

HYDROGRAPHY

Gulf of St. Lawrence—North Shore.—The C.G.S. *Acadia* was fitted out at Halifax and left on May 21 bound for her season's operations. From May 31 to June 2 the ship was engaged in calibrating the Belle Isle Radio Direction-Finding station. From the latter date until October 14 the charting of the north shore of the gulf from Harrington eastward to the Canadian boundary was continued. Coastal triangulation was carried on and many soundings were made, the launches being used for the sounding of the bays and inshore waters and the ship extending the work to some 25 miles off the coast. Many examinations were made of shoals which rise abruptly from the sea, both within and without the protective chain of islands with which this coast is favoured.

Working in conjunction with the ship was a subsidiary shore-party equipped with the 36-foot auxiliary cabin-cruiser *Henry Hudson* which had wintered at Old Fort Bay. On September 7, the *Henry Hudson*, with a reduced crew left for winter quarters at Quebec.

The *Acadia* returned to Halifax on October 16. Before returning to Ottawa, members of the staff made special examinations of Halifax and Yarmouth harbours for chart correction purposes.

Summary of Season's Work

Ship sounding	1,200 linear miles
Boat sounding	1,450 " "
Shoals examined	960

Gulf of St. Lawrence—Cape Breton.—Due to the obsolescence of many of the early Admiralty charts of the Atlantic Coast it has been the policy of the Hydrographic Service to replace them by the productions of modern scientific research as rapidly as available facilities permit. The C.G.S. *Cartier* was fitted out at Charlottetown and on June 15 commenced ship-sounding and the examination of shoals off Hillsborough Bay, P.E.I. The work was completed on June 19, after which charting operations were conducted along the east coast of Cape Breton Island, between Cape Smoky and Flint Island, including the entrances to Sydney harbour and Great Bras d'Or and St. Anns harbour. A trip to the Magdalen Islands was also made to examine a reported shoal. At the close of the season opportunity was taken to determine the position of the new navigation light erected at Cheticamp. On October 9 the vessel returned to winter quarters at Charlottetown.

As a result of the season's work the following charts will be published: "Flint Island to Cape Smoky," "Entrance to Great Bras d'Or," and "St. Anns Harbour."

Summary of Season's Work

Ship sounding	1,016 linear miles
Boat sounding	1,099 " "
Shoals examined	59

Hillsborough Bay and Approaches.—In sandy regions such as Prince Edward Island where the sea-currents and storms are constantly shifting the sand and piling it up in bars, it is only by constant vigilance that the navigation

charts can be kept up to date. From May 27 to August 2, a hydrographic party equipped with a motor launch completed the detailed charting of Hillsborough Bay. As a result of the work two new charts, "Charlottetown Harbour" and "Hillsborough Bay," will be published.

Summary of Season's Work

Boat sounding	396 linear miles
Shoals examined	53

Saguenay River.—The hydrographic cabin-launch *Boulton* left Prescott on June 1 for the Saguenay. En route, an examination was made of a dangerous rocky shoal reported by the Department of Transport as existing close to the main steamer channel in Lake St. Louis. The work of the *Boulton* was the charting of the deepest portion of Saguenay River, namely the 55-mile stretch extending from its confluence to St. Fulgence. The sounding of this deep, fiordal river was greatly facilitated by the use of the modern echo-sounding instrument. Depths of over 150 fathoms were found to be general, the 100 fathom line often skirting the very foot of precipitous cliffs. The great depths and strong tidal currents make anchorage in case of fog or emergency extremely difficult. It has been reported to the Service that the old Admiralty chart of this region is quite obsolete and, on account of its very small scale, is almost useless for navigation purposes.

The risk involved in navigating with this old chart was borne out this season when an important British ship reported that she had narrowly averted grounding on an uncharted obstruction. As a result of this season's charting operations this danger was definitely located and proved to be a narrow projection extending sharply seaward from the shore bank.

On completion of this work the *Boulton* left the Saguenay on September 13, and as she progressed up river, the actual positions of floating aids to navigation were verified. In order to determine the necessity for a recharting of certain areas, inspections were made of Quebec and Montreal harbours and depths of critical sections of the river, both in and outside of the main channels, were examined and compared with those shown on the charts. At the close of the season, at the request of local navigation interests, charting operations were conducted to locate a small channel between Adams and Pier Islands, at the head of the Galops Rapids, in order to assist in the conduct of winter ice-breaking operations. The *Boulton* returned to Prescott on October 11.

As a result of the season's work two new charts of Saguenay River will be published: "Tadoussac to Trinity Bay," and "Trinity Bay to St. Fulgence, including Ha Ha Bay."

Summary of Season's Work

Boat sounding	508 linear miles
Coastlining	146 " "

Georgian Bay.—From May 27 to September 30 a shore party operating out of Midland, Ont., conducted the charting of Matchedash Bay, including the ports of Midland, Port McNicoll, Victoria, and the grain-loading berths at Tiffin. Other special work included the locating of a reported danger in the vicinity of Chicora Shoal.

The United States Hydrographic Office reported the grounding of a United States yacht between Bourinat Island and Todd Point, Amedroz Island, and as a result of an examination of this locality a rock, with only 2 feet of water over it, was found lying directly in the entrance to the boat harbour.

At the request of the Department of Transport, an examination was made of a reported obstruction in the entrance to Collingwood Harbour. An officer of this Service superintended sweeping operations conducted in an attempt to locate the wreck of the collier *Aycliffe Hall* in Lake Erie.

Summary of Season's Work

Boat sounding	420 linear miles
Coastline surveyed	43 " "
Shoals examined	300

Pacific Coast.—The C.G.S. *Wm. J. Stewart* was commissioned for the season's charting operations on April 14. From April 15 to May 4 an inspection of field operations was made by the Surveyor General and Chief, Hydrographic and Map Service. During this trip, camp parties were left at Cowichan Bay, Nanaimo, and Tucker Bay, and, on the way north, hydrographic shoal-sweeping operations were made in order to locate reported uncharted rocks. The hydrographic houseboat *Pender* was established at Rivers Inlet, and the ship having returned by the west coast of Vancouver Island, an inspection was made of Fraser River entrance and Port Mellon. The camp parties were taken aboard and on May 1 the ship returned to Victoria. Upon completion of coaling and provisioning, charting work was resumed in the Strait of Georgia for a few days. On May 7 work was started between Bull Harbour and Cape Scott and towards the entrance of Quatsino Sound. At the request of Provincial authorities a net of ship triangulation stations was built and observed for local topographical purposes.

The ship then resumed the work left from previous years in the vicinity of Cape Cook and up to the entrance of Quatsino Sound, completing the chart between Kyuquot Sound and Cape Cook, and from Cape Cook to Entrance Island; also the charting of the low-water features and coastline between Entrance Island, Quatsino Sound, around Cape Scott, and as far as Bull Harbour. This work was completed on August 15. Special work was also carried out for the Department of Public Works at the entrance to Nitinat Lake.

The *Wm. J. Stewart* then proceeded to the west coast of Queen Charlotte Islands, and completed the charting between Cape St. James and Frederick Island, started in 1935. Returning south by way of Prince Rupert, a stop was made at Bakers Inlet for an investigation of charting requirements requested by certain mining interests. Upon arrival at Rivers Inlet the sweeping and examination of shoals and rocks at the entrance was completed in conjunction with the *Pender* party.

The ship then towed the *Pender* to the west end of Hakai Passage, returning from there to the vicinity of Bull Harbour. A few observations were completed and the ship proceeded south and resumed the charting of the Strait of Georgia, between the Fraser River lightship and Yellow Island lighthouse. Constant southeast winds and forest fires prevented the completion of triangulation observations, especially on the eastern shore, between Merry Island and Howe Sound.

On September 23 the *Wm. J. Stewart* reached Victoria, where the small hydrographic boats were stored and part of the crew paid off. After coaling at Union Bay the ship proceeded to Hakai where the *Pender* was taken in tow and returned to Victoria.

Summary of Season's Work

Ship sounding	700 linear miles
Boat sounding	1,136 " "
Coastline surveyed	253 " "
Shoals examined or swept	501

Houseboat Pender.—This auxiliary hydrographic craft was placed in commission on April 23 at Schooner Passage, Rivers Inlet, the charting of which was completed on August 26. The *Pender* was then towed to Hakai Passage and commenced the charting of this connection between Hecate and Fitzhugh Sound. The main channels were completely charted, but rocks and shoals closer to the shores will require further investigation.

Summary of Season's Work

Boat sounding	602 linear miles
Coastline surveyed	148 " "
Shoals located or examined	166

TIDES AND CURRENTS

The work in connection with the preparation of the various issues of tide tables for a year in advance was carried out as usual. The total number printed and distributed for the year 1938 was 103,100. These are classified as follows:

Atlantic Coast Tide Tables.—Atlantic Coast (complete) 10,000; Quebec and Father Point (abridged) 8,500; Charlottetown and Strait of Canso (abridged) 2,600; Halifax and Sydney, N.S. (abridged) 2,500; Saint John and Bay of Fundy (abridged) 22,500.

Pacific Coast Tide Tables.—Pacific Coast (complete) 35,000; Vancouver and Sand Heads (abridged) 13,000; Prince Rupert and Northern B.C. (abridged) 9,000.

The complete editions are required for the shipping industry generally, and the abridged editions for the needs of fishermen and others locally. Beginning with the year 1939 a charge will be made for all tide tables, and preparations have been made for this change in policy. Distributions and collections in general will be attended to by the King's Printer's Division of the Department of the Secretary of State. Hydrographic Service offices will maintain small stocks to meet direct requests.

The principal tidal stations maintained in operation are:

Atlantic Coast.—Quebec, Father Point, P.Q.; Charlottetown, P.E.I.; Saint John, N.B.; Halifax, N.S.; and Port Churchill, Man.

Pacific Coast.—Vancouver, Caulfields, Victoria, Clayoquot, and Prince Rupert, B.C.

The two additional stations established in Newfoundland in 1935 were closed in October 1937. The necessary reductions of the records from these two stations were completed and the results forwarded to the Geodetic Service to be used as the basis of their levelling operations in Newfoundland.

Seasonal Tidal Stations and Tidal Observations.—Tidal records were obtained at St. Jean, Saguenay River, and at North Sydney from Hydrographic Service parties working in these areas. Some observations of the tide were obtained at the head of Frobisher Bay, Baffin Island, by a representative of the Geodetic Service and forwarded to the Hydrographic Service for analysis. From a study of this data an approximate spring tide rise of 33 feet, instead of a reported rise of 45 feet, was indicated.

Investigation of Currents.—The charting of the currents in the St. Lawrence Estuary was continued with the use of the reserve lightship *No. 25*, a vessel loaned to this Service for the purpose by the Department of Transport. A set of twelve maps or charts showing the direction and rate of the currents for each hour of the tide at numerous anchorages, from the investigations of the past four seasons, is in preparation. A publication to be known as an Atlas of Currents will contain these charts and will be issued in the near future for the use of pilots and ship captains.

A reduction was made of observations of the tidal streams in Digges Sound, Hudson Strait, taken by the Department of Transport patrol vessel *N. B.*

McLean. Tidal and current information was supplied for insertion on new navigation charts and in response to numerous requests from navigational and other interests. Progress was made in the tabulation of tidal records for the purposes of analysis and for the determination of mean sea-level. It is essential that this work be kept up to date for revision of the publications of this Service.

In British Columbia further observations of the turn of the tidal streams in Porlier Pass were taken for a test of predictions as published in the tide tables.

Reductions, Reports, and Information Service.—The tidal records from both principal and secondary stations were inspected and datum lines ruled, and such reductions made as were required for tide tables, charts, or other purposes. The following reports on tidal currents are available on request: Currents in the Entrance to the St. Lawrence; Currents in the Gulf of St. Lawrence; Currents in the St. Lawrence Estuary; Currents in the Bay of Fundy. These deal with the currents to be met with in the outer areas of the main steamship route. Predictions for the turn of the tidal streams at places in the St. Lawrence River, in the Strait of Canso, and other straits or passes, are given in the Atlantic Coast Tide Tables. The Pacific Coast Tide Tables have similar information. Other publications are: Tide Levels and Datum Planes on the Atlantic Coast; Tide Levels and Datum Planes on the Pacific Coast; Tides at the Head of the Bay of Fundy; Tides and Tidal Streams (descriptive); Temperatures and Densities, Canadian (Atlantic) Waters.

PRECISE WATER-LEVELS

Under this Division is centralized the activities of continuously recording, by means of self-registering gauges, the ever-changing water-levels of the Great Lakes-St. Lawrence Waterways system extending from Port Arthur to Quebec, and also of the lower Ottawa River. This Division also compiles and correlates these records, prepares and issues reports, bulletins, and special water-level data to the various commissions, boards, navigation interests, and engineering services operating within that extensive field.

To provide such information, during the year 47 gauging stations were maintained, 522 months of continuous records were registered from which over 600,000 water-level elevations were computed, correlated, and compiled. Some 24,000 sheets of prepared data, bulletins, profiles, etc., were issued upon request during that period.

CHART CONSTRUCTION

The work of this Division is confined almost entirely to the draughting, compiling and revision, and preparation for the engravers and printers, of the results of the work of the hydrographic field parties. In addition, assistance was rendered during the year to the field parties in completing their field sheets and to the Tidal and Current Division in their reports and charts dealing with current work. Hand corrections to published charts totalled 117,700 to 8,614 copies of 145 different charts, and a total of 1,862 process prints were made from 44 fair sheets, tracings, and negatives.

During the year 60 charts, maps, prints, and correction patches were printed, consisting of the following: 4 charts published from engraved plates in full colours; 14 charts published by photo-lithography in full colours; 11 charts published by photo-lithography in black only; 28 charts published as process prints on vandyke or similar paper; 3 patches for chart correction.

List of Nautical Charts issued 1937-8 and in Hand on March 31, 1938

Province	No.	Issued 1937-8	Scale, Inches to Nautical Mile	Remarks
		Title		
Que.	20	St. Nicholas to Quebec Bridge.....	5.3	(a) (f) reprint
"	23	Batiscan to Sorel.....	1.0	(a) (f) "
"	24	Quebec to Batiscan.....	1.0	(a) (f) "
Ont.	56	Cornwall Island to Cardinal.....	2.4	(a) (d) "
"	57	Galop Island to Rockport.....	2.4	(a) (f) "
"	58	Rockport to Howe Island.....	2.4	(a) (f) "
"	84	Parry Sound and approaches.....	1.5	(a) (d) "
"	100	Georgian Bay.....	0.4	(a) (d) "
"	102	Lamb Island to Thunder Cape.....	1.0	(a) (d) "
B.C.	338	Broken Group.....	3.5	(a) (f) "
"	349	Race Rocks to Turn Point.....	1.0	(a) (f) new
"	350	Turn Point to Sand Head lightship.....	1.0	(a) (f) "
"	360	Plans of harbours in Graham Island.....		(a) (f) "
		Hippa Island.....	2.0	
		Seal Inlet.....	2.0	
		Tartu Inlet.....	2.0	
		Kano Inlet.....	2.0	
"	362	Esperanza Inlet, Maquinna Point to Kyu- quot Channel.....	1.0	(a) (f) new
"	365	Englefield Bay and vicinity.....	2.0	(a) (f) reprint
C.B.I.	463	Cape Smoky to St. Paul Island.....	1.0	(a) (f) new
"	464	Cheticamp to Cape St. Lawrence.....	1.0	(a) (f) "
"	465	Ingonish Harbour and approaches.....	4.0	(a) (f) reprint
Que.	P-1001	Outardes River.....	3.0	(b) (f) reprint
"	P-1004	Mutton Bay.....	6.0	(b) (c) "
"	P-1027	Sorel Harbour (2).....	15.0	(b) (c) "
Ont.	P-1409	Churchill Harbour to Hubbard Point.....	0.75	(b) (f) "
N.B.	P-1419	Saint John Harbour.....	6.0	(b) (f) "
"	P-1423	Miramichi Bay.....	9.0	(b) (f) "
"	P-1426	Dalhousie Harbour.....	10.0	(b) (f) "
Que.	P-1504	Mouth of Moose River.....	1.3	(b) (f) new
"	P-1505	Rupert Bay.....	1.6	(b) (f) "
"	P-1506	Mouth of Rupert River.....	3.0	(b) (f) "
Ont.	P-2030	Thames River, sheet 1.....	15.2	(b) (c) reprint
"	P-2031	Thames River, sheet 2.....	15.2	(b) (c) "
"	P-2032	Thames River, sheet 3.....	15.2	(b) (c) "
"	P-2043	Brockville Narrows.....	7.6	(b) (f) "
"	P-2065	Toronto Harbour.....	6.0	(b) (f) "
"	P-2070	Plans of harbours, Lake Ontario (2).....		(b) (c) "
		Port Whitby.....	15.4	
		Cobourg Harbour.....	12.3	
		Port Hope.....	12.2	
		Frenchman Bay.....	15.3	
		Port Credit.....	15.3	
		Port Dalhousie.....	7.7	
"	P-2073	Oakville Harbour.....	15.2	(b) (c) reprint
"	P-2080	Port Colbourne (2).....	12.0	(b) (c) "
"	P-2081	Plans of harbours, Lake Erie (2).....		(b) (c) "
		Entrance to Rondeau Harbour.....	15.1	
		Port Stanley Harbour.....	15.0	
		Port Burwell Harbour.....	15.1	
	P-2114	Port Arthur and Fort William (4).....	4.0	(b) (c) reprint
B.C.	P-3202	Allison Harbour and approaches.....	6.0	(b) (c) "
"	P-3203	Lockeport and approaches.....	3.0	(b) (c) "
B.C.	P-3205	Nass Bay.....	6.0	(b) (c) reprint
"	P-3206	Port Mellon.....		(b) (c) new
"	P-3208	Hakai Passage.....		(b) (c) "
"	P-3228	Lawn Point to Selwyn Inlet, Q.C.I. (2).....	1.0	(b) (c) reprint
"	P-3234	Burdwood Bay (Read Island).....	12.0	(b) (c) new
"	P-3254	Cowichan Harbour.....		(b) (c) "
"	P-3269	Mayne Passage (Johnstone Strait).....	2.0	(b) (c) reprint
"	P-3329	Fraser River, sheet 1.....	6.0	(b) (c) "
"	P-3353	Queen Charlotte Islands.....	0.5	(b) (f) "

(a) Printed in full colours.

(b) Printed in black only.

(c) Vandyke, photostat, blue or similar print, temporary edition.

(d) Printed from engraved plates.

(f) Printed by photo-lithography from originals.

In Printer's Hands March 31, 1938

Province	No.	Issued 1937-8	Scale, Inches to Nautical Mile	Remarks
		Title		
Que.	2	Longue Pointe to Varennes.....	6.0	(a) (f) reprint
Ont.	83	Waubashene to Western Islands.....	1.5	(a) (d) "
Que.	201	White Island to Pointe aux Originaux.....	1.0	(a) (d) "
"	209	Saguenay River.....	1.8	(a) (f) "
"	210	Bersimis River to Bic Island.....	0.8	(a) (d) "
B.C.	315	Victoria Harbour.....	11.9	(a) (d) new
Ont.	P-2070	Plans of harbours, Lake Ontario.....		(b) (c) reprint
		Port Whitby.....	15.4	
		Cobourg Harbour.....	12.3	
		Port Hope.....	12.2	
		Frenchman Bay.....	15.3	
		Port Credit.....	15.3	
		Port Dalhousie.....	7.7	
B.C.	P-3213	Port Neville (Johnstone Strait).....	6.0	(b) (f) new
"	P-3242	Beaver Cove (Johnstone Strait).....	6.0	(b) (f) "
"	P-3355	Houston Stewart Channel.....	4.0	(b) (f) reprint
"	P-3356	Skidegate Channel.....	2.0	(b) (f) "
"		Anchorage in Skidegate Channel.....	4.0	
"	P-3358	Flamingo Inlet.....	4.0	(b) (f) "
"	P-3361	Rennel Sound and Shields Bay.....	1.0	(b) (f) "

In Hand March 31, 1938

Que.	1	Montreal Harbour.....	6.0	new
"	5	Ile Bouchard to Ile St. Ours.....	6.0	new edition
"	21	Quebec Harbour.....	5.9	new
"	33	Quebec to St. Anvoine.....	2.0	new
"	34	St. Antoine to Ste. Emmelie.....	2.0	new
"	35	Ste. Emmelie to Champlain.....	2.0	new
"	36	Champlain to Pointe du Lac.....	2.0	new
"		Three Rivers.....	6.0	
"	37	Pointe du Lac to Sorel.....	2.0	new
"		Sorel.....	11.0	new
"	38	Sorel to Vercheres.....	2.0	new
"	39	Vercheres to Montreal.....	2.0	new
Ont.	68	Lake Ontario.....	0.2	new edition
Ont.	76	Lake Erie.....	0.2	new edition
"	77	Howe Island to Kingston.....	2.4	new edition
"	82	Cape Rich to Cabot Head.....	0.8	new edition
		Lionhead Harbour.....	5.8	
		Owen Sound.....	3.0	
		MacGregor Harbour.....	6.3	
"	120	Rideau River-Kingston to Brewer Mills...	2.5	new
"	121	Rideau River-Seeley Bay to Narrows lock	2.5	new
"	122	Rideau River-Narrows lock to Smiths Falls.....	2.5	new
"	123	Rideau River-Smith Falls to Becketts Landing.....	2.5	new
"	124	Rideau River-Becketts Landing to Ottawa	2.5	new
B.C.	344	Dixon Entrance.....	0.3	new
Que.	400	Gulf of St. Lawrence.....	0.07	new
"	405	Hudson Bay and Strait.....	0.03	new
P.E.I.	P-1460	Charlottetown Harbour.....	6.0	new edition
N.W.T.	P-2172	Tuktoyaktuk Harbour (Port Brabant).....	12.0	new edition
"	P-2173	Appr. to Tuktoyaktuk Harbour (Port Bra- bant).....	1.0	new edition
"	P-2174	Appr. to Tuktoyaktuk Harbour (Port Bra- bant).....	0.5	new edition
B.C.	P-3207	Atli Inlet and approaches.....	1.0	new
"		Tekelley Cove.....	6.0	
"	P-3244	Entrance to Portland Inlet.....	2.0	new
"		Traffic chart.....		new
Que.		Ice chart, Strait of Belle Isle.....		new

ENGRAVING SECTION

Charts Completed 1937-8

Province	No.	Title	Scale, Inches to Nautical Mile
B.C.....	340	Lennard Island light to Esteban Point.....	1.0
"	348	Clayoquot Sound (NW. portion).....	2.0
"	352	Swiftsure Bank to Esteban Point.....	0.5
N.S. and Que.	461	Cabot Strait to Magdalen Islands.....	0.33

Charts in hand March 31, 1938

B.C.....	349	Race Rocks to Turn Point.....	1.0
"	350	Turn Point to Sand Heads.....	1.0
"	351	Discovery Island to Beaver Point.....	2.0
"	362	Esperanza Inlet.....	1.0
N.S.....	463	Cape Smoky to St. Paul Island.....	1.0
"	464	Cheticamp to Cape St. Lawrence.....	1.0

DISTRIBUTION OF NAUTICAL PUBLICATIONS

The number of Canadian nautical charts distributed in the calendar year 1937 was, for the fourth consecutive year, considerably in excess of that of the previous corresponding period. The number of various nautical publications sold during the year was as follows:

Catalogue of charts, sailing directions, and tidal information with index maps..	756
Navigational charts.....	14,006
Pilots and Sailing Directions.....	473
Tide Tables.....	103,100
Water-levels bulletins, graphs, etc.....	24,396

There are now available for issue to the public 485 Hydrographic Service of Canada charts of Canadian waters, comprising general charts, coast sheets, river and lake charts, harbour and roadstead plans, and charts for special purposes. They are made up as follows:

Atlantic Coast (including the St. Lawrence River to the head of ocean navigation at Montreal; and Hudson Bay and Strait).....	190
Great Lakes and inland waters.....	135
Pacific Coast (including Vancouver Island).....	120
Charts for special purposes.....	40

There were 75,798 copies of charts in stock at the Hydrographic Office on January 1, 1938. For the convenience of shipping, a distribution service through local chart dealers, merchants, or Government officers has been provided where charts and other hydrographic publications may be procured at the official list prices, in the following ports: Saint John, N.B.; Yarmouth, N.S.; Quebec, St. Jean, and Montreal, P.Q.; Kingston, Toronto, Port Colborne, Killarney, Sault Ste. Marie, Little Current, Port Arthur, and Kenora, Ont.; Seattle, Wash.; Prince Rupert, Vancouver, and Victoria, B.C.

MAP SERVICE

LEGAL SURVEYS

This Division acts as a central surveys organization for the carrying out of legal surveys required by other Government services. Many of the records of surveys made under the Dominion Lands Surveys System and the survey records of the 2,187 Indian reserves in Canada are deposited in this Division. The Quartz Mining Regulations and the Yukon Quartz Mining Act provided that all plans and field notes in connection with mining claim surveys in the Northwest and Yukon Territories must be submitted to the Surveyor General for examination. In certain cases special instructions are issued for the survey of mining claims on Dominion lands. During the year instructions were issued for the survey of 113 surface lots, mostly mineral claims. Returns of survey were examined for approval in connection with 55 mineral claims including 21 of excessive size, which were dealt with according to the regulations. In addition to the above, detailed instructions were issued for the survey of four aviation fields in the Yukon Territory.

Field Work.—Several surveys were made in connection with Indian reserves, at the request of the Indian Affairs Branch. The establishment of a legally monumented boundary line between Caughnawaga Indian reserve and the Parish of St. Constant, in the Province of Quebec, was carried out as a joint undertaking between this office and the Provincial Department of Lands and Forests. Five and one-half miles of line were surveyed and thirty-one boundary monuments were erected. Surveys affecting 14 village lots and 88 Indian reserve lots were made in the vicinity of the new bridge that links the south shore of St. Lawrence River with the district of Montreal.

Thirty 50-acre lots were surveyed and monumented and a preliminary survey was made in connection with thirty additional lots in Maniwaki Indian reserve, in the Province of Quebec, as well as a partial survey of the limit between the reserve and the Township of Bouchette. This work included the traverse of Little Pocknock Lake and of portions of Pocknock and Little Cedar Lakes.

A resurvey was made of the outer boundaries of the block containing Lots 1, 2, and 3, Concession 1, and of the boundaries of Lot 1, Concession 2, Tyendinaga Indian reserve in the Province of Ontario. Certain lands situate in Georgian Bay opposite the Township of Baxter, which had been surveyed as mainland by the Province in 1878, were surveyed as islands in 1896 by the former Department of Indian Affairs. According to Indian Treaty, the islands in this locality were vested in the Dominion in trust for the Indians, and a survey was made to determine, if possible, the correct status of these lands on the dates of the previous surveys.

In Manitoba, a survey was made to determine the position of a disputed boundary of Fort Alexander Indian reserve, and a similar survey was made in connection with the south boundary of Brokenhead Indian reserve. At Elphinstone, an addition to the Indian cemetery was surveyed.

The north boundary of White Bear Indian reserve No. 70, Saskatchewan, was resurveyed in compliance with a request from the Provincial Government. Costs were shared equally by the Dominion and the Province. A site was chosen for the extension of Lakeview Subdivision, Last Mountain Lake Indian reserve No. 80A, Regina Beach. It was necessary to make preliminary topographic surveys and also to survey the boundaries of the site. The unsold lots of the existing subdivision were re-valued.

At Wabiskaw, Alberta, a new Indian reserve comprising 15,820 acres was selected from surveyed lands and the exterior boundaries were surveyed.

A survey was made of a townsite to be known as "New Bella Coola Indian Village" in British Columbia. The former Indian village had been encroached upon by the waters of Bella Coola River and the new site was established on higher ground. This survey was carried out by a British Columbia land surveyor in private practice under instructions prepared in this division.

Approximately 12 miles of line were surveyed in establishing portions of the boundaries of a Federal reserve at Rapides des Joachims, Quebec, for the Department of Public Works. This reserve contains valuable stands of white pine, which it appeared advisable to protect from encroachment.

Several surveys were made at the request of the Department of Justice. One of these comprised the limits of Kingston and Collins Bay penitentiary properties and an investigation was made of the title to a property adjoining penitentiary land at Collins Bay. Another survey was made to illustrate conditions at the intersection of Muriel Street and Fifth Avenue, Ottawa. This was the scene of an accident involving a Post Office Department truck.

The boundaries of Manitoba penitentiary were surveyed and concrete monuments planted. A topographic survey was also made and a large scale map prepared.

The boundaries of Saskatchewan penitentiary were surveyed and monumented, errors in title and descriptions were uncovered, and the necessary corrections made. A topographical survey of this property was also made and a large scale map was prepared.

At the request of the Lands, Parks, and Forests Branch, a retracement survey was made of the northerly limit of the danger zone of the rifle range at Belleville, Ontario, and a site for a historic monument was surveyed near Petitcodiac, New Brunswick.

MAP COMPILATION

Aeronautical Charts.—During the years 1934 to 1936 a commencement was made in covering the projected route of the Trans-Canada Airway with maps suitable for air navigation. These were made in conjunction with standard topographical map sheets which were as complete and accurate as the information available from all sources would permit, the topographical sheet being converted into the air navigation chart by the omission of certain details unnecessary for air navigation and the addition of others forming aids or hazards to flying. Although this arrangement gave an economical method of producing high-grade topographical and air navigation maps, it was not possible to keep pace with the ever increasing flying requirements, because the collection and compiling of the information, the drawing, the preparation of printing plates, and the printing necessarily required considerable time with a limited staff.

In 1937, at the request of the Department of Transport, a program for the completion by 1939 of a set of air navigation charts along the Trans-Canada Airway from the Atlantic Ocean to Vancouver was arranged. In order to comply with the time requirement it was necessary to re-design the charts, omitting roads other than the main and secondary highways, rural post offices, and minor water features, but supplying the information necessary for air navigation. For the new map the colours for the elevation tints were altered with a view to greater utility than is given by conventional methods. The range of heights in Canada was divided into three groups and a colour given to each group; green from sea-level to 1,500 feet altitude, buff from 1,500 feet to 3,000 feet, and purple from 3,000 feet to 8,000 feet, single rulings, cross rulings, and solids of each colour supplying the gradient. The symbols for aids to air navigation were revised and expanded to include the additional aids now being used in Canada. In conjunction with the Departments of Transport and National Defence, specifications for these charts were prepared.

The program includes eleven new map sheets at a scale of 8 miles to 1 inch. These are in addition to the three already printed and the three that were already in course of preparation. Where possible the map sheets conform to the National Topographic series and cover an area of 2 degrees in latitude by 4 degrees in longitude. During the year six of these sheets were compiled and two others were about 60 per cent compiled.

Northwest Territories Map.—The present small scale or general administrative maps of the Northwest Territories are now out of date, owing largely to the extensive mapping programs that have been carried out in conjunction with recent mining activities and to other explorations in the more inaccessible regions. A new map, on a scale of 80 miles to the inch, incorporating this information was, therefore, undertaken and the compilation is now well advanced. In addition to a careful selection of the features immediately available from the more detailed and accurate maps, this entails a review of older explorations and their re-adjustment in the light of newer and more reliable geographical positions.

Riding Mountain Park.—At the request of the Lands, Parks, and Forests Branch a plot from vertical air photographs of the western part of Riding Mountain Park was made on a scale of 40 chains to 1 inch, in order to provide a base map on which an inventory of the timber growth might be entered. The work was done on a schedule and prints supplied to the Forest Service as required for their field work, existing land surveys being used as control. The total area plotted exceeded 1,000 square miles. The mechanical positioner developed in this office was first used on this work and was found to be an improvement over the old method of plotting vertical air photographs.

General.—Other map compilation work consisted mainly of adding to plots made from air photographs the additional information required to complete the map in question. It entailed search through many existing maps and plans and considerable correspondence. Bases for the magnetic charts appearing in the borders of the maps were prepared and five maps revised for reprinting.

Manuscripts, fair drawings, and proof copies of all maps passing through this division are checked and edited. In all, work was done on 56 map sheets, 43 of which were maps of the National Topographic series. Fourteen maps were at a scale of one mile to one inch, 10 at a scale of two miles to one inch, 12 at the four-mile scale, 12 at the eight-mile scale, and 8 at miscellaneous scales.

A new table of elevations of places was prepared this year for the 1938 edition of the Canada Year Book and the elevations of the principal Canadian lakes were added to the table giving their areas.

COMPUTING AND ELECTORAL MAP

Ontario-Manitoba Boundary.—The field notes of that part of the interprovincial boundary surveyed during the winter of 1937 were received and partly examined. When the examination is completed photostat copies will be sent to the two provinces concerned.

Saskatchewan-Alberta Boundary.—During the year the Provinces of Saskatchewan and Alberta commenced the completion of the survey of their interprovincial boundary, which is defined by statute as "the Fourth meridian in the System of Dominion Lands Surveys, as the same may be hereafter defined in accordance with the said System." The need for this survey had become urgent with increasing mineral development and staking of claims in the vicinity of the supposed boundary line north of Lake Athabaska. The participation of the Dominion Government was enlisted in this work. The Surveyor General of Dominion Lands was named as Chairman of the Interprovincial Boundary Commission entrusted with the demarcation on the ground of the remaining 72 miles

of the boundary extending from the south shore of Lake Athabaska to the northern boundary of the provinces. The other members of the Commission, appointed by the Provincial Governments, were the Controller of Surveys for Saskatchewan and the Acting Director of Surveys for Alberta. The first task necessary in the survey of the boundary line was its production across Lake Athabaska, a stretch of about 24 miles, which necessarily had to be done during the winter. A Dominion land surveyor from this staff was seconded to the Commission to have charge of the field operations. All necessary arrangements were made during the winter and the line was successfully carried across the ice of Lake Athabaska in the early spring of 1938.

Magnetic Work.—The collection and collation of data relative to the magnetic needle was continued. This work forms the basis of the Magnetic Map of Canada issued periodically by this Service, and provides the best generalized information available to surveyors, prospectors, air navigators, and others.

Computations.—Numerous computations of a miscellaneous nature were done during the year, including the reduction of astronomical observations taken on interprovincial boundary surveys, the computation and issuance of the Astronomical Field Tables, widely used by surveyors throughout Canada; the computation of air line distances between aerial landing fields for the Post Office Department, which distances are accepted by that Department and by the Air Services as a basis for air mail contracts; and the design of map projections for the compiling and drafting divisions.

Among the map projections designed were projections for a new map of the World and for a map of the Northwest Territories, extending to the North Pole.

The new map of the World is constructed on quite an "unorthodox" projection, which it is thought will be favourably received by the general public. The public has been accustomed to World maps on Mercator's projection and has become accustomed to the meridians and parallels appearing as straight lines at right angles. Unfortunately, however, it is not generally realized that Mercator's projection—invented about 350 years ago—is really a special purpose map. It possesses special qualities which make it invaluable to mariners, but it is subject to gross distortions of area which make it totally unsuitable for a general purpose map. However, the public has become accustomed to a rectangular projection and it was, therefore, thought desirable to design our new World map on this type of projection, at least so far as the main part of the map is concerned. The main point kept in mind in the design was the reduction of the extreme exaggerations of areas to which Mercator's projection is subject, and which is particularly objectionable for a country such as Canada which extends over a large area in high latitudes.

Electoral District Maps.—The maps of Federal electoral districts are distributed from this division. Considerable work was done in keeping base maps up to date with regard to changes in parish, municipal, and county boundaries, so as to be in a position to deal with the work incidental to the next Redistribution.

SURVEY RECORDS AND DISTRIBUTION

This Division has charge of the registration and recording of all survey notes and plans affecting Dominion lands and interprovincial boundaries; the supplying of information relating to these records, and the storing and distributing of the official plans of townships, townsites, and settlements. Up to the end of the fiscal year, 22,095 books and 39,386 plans had been placed on record. Copies of official plans distributed during the year totalled 3,295.

This Division now distributes not only all the publications and topographical and geographical maps issued by this Map Service, but all the topographical and other maps issued by the Geographical Section, Department of National Defence, and the maps that were issued by what was formerly the National

Development Bureau. There is also available for distribution a stock of the topographical maps published by the Mines and Geology Branch. There are now available for distribution from this office over 1,100 different maps, as well as about 100 reports and pamphlets. A price has been set on all these maps, and on all the reports and pamphlets, except certain technical publications intended only for technical officials of the Government, surveyors, engineers, and scientific organizations. During the past 12 months 103,480 maps and 2,881 publications were distributed.

The demand for maps has greatly increased during the last few years. These requests come from those interested in the various phases of the development of the country—mining, lumbering, engineering, etc.,—from business firms of all kinds, from tourists, fishermen, hunters, from other branches and departments of the Federal and Provincial Governments, educational institutions, libraries, and similar organizations.

Of the maps issued during the year, a few that have been of special interest might be mentioned. The geographical map of Canada and the map of Canada indicating the main natural resources, both on a scale of 100 miles to an inch, have had a very large demand, especially from schools. Ten thousand copies of the first mentioned map were printed in October and by the end of the fiscal year the stock was entirely exhausted. Another popular map is the new edition of the map of the World showing trade routes. Three thousand copies of this map were printed for the Department of Trade and Commerce.

BOARD OF EXAMINERS FOR DOMINION LAND SURVEYORS

The Board of Examiners for Dominion Land Surveyors held one meeting during the year, beginning February 14 and lasting until March 17. During this meeting examinations were held at Ottawa, Kingston, and Edmonton. The total number of candidates who presented themselves at the examination was seventeen. Of these, thirteen tried the preliminary examination and four tried the final examination.

Five candidates were successful at the preliminary examination as follows: G. V. Bourbonnais; A. C. Davidson; C. S. Macdonald, jun.; D. R. Slessor; and W. H. T. Wilson.

Two candidates were successful at the final examination as follows: S. H. deJong; W. K. MacDonald.

One Dominion standard measure of length was issued during the year.

MAP PUBLICATION

This Division makes the finished drawings of maps and plans for reproduction, photographs these drawings to the scale of publication, makes the photo-litho zinc plates, and prints the editions. The maps published during the year and those in course of preparation are shown in a separate list. From this it will be observed that work was done for other branches of the department as well as for other Federal departments. The total number of copies of maps printed was approximately 224,000, necessitating nearly 1,000,000 impressions, as many of the maps were in several colours.

The work performed in the photo-mechanical division includes: wet plate negatives, 1,409; photolithographic plates, 452; enlargements, 1,660; contact prints, 1,297; vandyke prints, 1,320; plotting grids, 338; intaglio plates, 4; line-cuts, 34; blue and blue-line printing, 177,619 square feet; vandyke printing, 15,979 square feet; photostat work, 8,677 sheets. Much of this work was for other branches of the department and for other Federal departments.

Similarly, work was done for the whole department in the following respects: books bound, 58; maps mounted, 238; maps dissected and mounted, 18; maps mounted with rollers, 54; maps, photographs or other manuscript mounted on cardboard, 77; photographic index pockets, 200; miscellaneous jobs, 43.

List of Map Sheets of the National Topographic Series and of the Sectional Map Series Issued 1937-8, and in Hand on March 31, 1938

ISSUED 1937-8

Prov.	No.	Series	Name	Scale (in Miles to 1 Inch)	Latitude	Longitude	Remarks
Que.	31-G/NE.	N.T.	Lachute	2	45° 30' to 46° 00'	74° 00' to 75° 00'	(a) reprint
	31-G/NW	N.T.	Buckingham	2	45° 30' to 46° 00'	75° 00' to 76° 00'	(b) "
Ont.	31-E/N.E.	N.T.	Algonquin	2	45° 30' to 46° 00'	78° 00' to 79° 00'	(b) revised edition
	31-E/SW.	N.T.	Muskoka	2	45° 00' to 45° 30'	79° 00' to 80° 00'	(b) reprint
	31-E/NW	N.T.	Sundridge	2	45° 30' to 46° 00'	79° 00' to 80° 00'	(b) "
	41-H/NE.	N.T.	Byng Inlet	2	45° 30' to 46° 00'	80° 00' to 81° 00'	(b) "
Man.	221	Sect.	Swan River	3	51° 47' to 52° 30'	100° 00' to 102° 00'	(e) "
	575	Sect.	Port Nelson	3	56° 40' to 57° 23'	91° 53' to 94° 00'	(f) "
Sask.	64-E.	N.T.	Reindeer Lake North	4	57° 00' to 58° 00'	102° 00' to 104° 00'	(b) reprint
	117	Sect.	Red Deer Forks	3	50° 24' to 51° 06'	105° 03' to 110° 00'	(f) reprint
	267	Sect.	Battleford	3	52° 29' to 53° 12'	108° 00' to 110° 00'	(d) "
Alta.	116	Sect.	Rainy Hills	3	50° 23' to 51° 06'	110° 00' to 112° 05'	(f) "
	314	Sect.	St. Ann.	3	53° 11' to 53° 54'	114° 00' to 116° 05'	(e) "
	365	Sect.	Victoria	3	53° 53' to 54° 35'	112° 05' to 114° 00'	(e) "
	466	Sect.	Landels	3	55° 17' to 55° 59'	110° 00' to 112° 00'	(f) "
	516	Sect.	McMurray	3	55° 59' to 56° 40'	110° 00' to 112° 04'	(f) "
	616	Sect.	Firebag	3	57° 23' to 58° 05'	110° 00' to 112° 00'	(f) "
B.C.	10	Sect.	Port Moody	3	49° 00' to 49° 41'	120° 04' to 122° 00'	(f) "
	113	Sect.	Spillimacheen	3	50° 23' to 51° 06'	116° 03' to 118° 00'	(e) "
	461	Sect.	Moberly	3	55° 17' to 55° 59'	120° 00' to 121° 56'	(f) "

IN HAND MARCH 31, 1938

P.E.I.	S. ½ 11/NW.						
	N. ½ 11/SW.	Charlottetown-Sydney	8	45° 00' to 47° 00'	60° 00' to 64° 00'	(b)	
N.S.	11-K/NE.	N.T.	Nova Scotia Park	2	46° 30' to 47° 00'	60° 00' to 61° 00'	(b)
	21-H/16	N.T.	Amherst	1	45° 45' to 46° 00'	64° 00' to 64° 30'	(a)
	21-A/SE.	N.T.	Bridgewater	2	44° 00' to 44° 30'	64° 00' to 65° 00'	(b)
N.B.	21-G/SE.	N.T.	Saint John	2	45° 00' to 45° 30'	66° 00' to 67° 00'	(b)
Que.	31-I/NW.	N.T.	Grand Mère	2	46° 30' to 47° 00'	72° 00' to 73° 00'	(b)
	31-O/NW.	N.T.	Choquette	2	47° 30' to 48° 00'	75° 00' to 76° 00'	(b)
	31-M	N.T.	Timiskaming	4	47° 00' to 48° 00'	78° 00' to 80° 00'	(b)
	32-F.	N.T.	Waswanipi	4	49° 00' to 50° 00'	76° 00' to 78° 00'	(b)
	21-NW.	N.T.	Quebec-Edmundston	8	46° 00' to 48° 00'	68° 00' to 72° 00'	(a)
	31-NW.	N.T.	Upper Ottawa River	8	46° 00' to 48° 00'	76° 00' to 80° 00'	(b)
Ont.	31-F/7	N.T.	Renfrew	1	45° 15' to 45° 30'	76° 30' to 77° 00'	(a)
	52-A/SW.	N.T.	Fort William-Port Arthur	2	48° 00' to 48° 30'	89° 00' to 90° 00'	(b)
	52-A/NW	N.T.	Kaministikwia	2	48° 30' to 49° 00'	89° 00' to 90° 00'	(b)
	41-J/SW.	N.T.	Thessalon	2	46° 00' to 46° 30'	83° 00' to 84° 00'	(b)
	42-E.	N.T.	Long Lac	4	49° 00' to 50° 00'	86° 00' to 88° 00'	(b)
	31-SW.	N.T.	Toronto-Ottawa	8	44° 00' to 46° 00'	76° 00' to 80° 00'	(a)
	S. ½ 52/ NW. N. ½ 52/ SW. S. ½ 52/ NE. N. ½ 52/ SE.	N.T.	Kenora-Hudson	8	49° 00' to 51° 00'	92° 00' to 96° 00'	(b) aeronautical map
		N.T.	Sioux Lookout-Nipigon	8	49° 00' to 51° 00'	88° 00' to 92° 00'	(b) "
Man.	53-K.	N.T.	Stull Lake	4	54° 00' to 55° 00'	92° 00' to 94° 00'	(b)
	53-L.	N.T.	Oxford House	4	54° 00' to 55° 00'	94° 00' to 96° 00'	(b) revision
	53-M.	N.T.	Knee Lake	4	55° 00' to 56° 00'	94° 00' to 96° 00'	(b)
Sask.	74-F.	N.T.	Clearwater	4	57° 00' to 58° 00'	103° 00' to 110° 00'	(b)
	74-G.	N.T.	Cree Lake	4	57° 00' to 58° 00'	108° 00' to 108° 00'	(b)
Alta.	82-SE.	N.T.	Cranbrook-Lethbridge	8	48° 00' to 50° 00'	112° 00' to 116° 00'	(b) aeronautical map

List of Map Sheets of the National Topographic Series and of the Sectional Map Series Issued 1937-8, and in Hand on March 31, 1938—Concluded

IN HAND MARCH 31, 1938—Concluded

Prov.	No.	Series	Name	Scale (in Miles to 1 Inch)	Latitude	Longitude	Remarks
B.C.	92-G/2	N.T.	New Westminster	1	49° 00' to 49° 15'	122° 30' to 123° 00'	(a)
	92-G/3	N.T.	Vancouver South	1	49° 00' to 49° 15'	123° 00' to 123° 30'	(a)
	92-G/6	N.T.	Vancouver North	1	49° 15' to 49° 30'	123° 00' to 123° 30'	(a)
	92-L/1	N.T.	Schoen Lake	1	50° 00' to 50° 15'	126° 00' to 126° 30'	(a)
	92-L/2	N.T.	Woss Lake	1	50° 00' to 50° 15'	126° 30' to 127° 00'	(a)
	92-L/6	N.T.	Alice Lake	1	50° 15' to 50° 30'	127° 00' to 127° 30'	(a)
	92-L/8	N.T.	Adam River	1	50° 15' to 50° 30'	126° 00' to 126° 30'	(a)
	92-L/10	N.T.	Alert Bay	1	50° 30' to 50° 45'	126° 30' to 127° 00'	(a)
	93-A/5	N.T.	Beaver Creek	1	52° 15' to 52° 30'	121° 30' to 122° 00'	(a)
	93-A/6	N.T.	Horsefly	1	52° 15' to 52° 30'	121° 00' to 121° 30'	(a)
	93-A/11	N.T.	Spanish Lake	1	52° 30' to 52° 45'	121° 00' to 121° 30'	(a)
	93-A/12	N.T.	Hydraulic	1	52° 30' to 52° 45'	121° 30' to 122° 00'	(a)
	93-A/13	N.T.	Swift River	1	52° 45' to 53° 00'	121° 30' to 122° 00'	(a)
	93-A/14	N.T.	Cariboo River	1	52° 45' to 53° 00'	121° 00' to 121° 30'	(a)
	82-O/NW	N.T.	Barrier Mountain	2	51° 30' to 52° 00'	117° 00' to 118° 00'	(a)
	92-B/NW	N.T.	Victoria	2	48° 30' to 49° 00'	123° 00' to 124° 00'	(a)
	93-K/SE	N.T.	Fraser Lake	2	54° 00' to 54° 30'	124° 00' to 125° 00'	(b)
	82-SW	N.T.	Okanagan-Kootenay	8	48° 00' to 50° 00'	116° 00' to 120° 00'	(b) aeronautical map
N.W.T.	92-SE	N.T.	Victoria-Vancouver	8	48° 00' to 50° 00'	120° 00' to 124° 00'	(b)
	75-KandL	N.T.	Fort Reliance	4	62° 00' to 63° 00'	108° 00' to 112° 00'	(c)
	85-NE, NW	N.T.	Rae	8	62° 00' to 64° 00'	112° 00' to 120° 00'	(c)

NOTES.—Work performed on the sheets marked "In Hand" ranges throughout the various stages from the commencement of the compilation in the office to the preparation of the final lithographic plates for printing. Some sheets upon which very little work has so far been done are not included in the above list. Where a map sheet extends into more than one province, it is listed under one province only.

Under the column of "Remarks" the following are the meanings attached to the symbols used:

- (a) National Topographic Series—Standard Edition—Topographical information complete.
- (b) National Topographic Series—Provisional Edition—Topographical information complete or nearly so (except for contours), over all or greater part of sheet.
- (c) National Topographic Series—Exploratory Edition—Topographical information from exploration surveys, or where control is inadequate, no contours or contours conjectural only.
- (d) Sectional Map Series—New Series Edition—Detailed topographical information in eight colours, including contours.
- (e) Sectional Map Series—Intermediate Series Edition—Topographical information in five colours, not so complete, contours, when shown, usually approximate only.
- (f) Sectional Map Series—Old Series Edition—General topography only, in from one to four colours.

*List of Miscellaneous Map Sheets and Plans Issued 1937-8 and in Hand
March 31, 1938*

ISSUED 1937-8

Province	Map	Scale (in Miles to 1 inch)	Remarks
N.B.	Moncton	3-95	Reprint without revision
N.S.	Halifax	3-95	" " "
	Yarmouth	3-95	" " "
	Cape Breton	7-89	" " "
Que.	Chibougamau	7-89	" " "
	Mattagami	7-89	" " "
	Montmagny	7-89	" " "
	Montreal-Quebec	7-89	" " "
Ont.	Renfrew	1	Advance copies.
	Thessalon	2	Advance copies of four quarters.
	Kingston	3-95	Reprint without revision.
	Nipissing	7-89	" " "
	Sudbury	7-89	" " "
Sask.	Saskatchewan North	16	Advance copies.
N.W.T.	Fort Reliance	4	Advance copies of four quarters.
	Yellowknife Bay	4	Advance copies of two printings.
	Port Radium Settlement		Revised edition.
General	Map of Canada	100	" "
	Map of Canada showing Natural Resources	100	
	Map of the World showing Trade Routes		
	Index to Standard Geographic Series		
	Index to National Topographic Series, Quebec and Maritimes		Two printings.
	Index to National Topographic Series, Ontario		Two printings.
	Index to National Topographic Series, Manitoba and Saskatchewan		
	Index to National Topographic Series, Alberta and British Columbia		
	Index to Sectional Maps		
	Index to Maps of Northwest Territories		
	Astronomical Field Tables—2 sets		
	Folder covers for Algonquin, Barrier Mountain, Bridgewater, Carroll Lake, Dryden, Lachute, Petawaga, Quetico, Rainy Lake, Reindeer Lake North, Rouyn-Larder Lake, Sundridge, and Winnipeg map sheets		
	Twenty township plans	$\frac{1}{2}$ mile	Twelve reprints.
	Forty Hydrographic charts		
	Eight indexes to Hydrographic charts		
Miscellaneous	Hydrograph chart		For Dominion Water and Power Bureau.
	Set of Employment charts		For Dominion Water and Power Bureau.
	Kettle River geological map		For Mines and Geology Branch.
	Ashcroft geological map		For Mines and Geology Branch.
	Geological map to accompany Memoir 211		For Mines and Geology Branch.
	Township form with blue line grids for plotting air photographs		For Mines and Geology Branch.
	Coal Mining Costs chart		For Mines and Geology Branch.
	Fire Hazard chart		For Lands, Parks, and Forests Branch.
	Three Forestry graphs		For Lands, Parks, and Forests Branch.
	Chart of personnel		For Lands, Parks, and Forests Branch.
	Map of Canada showing Forests of Canada		For Lands, Parks, and Forests Branch.
	Chart showing weather elements		For Lands, Parks, and Forests Branch.

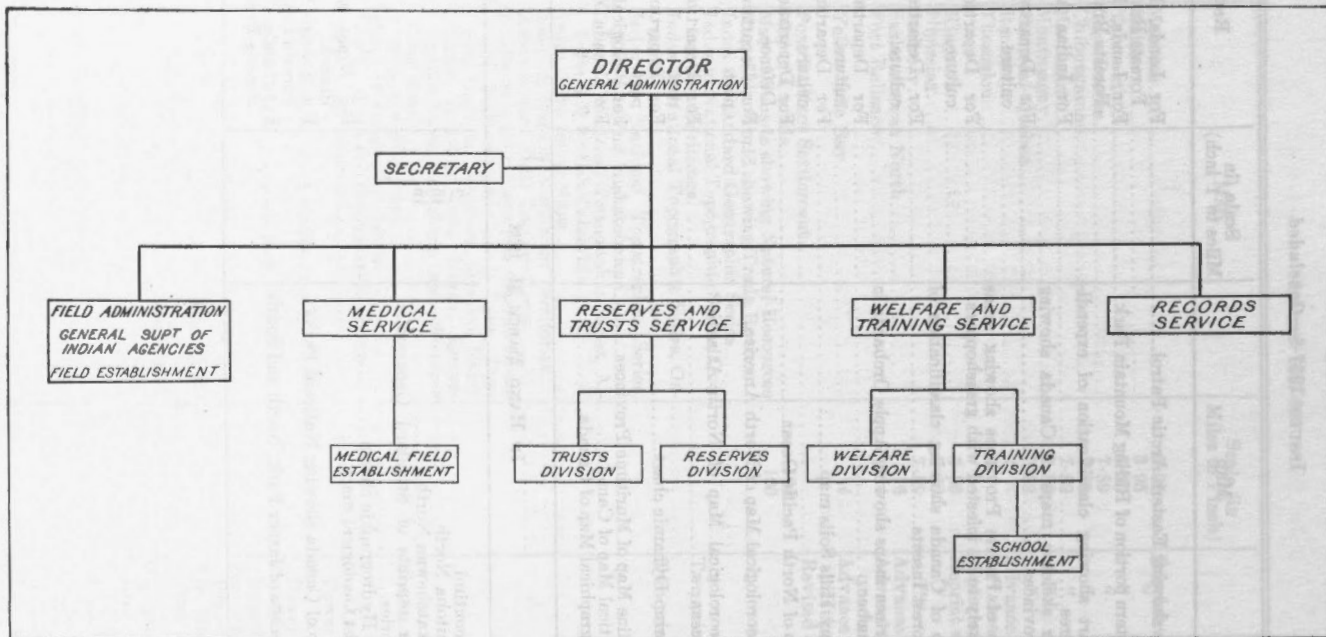
List of Miscellaneous Map Sheets and Plans Issued 1937-8 and in Hand March 31, 1938—Concluded

ISSUED 1937-8—Concluded

Province	Map	Scale (in Miles to 1 inch)	Remarks
Miscellaneous	Map showing Eastern Arctic Patrol.....		For Lands, Parks, and Forests Branch.
	Western portion of Riding Mountain Park.....		For Lands, Parks, and Forests Branch.
	Chart showing classification of expenditures.....		For Indian Affairs Branch.
	Four skeleton maps of Canada showing provinces.....		For Department of Agriculture.
	Map of Prairie Provinces showing areas likely to be infested with grasshoppers.....		For Department of Agriculture.
	Map of Canada showing classification of Forest Insects.....		For Department of Agriculture.
	Fourteen maps showing Apple Orchards in Quebec.....		For Department of Agriculture.
	Rainy Hills Soils map.....		For Department of Agriculture.
	Map of North Pacific Ocean.....		For Department of National Defence.
	Meteorological Map of North America.....		For Department of Transport.
	Meteorological Map of North Atlantic Ocean.....		For Department of Transport.
	Thermo Dynamic chart.....		For Department of Transport.
	Outline Map of Maritime Provinces.....		For Biological Board.
Political Map of Canada.....		For "Canada Year Book."	
Orographical Map of Canada.....		" " " "	

IN HAND MARCH 31, 1938

Que.....	Chicoutimi.....	2	
Man.....	Manitoba North.....	16	
Sask.....	Saskatchewan North.....	16	
General.....	Four reprints of Standard Geographic Series.....		
	Ten Hydrographic charts.....		
	Eight Geological maps.....		For Mines and Geology Branch.
	Map of Canada showing National Parks.....		For Lands, Parks, and Forests Branch.
	Reprints of Jasper Park, North and South.....		For Lands, Parks, and Forests Branch.



Organization Chart, Indian Affairs Branch.

INDIAN AFFAIRS BRANCH

DR. H. W. MCGILL, DIRECTOR

Reports from the Indian agencies and other reliable sources for the fiscal year just closed indicate that in the northern parts of the Dominion natural conditions have been the cause of considerable distress and suffering among the Indians. The fur catch on the whole was poor and the prices of skins low. In that part of the Northwest Territories lying south of the Arctic Circle where the game supply was particularly low, it was decided, as a measure of relief, to allow native-born Indians and half-breeds who were authorized to trap without licences, to take muskrats in this district for a period of 6 weeks in advance of the normal trapping season. It was found that this temporary extension of the open season for muskrats was most beneficial to the resident natives.

In British Columbia returns from trapping were disappointing. Indian fishermen on the sea-coast did not have a good year; prices were fair, but the salmon run was light and the fish were small. Marked progress, however, was made in the Dry Belt agencies in the interior of the province in bringing new lands under irrigation, although the limited amount of water available militates seriously against large areas being irrigated. The cattle industry is a very important one in that part of the province. Prices for good cattle were better during the year under review than for the immediately preceding years, and the Indians took advantage of this favourable opportunity to dispose of surplus stock. They are becoming definitely interested in the production of good beef cattle for market. The policy of the Department of providing well-bred sires is bringing about a gradual improvement in the Indian cattle herds. An experiment in growing tomatoes on the Westbank Indian Reserve in the Okanagan Agency is being carried out under the supervision of the agent. Some 60 acres of unused sagebrush land was allocated to young Indians. These young men cleared, ploughed, and fenced the area, which is now entirely under cultivation. In January a hothouse 94 feet by 24 feet was constructed, with a floor covered solidly with soil, laid over an excavation its full length. Two large stoves were placed in the excavation to heat the beds above. In this hothouse and in six large cold frames, some 105,000 tomato plants were growing and doing well when the reserve was visited in March. Conditions in industry in the province generally were better than in the previous year, with a consequent beneficial influence on the Indian population.

Adverse weather conditions affected the activities of the farming Indians in the Prairie Provinces and, consequently, returns from that region were greatly reduced. The decrease was offset to some extent by the excellent prices that the Indians were able to obtain for beef at the agencies where cattle were raised. The drought conditions also affected the Indians indirectly, as white farmers were unable to employ Indian labour. Special efforts that have been made to increase garden production are beginning to show results, and the Indians are being brought to realize the necessity for producing more vegetables.

Considerable assistance has been given the farming Indians of Ontario and Quebec; new land has been cultivated and good crops are expected. The Indians of the Maritime Provinces who were furnished with garden seed and seed potatoes raised produce that materially assisted them throughout the winter.

The trapping Indians of Ontario and Quebec have fared no better than those farther west. These Indians, up until the last few years, have been able to secure sufficient fur-bearing animals to supply most of their needs; whereas it

is now necessary to provide considerable assistance to prevent starvation. This undesirable situation appears to be due primarily to the presence of increased numbers of white trappers.

The depletion that has taken place during the past years in the resources upon which the hunting Indians were always dependent will make necessary a somewhat slow and gradual process of rehabilitation. As a result of the consideration and study that has been given recently to this problem, several projects have been put under way with a view to ameliorating conditions. These consist of the securing and setting aside of areas for the propagation of muskrats and conservation of beaver, and the establishment of hunting preserves in suitable parts of the country for the exclusive use of Indians, and in some instances Indians and half-breeds.

QUEBEC BEAVER SANCTUARY

For the benefit of the hunting Indians of Quebec, negotiations were entered into with the Government of that province for the purpose of setting aside an area between Rupert and Eastmain Rivers on James Bay as a beaver sanctuary. A similar experiment carried out by the Hudson's Bay Company since 1932 has proved very successful, the increase amounting to between 13,000 and 14,000 beaver. The proposed sanctuary will be immediately south of that operated by the Hudson's Bay Company. Close patrol in such a sanctuary would prevent any violation of the law and regulations, and a complete progress report might be kept for the benefit of future projects. Moreover, such a project would inure to the benefit of the province by increasing the value of the fur resources, and, when trapping is permitted, would be most beneficial to the Indian population of the nearby areas.

BEAVER COLONIES

Last year the establishment of beaver colonies was reported on certain reserves in Saskatchewan. Sixteen beaver were transferred to the Mistawasis Reserve, Carlton Agency, and of these fourteen survived the winter of 1936-7. In the autumn of 1937 there were approximately forty beaver. Only one colony remained in the lake in which they were originally placed, the other beaver moving to smaller lakes about half a mile away from the larger lake. The colonies now extend over an area of about 7 miles. The latest report is to the effect that they wintered well and a large increase is expected this year.

In the Pelly Agency, of forty beaver, eight were killed by bears, accident, and cold. The remainder were released in the Provincial Forest Reserve. Some have migrated into Manitoba and are established in lakes nearby. They have increased satisfactorily and it is estimated that they now number over one hundred. This number is approximate, as only the number of colonies can be checked.

Four pairs were placed on the Cote and Keys Reserves. These have remained and increased, but their young moved in the spring and cannot be located.

REMOVAL OF BELLA COOLA INDIANS

The flood that occurred on the coast of British Columbia in November 1936 was the greatest ever recorded on Bella Coola River. The river reached a level of from 2 to 3 feet higher than any previous record, and flood damage was general along the river and throughout the Indian village of Bella Coola. Aside from the fact that sidewalks, woodpiles, outbuildings, fences, and everything movable was carried off, the most disastrous effect of the flood was the shutting off of the Indian village from access to the road system and from their source of domestic water supply.

Two alternatives were available to remedy the situation; the re-establishment of a water supply service, or the removal of the village to a new location. As Nacleetsconnay River had changed its course and was flowing at the back of the Indian dwellings, thus placing them between it and Bella Coola River, it was considered that they would be in great danger in the event of a recurrence of flood conditions. The decision, therefore, was to move the village to a new location on the south side of Bella Coola River, adjacent to the white village. The new site was well above flood level and close to a good water supply.

Following a resolution of the Band, authority was obtained early in 1937 for the expenditure of capital funds at the credit of the Bella Coola Indians. During the summer a survey was made of approximately fifty-six lots, which were to form the new Bella Coola townsite. In October, following the fishing season, the removal of the Indians began. This was done as economically as possible by using the lumber in the old houses for construction of the new; the water-pipes were also recovered and laid again in the new location. The actual moving of the houses was done by the Indians themselves on a co-operative basis, and during this time community meals were prepared for those engaged in the work. At the end of the fiscal year the transfer was still proceeding and practically all the Indians had moved from the old village site. The difficulty of providing accommodation while houses were being torn down was met by a number of Indian women with their children seeking employment in the nearby canneries.

RADIO BROADCASTS BY INDIANS

The advice and co-operation of the Branch was sought by the Canadian Broadcasting Corporation in connection with the presentation of a coast to coast series of talks by Canadian Indians. These talks, which dealt with the Indians' present life, historical background, and related matters, proved both interesting and informative.

Synopses for the series were prepared and were arranged so as to be representative of racial and geographical distribution. The talks were of 15 minutes' duration, 3 minutes of which was occupied by an introduction by the local Corporation announcer.

The series commenced with a broadcast from Charlottetown in October, and was followed weekly by successive talks from Montreal, Ottawa, Winnipeg, Regina, Calgary, and Vancouver, ending with an address by the Minister in December.

INDIAN HEALTH SERVICES

During the year under review communicable disease was not widespread among the Indians, but in three areas intense local epidemics caused serious loss of life. In October, November, and December, 1937, measles of a virulent type appeared among the Indians at the east end of Lake Athabaska, and in the western part of Cariboo district in British Columbia. Both these districts are remote, the time of year was the worst possible, and the Indians affected were of the most primitive type.

A little later typhoid fever was reported at a reserve some 50 miles south of the National Transcontinental Railway in northern Quebec. The epidemic had been under way some weeks before firm ice allowed the news to be brought out. A doctor and two nurses were placed in charge. The nurses remained on constant duty for over 2 months. The disease was controlled by preventive inoculation, but many deaths occurred among those already infected.

These accounts show that there are still large areas in Canada where control and treatment of severe epidemic disease is an extremely difficult problem.

On May 1, 1937, a medical superintendent replaced the former part-time physician at the Caughnawaga Indian Reserve, near Montreal, where there are over 2,500 Indians in one group.

A new departmental hospital of 16 to 20 beds was opened at Pine Falls, Manitoba, to relieve the hospital operated by the Manitoba Paper Company, Limited, of sick Indians. The company had been very kind in this matter for some years, but found that it required all the space in its hospital for the care of its employees. The new hospital was built at a very reasonable cost, and has been used to capacity from its opening date.

The hospital of 50 to 60 beds completed and operated at Fort Qu'Appelle, Saskatchewan, in 1936, is operating very successfully. During 14 months of operation it provided 24,458 hospital days treatment for 475 resident patients. At the last report date there were 65 patients, of whom 51 were under treatment for tuberculosis. The cost of operation is extremely low. The remaining seven departmental hospitals carried on their work economically throughout the year and without any serious problem or complaint.

It is pleasing to be able to report definite progress in the treatment and control of tuberculosis. On June 23, 1937, a conference was held at Ottawa of leading tuberculosis authorities from almost every province and many of the senior departmental medical officers, to consult on this problem, and to advise on the use of a limited special appropriation provided for that year for combating tuberculosis among the Indians. Very briefly the measures recommended were the clearing of residential schools of active tuberculosis cases; the examination and survey of the more accessible reserves, and the isolation and treatment of the Indians found to have active tuberculosis.

During the year some 8,000 Indians were examined by the tuberculin skin test, X-ray, physical examination, or combination of these methods. Almost all of this work was carried out by provincial or voluntary tuberculosis clinics, at a small individual fee. The number of Indians receiving institutional treatment for tuberculosis reached 358 at the end of the fiscal year.

Accurate statistics of the prevalence of active tuberculosis among Indians are extremely difficult to obtain. Even the death rate from the disease is not accurately known. Among bands carefully surveyed last year, the proportion of children infected with tuberculosis varied from 13 to 90 per cent. The test used only shows that the person has, at some time in his life, been subject to invasion by the disease. It does not indicate that he has it in any active form. It may, in fact, indicate only that he has received repeated small infections, which tend to protect him against more serious invasion.

It is possible, however, to say with some definiteness that the Indian population is from ten to twenty times as tuberculous as the white, the rate varying widely in different provinces, and in different parts of each province.

In March 1938 a select committee representing those present at the meeting in June 1937, met again at Ottawa to plan for tuberculosis work in the new fiscal year. It is proposed to carry out a considerable extension of this important work when additional funds are provided for that purpose.

There was a considerable extension of remedial dental work in the residential and larger day schools. The field, however, was not completely covered. The method adopted is designed to secure the greatest possible amount of operative dental treatment for the expenditure of available funds. Although almost no provision is made for dental repair work for adult Indians, the Department does provide for extractions for the relief of pain, or to clear up a mouth condition that affects general health. Dental plates are supplied only if, and when, the Indian pays a part of the cost.

WELFARE AND TRAINING SERVICE

TRAINING

A table of pupil enrolment and attendance follows:

Fiscal Year	Residential Schools		Day Schools		Total		
	Enrolment	Average Attendance	Enrolment	Average Attendance	Enrolment	Average Attendance	Percentage of Attendance
1928-29.....	7,075	6,282	8,272	4,976	15,347	11,258	73.55
1929-30.....	7,302	6,476	8,441	5,103	15,743	11,579	73.55
1930-31.....	7,831	6,917	8,584	5,314	16,415	12,231	74.51
1931-32.....	8,213	7,400	8,950	5,707	17,163	13,107	76.36
1932-33.....	8,465	7,613	8,960	5,874	17,425	13,478	77.40
1933-34.....	8,596	7,760	8,852	5,592	17,448	13,352	76.52
1934-35.....	8,709	7,882	8,851	5,560	17,560	13,442	76.54
1935-36.....	8,906	8,061	9,127	5,788	18,033	13,849	76.79
1936-37.....	9,040	8,176	9,257	5,790	18,297	13,966	76.34
1937-38.....	9,233	8,121	9,510	5,978	18,743	14,099	75.22

Day schools were constructed during the year at the following reserves:

- Christian Island, Ontario
- Restigouche, Quebec
- Port Simpson, British Columbia
- Kinistino, Saskatchewan
- Bloodvein, Manitoba

These schools, with the exception of Kinistino, where a school was established for the first time, were built to replace buildings that, in recent years, had become wholly unsuitable for educational purposes.

It is estimated that the increase now taking place in the Indian school population will necessitate the construction of at least ten, one-room day schools annually, or five day schools and one residential school, with accommodation for one hundred and fifty pupils, if the present policy of making provision for pupils in day and residential schools is continued.

Throughout the year steadily increasing emphasis has been placed on the importance to the pupil of manual training and vocational instruction. Residential schools are now equipped to provide worth-while instruction in agriculture, gardening, carpentry work, boat-building, tailoring, dressmaking, cooking, hand-loom weaving, and physical culture. These studies are combined with the regular courses of study supplied by the Provincial Departments of Education. In the cases of Indian pupils, however, and particularly those pupils who intend to establish themselves on reserves, the tendency at present is to provide a practical course of study with less emphasis on academic subjects.

The one-room, ungraded, rural school is, in most cases, a poorly equipped educational unit for Indians. In the absence of basement accommodation, it is almost impossible to promote a program of vocational instruction. It is the policy of the Department, however, to provide basement accommodation suitable for vocational instruction at all newly constructed day schools. The fact that there are difficulties to be overcome in the case of the older schools does not mean that at these schools vocational instruction is wholly neglected. Teachers, often at their own request, are supplied regularly with dressmaking material, yarn, tools for gardening, garden seeds, and lumber for wood-working projects. The fact that requests for these supplies have been multiplying during the year is an indication of one of the most encouraging tendencies in educational effort among our Indian population.

Indian Education—Expenditures for Year 1937-8

	Day Schools	Residential Schools	General	Total
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Nova Scotia.....	10,051 59	28,230 44		38,282 03
Prince Edward Island.....	1,000 70			1,000 70
New Brunswick.....	16,114 16			16,114 16
Quebec.....	56,093 97	8,346 66		64,440 63
Ontario.....	106,802 52	243,893 04		350,695 56
Manitoba.....	56,726 88	159,544 62		216,271 50
Saskatchewan.....	32,280 82	274,002 90		306,283 72
Alberta.....	1,885 50	312,418 45		314,303 95
British Columbia.....	66,064 61	324,235 60		390,300 21
Yukon.....	2,943 00	15,365 17		18,308 17
Northwest Territories.....	1,378 07	37,466 51		38,844 58
Assistance to ex-pupils.....			1,252 90	1,252 90
Freight and express.....			1,062 55	1,062 55
Salaries and travel.....			7,989 63	7,989 63
Stationery.....			36,802 08	36,802 08
Tuition.....			25,844 89	25,844 89
Miscellaneous.....			2,274 21	2,274 21
Total.....	351,341 82	1,403,503 39	75,226 26	1,830,071 47

WELFARE

A special welfare program was organized early in the year. This program was designed to re-establish Indians, and particularly Indians in receipt of relief allowances, on a self-supporting basis.

The sum of \$150,000 was set apart from the regular welfare appropriation voted by Parliament for the promotion of projects and the purchase of supplies. An attempt was made by the field officials to give particular attention to reserves where unemployment was most in evidence and where relief expenditures appeared to be increasing. The most urgent needs of the Indian population on each reserve determined almost wholly the scope and details of the program. Under the direction and supervision of Indian Inspectors and Agents, live stock, farm machinery, and tractors were purchased and supplied to Indians. A number of the unemployed were engaged in cutting pulpwood, clearing land, boat-building, and in the construction of root houses.

Twelve tractors were purchased during the year. These tractors remain the property of the Department, but are placed at the disposal of Indians and are operated under the personal supervision of our farming instructors.

It is gratifying to state that despite the crop failure in Saskatchewan and Alberta, the results of the special program have been encouraging. It must be borne in mind, however, that the rehabilitation of the Indian population calls for the exercise of patience and perseverance and is a process that cannot be unduly hurried. It is significant that the majority of young Indians are at this time anxious to establish themselves on reserves. It is the policy of the Department to encourage this tendency and to make life on the reserves as attractive and as satisfying as it is possible to make it.

INDIAN HANDICRAFT

The revival and advancement of Indian handicraft has been given particular attention during the past year. The services of one of the officials of the Branch have been devoted entirely to the organization of this work among the Indians in Eastern Canada. Although it is too soon to gauge the ultimate result, a good beginning has been made in stimulating the Indians to a greater output of articles of good quality, and to finding outlets for the disposal of their wares.

The number of permanent workers, though small at first, has gradually increased, and a keener interest has become apparent. The Indians are assisted by the Branch in obtaining materials for the basketry work. Ash logs are cut and hauled by the Indians, pounded, made into bundles of splints, and dyed. Looms and other materials necessary have been provided in an effort to revive weaving among the Indian girls, and they have shown great aptitude for the work. Belts, ties, tweeds, blankets, linen towels, and bags are made, for which ancient Iroquoian, Montagnais, and Abenakis patterns have been revived and used.

GRANTS TO AGRICULTURAL AND INDUSTRIAL EXHIBITIONS AND FAIRS, FISCAL YEAR 1937-8

<i>New Brunswick</i>	
Fredericton Exhibition	\$ 25
<i>Ontario</i>	
Oshweken Agricultural Society, Brantford.....	200
Garden River Agricultural Society, Sault Ste. Marie.....	100
Caradoc Fair and crop competition.....	300
Manitoulin Island Unceded Agricultural Society.....	100
Snake Island Agricultural Society, Georgina Island.....	50
Ploughing matches.....	650
Field prizes, standing crop competitions.....	360
Garden prizes, standing crop competitions.....	250
Thunder Bay Agricultural Association.....	250
<i>Manitoba</i>	
Rosburn Agricultural Society, Rosburn.....	20
Manitoba Provincial Exhibition, Brandon.....	200
<i>Saskatchewan</i>	
Prince Albert Agricultural Society.....	350
Regina Agricultural and Industrial Exhibition Association, Limited.....	350
<i>Alberta</i>	
Calgary Exhibition, Calgary.....	350
Edmonton Exhibition Association, Limited.....	350
<i>British Columbia</i>	
Bulkley Valley Fall Fair, Smithers (Babine).....	100
Farmer's Institute, Bella Coola.....	25
Cowichan Agricultural Society, Duncan.....	150
North and South Saanich Agricultural Association (Cowichan).....	50
Windermere District Fall Fair (Kootenay).....	150
Vanderhoof Ploughing Association (Stuart Lake).....	50
Field crops, Stuart Lake.....	100
Chilliwack Fair (New Westminster).....	100
Vancouver Fall Fair.....	350
Armstrong Fall Fair (Okanagan).....	250
Colt and Calf Show (Stuart Lake).....	50
	\$5,280

CONSTRUCTION, SURVEYS, AND ENGINEERING WORKS

Agency Buildings

Repairs and improvements as required were carried out to agency buildings at the following Agencies: Six Nations, Saugeen, Caradoc, and Kenora, Ontario; Timiskaming, Pointe Bleue, Seven Islands, and Caughnawaga, Quebec; Portage la Prairie, Birtle, Fisher River, The Pas, Griswold, Pelly, Clandeboye, and Norway House, Manitoba; Touchwood, Carlton, Duck Lake, Battleford, File Hills, Crooked Lake, Onion Lake, and Qu'Appelle, Saskatchewan; Stony, Peigan, Blackfoot, Edmonton, Saddle Lake, Sarcee, Blood, Athabaska, and Lesser Slave Lake, Alberta; Bella Coola, Williams Lake, Kootenay, Kwawkewith, and Kamloops, British Columbia.

Repairs were also made to the old, historical building, known as Fort St. Louis, at Caughnawaga. The old File Hills Hospital was demolished and the materials used to build a granary at the File Hills Agency.

A number of buildings, transferred to this Department by the Department of National Defence, were moved and rebuilt at Norway House, Manitoba.

The new residences for the Indian Agents at Norway House, Manitoba, and Caughnawaga, Quebec, were completed.

Road Work

Approaches to the new bridge at Maniwaki, constructed in the previous year, were built, also a new road leading to the new bridge.

Repairs were made to roads on the following reserves: Sarnia, Kettle Point, Stoney Point, Caradoc, Tyendinaga, Golden Lake, Walpole Island, Pic, Parmachene, Oneida, and McIntyre Bay, Ontario; St. Regis, Bersimis, Caughnawaga, Oka, Lorette, Pointe Bleue, Abenakis, and Restigouche, Quebec; Fisher River and Norway House, Manitoba; Bear River, Shubenacadie, and Chapel Island, Nova Scotia; Big River, Saskatchewan; Lennox Island, Prince Edward Island; Big Cove and Tobique, New Brunswick; and Babine and Vancouver Agencies, British Columbia.

Bridges

Repairs were made to the bridge over Styne Creek in the Lytton Agency, and to bridges on the Neauslie and Stony Creek Reserves in the Stuart Lake Agency, British Columbia, on the Caughnawaga Reserve, Quebec, and Walpole Island, Ontario.

A new bridge was built over Cedar Creek on the Maniwaki Reserve, Quebec.

Drainage Work

Drainage work was carried out at Caughnawaga and Sarnia.

Other Works

Extensive repairs to the breakwater at Middle River Reserve, Nova Scotia, were made, and a telephone line was constructed from Orient Bay to McIntyre Bay, Ontario. The reconstruction of floats for the Homalco and Klahoose bands in British Columbia was commenced, and an extension to the wharf at the Kincolith Reserve, B.C., was provided.

Water Supply Systems

Wells were provided or deepened at the Touchwood Agency, Battleford, Saskatchewan, and Hobbema Agency, Alberta. Repairs to domestic water supply systems were made at Ahousaht, Nesquiaht, and Nootka Reserves, British Columbia.

Boats

Repairs were made to the agency boat the "Naskeena" and a new Diesel engine installed. Minor repairs were made to other department owned boats.

Miscellaneous

In addition to the foregoing, funds were advanced or transferred to the Surveys and Engineering Branch for the construction of irrigation systems in British Columbia or for the improvement of existing ones.

Funds were advanced to that Branch for the drilling of wells at the File Hills Agency, the replacement of the water pipe-line at Port Simpson, British Columbia, completion of water supply system at the Lower Similkameen Reserve, British Columbia, completion of renewal of water supply system for Skidegate Indian Village, British Columbia, and water supply system for Kitimat Village, British Columbia. Advances were also made for a well at Stony Agency, Morley, Alberta, and for irrigation work at the Little Shuswap Reserve, British Columbia. The drilling of a well at Beardy's Reserve was also looked after by the Surveys and Engineering Branch.

RESERVES AND TRUSTS SERVICE

RESERVES DIVISION

The volume of sales and leases of surrendered Indian lands during the past year differed very little from the fiscal year 1936-7. The agricultural depression, mainly in Western Canada, has not passed, or at least the effects remain. This, in addition to crop failures in western sections due to various causes, made collections on open accounts difficult and in large areas impossible. New sales and leases of available lands naturally have been adversely affected.

LAND SALES AND LEASES

During the fiscal year just closed Indian lands valued at \$44,611.36 were sold and the sum of \$77,743.52 collected on current sales contracts. Rentals from leases amounted to \$137,546.64.

ADJUSTMENTS UNDER F.C.A. ACT

In the 12-month period eighteen applications for adjustments of sales contracts were dealt with by Boards of Review under the terms and provisions of the Farmers' Creditors Arrangement Act. Reductions of arrears of principal or interest amounted to \$27,557.39.

TIMBER

The quantity of timber cut for sale from Indian reserves throughout the Dominion was 20 per cent more during the 1937-8 season than in the previous year. The increase would have been much greater if the active export market in British Columbia had been maintained, but owing to unsettled conditions in the Orient the demand for lumber was appreciably curtailed. Greater activity was, however, noted in Eastern Canada.

The kinds and quantities of timber cut for sale from Indian reserves during the season of 1937-8, on which royalty and dues were collected, were as follows:

Pine (white).....	431,392 f.b.m.
Pine (yellow).....	13,223 "
Pine (red).....	555,970 "
Pine (jack).....	1,678,378 "
Spruce	5,297,040 "
Hemlock	3,775,905 "
Cedar	1,824,309 "
Fir (Douglas).....	7,783,123 "
Fir (balsam).....	991,156 "
Tamarack	275 "
Maple	808,580 "
Birch	267,900 "
Elm	17,585 "
Oak	2,000 "
Walnut	1,000 "
Basswood	430,242 "
Poplar	13,468 "
Cottonwood.....	622,553 "
Christmas trees.....	14,988 bales
Cordwood (mixed).....	7,333 cords
Pulpwood (spruce and balsam).....	38,224 "
Shingle bolts.....	135 "
Ties	20,485
Poles	1,099
Posts	9,096
Piling	16,522 l.f.

The above quantities expressed in terms of board measure feet represent a cut of approximately 42,000,000 feet, and the Indians cut approximately 5,000,000 feet board measure free of dues, for sale, and an additional quantity of approximately 9,000,000 feet board measure was cut by them for building, fencing, and fuel purposes.

Revenue During Year

Revenue receipts during the year were as follows:

Licence royalties and dues.....	\$42,295 00
Permit dues.....	23,573 70
Rentals from timber berths.....	2,149 50
Licence fees.....	435 00
Interest payments.....	92 99
Trespass dues.....	1,333 97
Fines.....	95 35
Flooding compensation.....	2,300 00
Fire-fighting costs, refunded.....	2,041 31
Total.....	<u>\$74,316 82</u>

Sales of timber during the year were as follows:

Compton Island Reserve, B.C.....	\$ 160
Chemainus Reserve No. 13, B.C.....	1,000
Quinsam Reserve No. 12, B.C.....	100
Iloco Reserve No. 12, B.C.....	200
Dokis Reserve, Ont. (Berths 5 and 6).....	7,000
Lac des Milles Lacs Reserve, Ont.....	2,000
Total.....	<u>\$10,460</u>

There were twenty-three timber licences current on April 1, 1938, being three more than the previous year, six new ones having been issued and three having terminated.

MINING ON RESERVES

The revenue derived from mining activities on Indian reserves, including the sale of sand and gravel for road construction, was somewhat less than the previous year, and is summarized as follows:

Royalty on mining and gravel permits.....	\$3,277 83
Rentals from mining permits.....	1,778 50
Prospectors' fees.....	410 00
Compensation for Indians.....	25 00
Total.....	<u>\$5,491 33</u>

FOREST PROTECTION

The number of forest fires reported on Indian reserves during 1937 was 52, being one more than the previous year, dry seasonal conditions in the Provinces of Ontario, Saskatchewan, and British Columbia being the main cause of the number being above normal.

A summary of the salient features with respect to these forest fires is shown hereunder:

Total number of fires.....	52
Total area burned over.....	18,974 acres
Merchantable timber area burned.....	6,796 "
Quantity of merchantable timber burned.....	189,000 f.b.m.
	12,205 cords
Estimated stumpage value of timber burned.....	\$20,332 00
Area of young growth burned.....	5,628 acres
Estimated value of young growth lost.....	\$20,000 00
Cut-over area burned.....	1,550 acres
Estimated value of timber and young growth lost on cut-over lands.....	\$ 3,000 00
Non-forested area burned.....	5,000 acres
Value of other property burned.....	\$ 605 00
Actual cost of fire-fighting.....	\$ 3,108 75

Fire Classification

SIZE OF FIRES		MONTHLY OCCURRENCE		
Less than 1/4 acre.....	7	Month	No.	Area
1/4 acre to 10 acres.....	25			
10 acres to 500 acres.....	12			Acres
Over 500 acres.....	8			
	52	May.....	5	229
		June.....	8	2,718
		July.....	19	5,995
		August.....	12	5,922
		September.....	8	4,110
				18,974

CAUSE OF FIRES		LOCALITY	
Campers and fishermen.....	10	Quebec.....	3
Smokers.....	12	Ontario.....	16
Indians.....	8	Manitoba.....	4
Lightning.....	3	Saskatchewan.....	12
Brush burning.....	3	Alberta.....	1
Unknown.....	16	British Columbia.....	16
	52		52

No actual fire-fighting organization is maintained by the Indian Affairs Branch, other than as represented by a few Indian fire rangers, but arrangements have been made with the various provincial governments whereby forest fires on Indian reserves are extinguished by the provincial forest service with the assistance of the Indians.

PETROLEUM AND NATURAL GAS

Throughout the year considerable interest continued to be focused on several Indian reserves in the western provinces, chiefly the Blood, Sarcee, and Stony Reserves, in Alberta, as potential oil-fields. No actual development has yet taken place, but large sums of money have been expended by interested parties in investigational and exploratory work. Test drilling appears to indicate that if oil exists it is at a considerable depth, and this presumption has necessarily delayed deep drilling. All possible geological and other information is being obtained before beginning operations. It is anticipated that one or more deep wells will be drilled during the fiscal year 1938-9, and the outcome is of more than ordinary interest to the Indians and the Department.

LOCATION TICKETS

During the fiscal year 1937-8 two hundred and thirty-two location tickets, granting title under the provisions of the Indian Act to individual owners, covering lands on reserves, were issued, and on March 31, 1938, there were 3,339 such location tickets current.

INDIAN ENFRANCHISEMENTS

Under the provisions of Section 114 of the Indian Act there were carried out during the past fiscal year 76 enfranchisements, comprising a total number of men, women, and children of 199.

TRUSTS DIVISION

INDIAN TRUST FUNDS

A considerable number of Indian bands in Canada possess trust funds derived from the sale of land and timber, from rents, and from capitalized annuities. The Dominion Government allows interest on these funds and the proceeds are used for the benefit of the Indians.

The total amount of Indian trust funds at the close of the fiscal year was \$14,081,905.63. During the year there was credited to the various funds \$1,210,816.47. This was derived from collections and Government interest. The expenditure amounted to \$1,126,554.97.

ANNUITIES

The usual arrangements for the payment of Indian annuities were made. Funds for this purpose were sent to forty-three Indian Agents throughout Ontario, Manitoba, Saskatchewan, Alberta, and the Northwest Territories. The payment of annuities due under Treaty 9 in the District of Patricia, Ontario, was again undertaken by an officer from headquarters, who made the trip by aeroplane, commencing at Sioux Lookout, following the general course of Severn River to its mouth on Hudson Bay, thence easterly along the shores of Hudson Bay to the mouth of Winisk River, thence following the general course of Winisk River and Albany River to Sioux Lookout.

Treaty was paid on this trip to bands located at ten different points. The total expended on Indian annuities during the year was \$252,644, which includes payments of commutation and enfranchisement grants in addition to the regular annuities paid by Indian Agents in the field and by the Department direct.

INDIAN SOLDIER SETTLEMENT ACT

The administration of this Act as it applies to Indian returned soldiers is carried out by the Indian Affairs Branch. Loans have been made to 265 Indian settlers throughout Canada, entailing an expenditure of over \$500,000. The granting of these loans has enabled a large number of Indians to become established on the land, where they and their children will become an asset to the country. The total amount of loans outstanding is \$237,362; collections during the year amounted to \$10,261.

SUMMARY OF INDIAN AFFAIRS BY PROVINCES AND TERRITORIES

PRINCE EDWARD ISLAND

Agency.—There is only one agency in the province. A large number of Indians live on Lennox Island, and other parts of the Province where the Indians can be found are at Rocky Point, near Charlottetown, Morell, St. Andrews, and Scotch Fort.

Tribal Origin.—The Indians in this Province belong to the Micmac tribe, which is of Algonkin stock.

Occupations.—On Lennox Island several of the Indians engage in farming on a small scale. Most of them own a few head of cattle and horses, but their main occupations are basket-making, fishing, and working around the different towns and villages, wherever they can find employment.

Dwellings.—A considerable amount of money has been spent in repairs to Indian houses, and on the whole these Indians have fairly good homes.

NOVA SCOTIA

Agencies.—There are nineteen Indian agencies in the Province of Nova Scotia, namely: Yarmouth, Digby, Shelburne, Lunenburg, Annapolis, Kings, Queens, Windsor, Shubenacadie, Halifax, Cumberland, Colchester, Pictou, Antigonish-Guysborough, Richmond, Inverness, Victoria, Sydney, and Eskasoni.

Tribal Origin.—The Indians of Nova Scotia are of Algonkin stock, and bear the distinctive name of Micmac.

Occupations.—Very few of the Indians in this province engage in farming to any extent, but a decided effort is being made by the Indian Affairs Branch to encourage the Indians in all agencies in Nova Scotia to put in better gardens. Liberal amounts of seed, potatoes, and fertilizer have been supplied. Opportunities for employment have increased and here and there throughout the province the Indians are finding work in the lumber camps, sawmills, or as stevedores. A number of them also find work with the farmers, especially in the Annapolis Valley orchards. With increased tourist trade during the summer, the Indians are engaged as canoemen and as guides. In all agencies they manufacture baskets of all descriptions, wooden handles, hockey sticks, butter tubs, churns, barrels, etc. However, they have had great difficulty in the past in disposing of their products, but with improved economic conditions in the last year there has been an increased demand for Indian handiwork.

Dwellings.—The homes of the Indians in most of the reserves in Nova Scotia consist of one and one-half story frame buildings fairly well finished on the outside but not on the inside. Many shacks are to be seen at practically every agency. As few of the Indians own any live-stock, barns are to be found only here and there, and these are also of frame construction.

NEW BRUNSWICK

Agencies.—There are three agencies in the Province of New Brunswick: the Northeastern, located at Richibucto; the Northern, located at Perth; and the Southwestern, located at Fredericton.

Tribal Origin.—Most of the Indians of New Brunswick belong to the Micmac race, which is of Algonkin stock. In addition to these there are some bands of Malecites, also of Algonkin stock.

Occupations.—The Indians of New Brunswick are among the least progressive in the Dominion. Their farming operations are restricted mostly to the growing of potatoes for their own use. Formerly they derived a substantial income from hunting and trapping, but in later years this has dwindled to an almost negligible amount owing to the scarcity of fur-bearing animals. A considerable number find employment in the lumber camps and others as day labourers. In the southern part of the Province the Indians are engaged commercially in the manufacture and sale of Indian wares.

Dwellings.—There has been a marked improvement in recent years in the housing conditions among the Indians of New Brunswick. Many of their houses are solidly constructed of squared timbers, covered with shingles and often whitewashed.

QUEBEC

Agencies.—The Indian agency offices in Quebec are located as follows: Bersimis, Cacouna (Viger), Caughnawaga, Gaspé, Gentilly (Bécancour), Havre St. Pierre (Mingan), Harrington Harbour (St. Augustine), Maniwaki, Maria, Notre Dame du Nord (Timiskaming), Oka, Pierreville, Pointe Bleue, Restigouche, St. Régis, Seven Islands, Village des Hurons (Lorette).

Tribal Origin.—The principal tribes found in Quebec are: Iroquois at Caughnawaga, Lake of Two Mountains, and St. Regis; the Hurons of Lorette are also of Iroquoian stock; the Montagnais, who are of Algonkin stock, at Bersimis, Mingan, Lake St. John, Seven Islands; the Abenakis, also of Algonkin stock, at Bécancour and St. Francis; the Micmacs, also of Algonkin stock, at Maria and Restigouche; and the Malecites, also of Algonkin stock, at Viger.

Occupations.—In the agricultural districts of the Province the Indians engage in mixed farming. Assistance has been given to these Indians in the way of horses and cattle on the repayment plan, and they have cultivated considerable additional land. In Gaspé Peninsula they find employment in the lumber camps and mills, but on the north shore of the gulf, fishing, hunting, and trapping are still the principal sources of income. In the northern part of the province lumbering is the chief pursuit. One of the principal industries of the Indians of Quebec is making baskets, and many of them spend the summer months at the resorts in order to dispose of the baskets, lacrosse sticks, racquets, moccasins, and other articles to the tourists. Some of them, particularly in the Saguenay district, act as guides and canoeemen. The Indians of the large Caughnawaga reserve situated near Montreal are expert steel workers and find highly profitable employment when building operations are active.

Dwellings.—In the older settled districts of the Province many of the Indians own stone, brick, or frame houses of good construction, comfortable and sanitary. In the more remote districts, where hunting and trapping are still the principal occupations, the Indians necessarily live in tents during a great part of the year.

ONTARIO

Agencies.—The Indian agency offices in Ontario are located as follows: Deseronto (Six Nations), Chapeau, Chippawa Hill (Saugeen), Christian Island, Deseronto (Tyendinaga), Fort Frances, Gore Bay, Highgate (Moravian), Kenora, Longford Mills (Rama), Manitowaning, Moose Factory (James Bay), Muncey (Caradoc), Parry Sound, Peterborough (Rice and Mud Lakes), Port Arthur, Port Perry (Scugog), Golden Lake, Sarnia, Sault Ste. Marie, Sutton West (Georgina and Snake Island), Sturgeon Falls, Thessalon, Walpole Island, Warton (Cape Croker).

Tribal Origin.—Most of the Indians of Ontario are Ojibwas, and are of Algonkin stock. The Oneidas of the Thames, the Mohawks of the Bay of Quinte, the Mohawks of Parry Sound district, and the Six Nations of Grand River, are of Iroquoian stock. There is a band of Pottawattamies at Walpole Island, and Delawares at the Caradoc (Muncey) Agency; these are of Algonkin stock.

Occupations.—The Indians in the southern, western, and central parts of Ontario engage largely in farming. The reserves are generally well suited for this purpose. During the years of depression, owing to the lack of funds, very little new equipment was purchased. Considerable assistance has been given the farming Indians, both from appropriation and from band funds, and tractors have been supplied. On the Tyendinaga Reserve, near Deseronto, the individual Indians own nine tractors and their farms are the equal of those of the white settlers in the district. Some of the Indians also do well with dairy products.

A special representative of the Indian Affairs Branch supervises the farming operations of the Indians in central and western Ontario. He organizes Indian agricultural societies wherever farming is carried on, and holds a short course in agriculture. Courses are also held in domestic science and dietetics for girls and young women. These courses are well attended and have proved very popular among the Indians. Great interest is shown by the young people, as

well as by the old people. At the annual meeting of the different agricultural societies, as well as during the time the courses are held, there are lectures by outside speakers, who have voluntarily given their services, especially from the Agricultural College at Guelph and from the Provincial Department at Toronto. This work has stimulated the interest of the Indians a great deal.

During the summer months Indians find a profitable source of income as guides and canoemen. Others are employed at various industries and trades. The Indians are proficient bushmen and many find employment in the various lumber camps. There is still a market for snow-shoes, canoes, and moccasins, and these are usually manufactured by the older members of the community, although in some areas successful efforts have been made to engage the younger generation in these distinctive Indian pursuits.

The women also find sources of income; some are employed as domestics; others support themselves by making baskets and fancy work. In certain districts berry-picking is an important item and furnishes considerable income.

Dwellings.—In the more settled districts many of the Indians own houses of brick, stone, or modern frame construction, and on some reserves both houses and farm buildings are comfortable and well built. In the outlying and more remote parts the old type of log house still predominates and tents and tipis are used during the summer months.

Northern Ontario.—In the remote parts of Ontario hunting and fishing are still the chief sources of livelihood. Acting as guides and canoemen during the summer months adds considerably to the income of the Indians. Although agriculture is not carried on to any extent, most of the bands grow considerable crops of potatoes and vegetables. These Indians are, of necessity, more or less nomadic and, consequently, live in tents most of the year.

MANITOBA

Agencies.—The Indian agency offices in Manitoba are located as follows: Birtle, Griswold, Hodgson (Fisher River), Norway House, Portage la Prairie, Selkirk (Clandeboye), The Pas.

Tribal Origin.—Most of the Indians of Manitoba belong to the Ojibwa race, which is of Algonkin stock. Bands of Swampy Crees are found at the Norway House and Fisher River Agencies and in the York Factory district; these are also of Algonkin stock. The Indians located at the Griswold Agency are Sioux; there are also Sioux at the Birtle and Portage la Prairie Agencies. There is a band of Chipewyans at Churchill; this tribe is of Athapaskan stock.

Occupations.—The reserves in Manitoba suitable for extensive agriculture are mainly within the Birtle, Griswold, Portage la Prairie, and Clandeboye Agencies.

In the northern agencies the chief occupations of the Indians are hunting, trapping, and fishing. Many of the northern Indians are expert guides and canoemen. They are employed by sportsmen and to some extent by the transport and fur companies, but their main source of revenue is from trapping and fishing.

A great many of the Indians from around Lake Manitoba and Lake Winnipeg come south in the summer and work in the harvest fields in the farming communities in this province. The women also derive considerable revenue from the sale of moccasins and gloves, which are made from tanned moose and deer hides. The women do the tanning, and most of them are expert needlewomen.

The Indians in the southern part of the Province, wherever the land is suitable, carry on farming and stock raising. Considerable money has been spent in supplying them with equipment. Land has been broken for the Indians living in the lake reserves, with a view to having them supply themselves with

flour. On the reserves around Lake Manitoba the Indians own a great many cattle, and they have recently been supplied with good breeding stock. Increased interest has been shown in gardens.

Dwellings.—On most reserves in Manitoba fairly good log homes are to be found. They are one and one-half stories high with shingle roofs. Most of these homes are whitewashed every year, which improves the sanitation. There are also quite a number of houses of frame construction to be found on all the reserves. In the extreme north, of course, the homes are more primitive.

SASKATCHEWAN

Agencies.—The Indian agency offices in Saskatchewan are located as follows: Balcarres (File Hills), Battleford, Broadview (Crooked Lakes), Duck Lake, Kamsack (Pelly), Leask (Carlton), Muscow (Qu'Appelle), Onion Lake, Punnichy (Touchwood).

Tribal Origin.—The most numerous tribes among the Saskatchewan Indians are the Ojibwas, Swampy Crees, and Plains Crees, which all belong to the Algonkin stock. In addition to these, Sioux Indians are found at the Crooked Lakes, Qu'Appelle, and Carlton Agencies, and on the Moose Woods Reserve. In the Onion Lake Agency there is a band of Chipewyans, who are of Athapaskan stock. There are also a few Chipewyan Indians in the Ile à la Crosse district.

Occupations.—The principal occupations of the Indians of Saskatchewan are farming and stock raising, and farming instructors are employed on most of the reserves in this Province to instruct the Indians in agricultural pursuits. A great effort has been made to increase the acreage under cultivation. A large amount of land has been broken and old land summer-fallowed. The Indians also own a number of cattle of a very good type, principally of Shorthorn breed. They are well equipped with implements and own a number of horses.

Other Occupations.—Wherever there are fur-bearing animals to be found the old Indian still carries on his former pursuit, and the Indians in the extreme north still make their living from hunting and fishing.

Dwellings.—On most of the reserves in this province the Indians are fairly well housed, the homes being usually of log construction with shingle roof. These houses are very comfortable if properly cared for. Here and there there are also to be found a few homes of frame construction and also the old Indian hut, but there are not very many of this type as the Branch has endeavoured to replace them with better homes in the last few years. The Indians in the extreme north move about and their homes when they are out on the hunting grounds consist in winter of an old log cabin with a sod roof, and a tent in the summer.

ALBERTA

Agencies.—The Indian agency offices in Alberta are located as follows: Brocket (Peigan), Calgary (Sarcee), Cardston (Blood), Driftpile (Lesser Slave Lake), Fort Chipewyan (Athabaska), Gleichen (Blackfoot), Hobbema, Morley (Stony), Saddle Lake, Winterburn (Edmonton).

Tribal Origin.—The Alberta Indians are of Algonkin stock, with the exception of the Sarcees near Calgary and the Beavers and Slaves in the Lesser Slave Lake Agency, who are Athapaskan, the Paul's band in the Edmonton Agency, who are Iroquoian, and the Stonies, who are of Siouan stock. The Algonkin Indians of Alberta are subdivided into Blackfoot Nation, comprising the Indians of the Blackfoot, Blood, and Peigan Agencies; Plains Crees found in the Lesser Slave Lake, Saddle Lake, Edmonton, and Hobbema Agencies.

Occupations.—The principal occupations of the Indians in Alberta are farming and stock raising. The farming Indians in this Province are very well

equipped with machinery and horses to carry on their work, as the Indians in the south own large herds of horses. There has been a great improvement in their method of farming in the last 10 years. In good years the Indians derive a considerable revenue from the sale of hay.

The Indian cattle herds in this Province are of a very good type and many bring a premium on the market. The breeds are principally Shorthorn and Hereford with a few Aberdeen Angus. They get good returns for the sale of beef cattle.

In the northern portions of the Athabaska and Lesser Slave Lake Agencies the Indians are still hunters and make their living from that source. The Indians in other parts of the Province derive considerable revenue also from fishing, working for white farmers and stockmen, and from the sale of wood. The Blackfoot Indians, during the winter, derive a large revenue from their coal mines, which they operate themselves under the supervision of a white miner.

Dwellings.—Practically all the Indians in this Province own good homes. On the Blackfoot Reserve every family has a fair house of good construction and good barns. Frame houses and barns are also to be found on the Sarcee Reserve south of Calgary and on the Edmonton Reserve. On the other reserves the homes are mostly of log construction with shingle roofs, but there are also quite a number of frame houses belonging to more prosperous Indians. On the whole, the homes are good and fairly well kept, many of them being well furnished.

BRITISH COLUMBIA

Agencies.—The Indian agency offices in British Columbia are located as follows: Alert Bay (Kwawkewlth), Bella Coola, Cranbrook (Kootenay), Duncan (Cowichan), Fort St. John, Hazelton (Babine), Kamloops, Lytton, Massett, Graham Island (Queen Charlotte), Merritt (Nicola), New Westminster, Port Alberni (West Coast), Prince Rupert (Skeena), Telegraph Creek (Stikine), Vancouver, Vanderhoof (Stuart Lake), Vernon (Okanagan), Williams Lake.

Tribal Origin.—The Indians of the Bella Coola, Cowichan, Kamloops, Lytton, New Westminster, Nicola, Vancouver, and Okanagan Agencies belong to the Salish tribes. The Kootenay tribe is located in the agency of the same name. The Kwakiutl-Nootka tribe is located at the Kwawkewlth and West Coast Agencies; the Haidas, in the Queen Charlotte Islands; the Tlingits, in the Stikine; and the Tsimshians in the Skeena Agency. The Indians of the Babine, Stuart Lake, and Williams Lake Agencies belong to the Athapaskan race.

The Indians of the Peace River Block are Athapaskan, with the exception of a small group of Saukteaux and Crees at Moberly Lake who are Algonkin.

Occupations.—Most of the Indians of Vancouver Island and the mainland coast derive their living by fishing. Many of them own power-boats and up-to-date fishing equipment and either fish independently or by contract with the canneries. The main source of their annual revenue is from the summer salmon fishing. The cattle industry is a very important one in the interior agencies of the Province. Gradual improvement in the Indian cattle herds continues.

Dwellings.—The best Indian houses in British Columbia are found on the northwest coast among the Haidas of Queen Charlotte Islands, the Tsimshians of Port Simpson, Metlakatla, and Port Essington, and the Kwakiutls of Bella Bella. These Indians appear to have a natural bent for carpentry and housing architecture. Without departmental assistance, they build from their own plans commodious bungalows of the most modern type, well finished inside and out, that would be a credit to a prosperous suburb of any large city. The Indians of

the west coast of Vancouver Island also have roomy, well-ventilated, and well-kept houses, although of a less pretentious character than in the first-mentioned locality.

These Indians were accustomed to dwell in large community houses and this may account for the unusual size and height of the rooms in their modern homes. The women of these more northerly coast villages are experienced housekeepers and maintain a high standard of neatness and cleanliness.

Strangely the Salish Indians of the southern British Columbia Coast in the vicinities of the larger cities of Vancouver and Victoria, and who have been in closer touch with civilization, are backward and unprogressive in their housing conditions in comparison with the north coast Indians above mentioned. Indeed the houses of the Indians of the south coast are for the most part little better than shacks and show little evidence of care or good housekeeping. Housing conditions on the whole are improving. There is much evidence of rapid progress in some sections over conditions of a few years ago, but there is still much room for improvement.

NORTHWEST TERRITORIES

Agencies.—The Indian Affairs Branch now has three agencies in the Northwest Territories, namely: Fort Simpson, Fort Resolution, and Fort Good Hope.

Tribal Origin.—The principal tribes found in the far north are the Slave, Hares, Loucheux, Sekani, Dogribs, Yellow Knives, Chipewyans, and Caribou Eaters. All these tribes are of Athapaskan stock. The most northerly tribes are the Takudah, who extend to the Mackenzie Delta; and the Copper Mines, who are located along Coppermine River. The territory occupied by these two last-named tribes is contiguous to that inhabited by the Eskimos.

Occupations.—The Indians depend almost entirely upon hunting and trapping for a livelihood. Here and there some cultivate small plots of potatoes. They own no cattle or horses, their mode of transportation being by boat, usually, along the great waterways in the summer, and with dogs in the winter. They catch and preserve large quantities of fish for their own use and for food for the dogs during the winter. They also pick and dry large quantities of different kinds of berries for winter use.

Dwellings.—The Indians live in log cabins in winter, using tents and tipis during the summer.

YUKON

Tribal Origin.—The Forty-Mile, Blackstone, and Moosehide bands belong to the Takudah tribe. There is a band of Slaves at Lancing Creek who migrated from Good Hope on Mackenzie River; another band of Slaves, called Nahani, is located at the headwaters of Pelly River. All these Indians are of Athapaskan stock. At Mayo, Selkirk, Little Salmon, and Carmacks there are bands belonging to the tribe known as Stick Indians. Bands belonging to the Tlingit tribe are found at Whitehorse, Teslin Lake, Champagne Landing, and Carcross.

Occupations.—Hunting, trapping, and fishing are the chief occupations of the Yukon Indians. The women also derive some revenue from the sale of moccasins and curios of various kinds, and the men are expert at making toboggans and snow-shoes. Practically no farming is carried on owing to climatic conditions, but some of the Indians cultivate patches of potatoes and other vegetables for their own use.

Dwellings.—The Indians of the Yukon live in log cabins.

TABLE 1

Recapitulation: Census of Indians—Arranged Under Provinces, 1934

PROVINCES	Number in Province	Religions						Under 7 Years		From 7 to 16, Inclusive		From 17 to 21, Inclusive		From 22 to 65, Inclusive		From 65 Years Upwards		
		Anglican	Baptist	United Church	Presbyterian	Roman Catholic	Other Christian Beliefs	Aboriginal Beliefs	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
		Alberta.....	10,900	1,607	1,440	7,718	135	1,116	1,238	1,277	1,221	601	513	2,233	2,124	259	318	
British Columbia.....	23,598	4,761	4,495	13,492	701	149	2,148	2,260	2,762	2,755	1,023	1,024	5,213	4,803	807	803		
Manitoba.....	12,958	4,511	52	3,881	574	3,510	239	191	1,212	1,134	1,497	1,345	851	742	2,667	2,785	322	403
New Brunswick.....	1,734			1,734		165	173	208	193	92	89	401	333	39	41			
Northwest Territories.....	3,854	632		3,222		355	428	439	408	262	183	812	888	31	48			
Nova Scotia.....	2,093	1		2,091	1	178	177	210	235	134	117	466	427	83	66			
*Ontario.....	30,631	9,995	1,170	5,530	261	10,308	714	2,653	2,012	2,046	2,618	2,576	1,868	1,857	5,898	5,923	829	842
Prince Edward Island.....	224			224		21	27	26	29	5	10	46	48	7	5			
Quebec.....	13,281	2,546	555	9,885	183	112	1,334	1,252	1,406	1,441	753	732	2,940	2,696	350	377		
Saskatchewan.....	11,878	3,904	1,111	5,637		1,061	1,288	1,347	1,313	1,330	575	502	2,351	2,507	289	376		
Yukon.....	1,359	1,282		12		65	121	173	134	150	87	87	273	239	47	48		
Total Indian population.....	112,510	29,238	1,223	17,012	1,000	57,833	1,838	4,366	9,950	10,255	11,890	11,683	6,251	5,856	23,300	22,773	3,063	3,327

* No details as to religion of 4,162 Indians available.

NOTE:—2,500 Nomadic Indians in British Columbia and 609 Nomadic Indians in Northwest Territories, formerly shown, have been omitted from this census as they have now become absorbed in the different agencies of these provinces.

TABLE 2

Grain, Vegetable, and Root Production

Agencies	Wheat		Oats		Other Grains		Peas, Beans, etc.		Potatoes		Other Roots		Fodder—Tons		
	Acres Sown	Bushels Harvested	Acres Sown	Bushels Harvested	Acres Sown	Bushels Harvested	Acres Sown	Bushels Harvested	Acres Sown	Bushels Harvested	Acres Sown	Bushels Harvested	Hay Cultivated	Hay Wild	Other Fodder
ALBERTA															
Athabaska.....									16	1,010	1½	60	35	145	20
Blackfoot.....	4,725	1,733	1,062	5,104	10	25			14	883	5	450	60	525	982
Blood.....	4,724	44,165	918	14,263	50	759			7	598			80	1,799	60
Edmonton.....	307	3,248	1,560	49,688	978	23,024			28½	4,367				1,823	351
Hobbema.....	1,768	15,601	2,995	116,116	235	4,681			16	4,597	5	525		4,652	318
Lesser Slave Lake.....	405	7,799	575	18,363					63	2,723	20	636	26	1,794	146
Peigan.....	1,120	12,814	182	3,264					13	800				400	100
Saddle Lake.....	978	6,588	1,111	21,209	41	683			27	4,502	6	210		3,589	102
Sarcee.....	488	4,231	360	9,264					17	383				433	220
Stony.....			235								10	600		500	100
Total.....	14,528	96,159	8,938	237,269	1,314	29,172			201½	19,862	47½	2,481	201	15,665	2,399
BRITISH COLUMBIA															
Babine.....			382	500					199	8,700	98	2,915	380	545	600
Bella Coola.....									41	2,575	2	100	50		
Cowichan.....									196	3,820	1	30	1,428		
Fort St. John.....	46	1,475	348	11,120	56	1,620			15	100	2	50		68	
Kamloops.....	244	4,100	308	8,100	65	475	44	440	100	4,150	29	1,600	2,040	335	170
Kootenay.....	53	526	398		5	20			22	2,430	5	340	770	560	138
Kwawkwath.....									13½	880					
Lytton.....	73	1,700	136	5,280	17	320	129	3,700	172½	17,580	41	981	431	2	117
New Westminster.....	16	287	215	10,200	17	680	34	2,630	164	11,080	49	3,780	467	143	
Nicola.....	128	2,510	407	13,000	8	200	18	445	138	14,395	9	300	5,370	708	84
Okanagan.....	3,790	96,500	755	19,575	147	3,800	145	5,175	560	80,250	195	37,575	5,900	1,515	370
Queen Charlotte.....									22	800		40		1	
Skeena River.....			8						2	115	157	12,760	9½	610	25
Stikine.....														48	
Stuart Lake.....			348	500					71	2,360	28	1,295	323	688	286
Vancouver.....									40	3,600	9½	765	5	8	
West Coast.....			4		12½	325	9½	208	113	9,597	8	194	30		44
Williams Lake.....	39	1,850	164	8,325							56		2,555	2,990	
Total.....	4,389	100,748	3,473	74,608	327½	7,440	394½	13,133	2,037½	175,667	540½	50,425	20,374	7,581	1,700

MANITOBA													
Birtle.....	157	853	401	1,968	267	1,005	1	17	705	3	130	61	3,157
Clandeboye.....	567	10,605	262	6,665	52	2,355	20	297	611	7	70	50	969
Fisher River.....			344	11,273	19	263		48	3,865	2	250		4,877
Fort Churchill.....													
Griewood.....	458	7,285	326	5,065	377	4,435	321	674	151	11	150		924
Manitowapah.....			28	466	7	133		441	3,601	221	420		4,992
Norway House.....								98	7,850	2	115		400
The Pas.....			18					83	5,425				3,040
Portage la Prairie.....	565	6,898	486	9,739	714	10,720	7	211	1,933	7	77	14	487
Port Nelson.....								16					
Total.....	1,747	25,641	1,855	35,226	1,466	18,911	60	1,182	384	28,624	45	1,212	17,846
NEW BRUNSWICK													
Northern Division.....							2	35	13	1,700	21	150	50
Northeastern Division.....			107	900	17	165	6	85	52	1,500	11	850	90
Southwestern Division.....							11	24	81	485	1	36	3
Total.....			107	900	17	165	91	144	731	3,685	141	1,086	143
NORTHWEST TERRITORIES													
Fort Good Hope.....													
Fort Resolution.....								15	190		2	24	
Fort Simpson.....								30	1,186		15	462	3
Total.....								45	1,376		17	486	3
NOVA SCOTIA													
Annapolis.....							1	10	21	250	1	60	
Antigonish and Guysborough.....			2	42			31	49	121	290	3	63	19
Cape Breton (Eskasoni).....			4	70	3	40	2	35	10	400	2	40	45
Cape Breton (Sydney).....							2	30	12	510	6	225	4
Colchester.....			7				1	10	500	1	50		7
Cumberland.....							1	23	5	73			
Digby.....							2	10	6	200	2	75	5
Halifax.....							1	6	2	75	1	25	6
Hants (Indian Brook).....			3	75			1	10	6	440	11	250	34
Hants (Windsor).....										50			4
Inverness.....			31	50			11	27	21	1,300	1	70	11
Kings.....													19
Lunenburg.....										50			
Pictou.....								4	17	1,043	2	151	1
Queens.....								2	1	40			11
Richmond.....			10	50				12	1,240	11	392	50	3
Shelburne.....								2	11	75	1	50	6
Victoria.....			2					15	8	475	1	20	20
Yarmouth.....									2	90			1
Total.....			311	287	3	40	17	230	1291	7,100	22	1,3351	1991

TABLE 2—Concluded

Grain, Vegetable, and Root Production—Concluded

Agencies	Wheat		Oats		Other Grains		Peas, Beans, etc.		Potatoes		Other Roots		Fodder—Tons		
	Acres Sown	Bushels Harvested	Acres Sown	Bushels Harvested	Acres Sown	Bushels Harvested	Acres Sown	Bushels Harvested	Acres Sown	Bushels Harvested	Acres Sown	Bushels Harvested	Hay Cultivated	Hay Wild	Other Fodder
ONTARIO															
Alnwick.....	10	170	350	5,000	100	1,900	5	50	50	3,500	3	150	150	10	.....
Cape Croker.....	34	625	24	450	34	390	25	340	60	1,040	15	235	450	40	11
Caradoc.....	67	917	341	6,811	18	303	204	10,570	114	6,840	46	1,600	1,210	16	202
Chapleau.....									12½	955					
Christian Island.....			118	900			25	200	30	1,500	10	600	115	50	10
Fort Frances.....	35	301	54	774	35	113			26½	1,475	1½	178	317	79	20
Georgina Island.....	11	130	35	700	6	72			4	160	2		20	5	4
Golden Lake.....			30	175	10	50			10	800	4	100	10	10	.....
Gore Bay.....	12	370	184	2,700	31	695	33	530	66	2,710	7	240	212	8	37
James Bay.....									50	1,280					
Kenora.....									57	2,700	13	225	35	260	.....
Manitowaning.....	100	125	475	3,650	89	435	63	175	327	5,610	35	510	2,367	50	60
Moravian.....	55	507	89	1,123	169	1,080	78	780	15	930	3	100	200	50	170
New Credit.....	25	300	350	7,000	75	1,600	7	140	15	650			120	125	105
Parry Sound.....	93	2,600	151	4,161	25	360	36	370	173	2,315	32	960	576	12	.....
Port Arthur.....									91	1,538	17	185	35	11	.....
Rama.....	14	450	30	300	6	60	1	20	4	400	1	60	60	3	.....
Rice Lake.....	40	720	100	2,000	35	709	40	250	47	3,200	15	1,000	85	10	15
Sarnia.....	194½	3,609	131	3,242	40½	1,035	23½	1,200	24½	1,025			153		.....
Saugeen.....			300	3,000	68	900	13	250	78	1,650	20	475	100	10	80
Sault Ste. Marie.....	5	30	80	1,000			41	305	140	1,570	56	508	73	38	.....
Savanne.....									56	2,950	20	270		32	.....
Soulog.....											2	125			.....
Six Nations.....	890	15,030	13,100	150,040	1,540	16,940	75	825	250	3,750	125	3,750	4,500		6,300
Sturgeon Falls.....			22	440	9	135	5	205	16½	1,675	12	220	37	10	.....
Thessalon.....	1	12	115	790	23	168	7	100	99	3,525	4	89	405	43	.....
Tyendinaga.....	90	1,800	2,000	68,300	800	2,800	70	1,300	50	1,300	7	500	2,500	30	3,000
Walpole Island.....	118½	2,677	99	1,952	290	14,555	29½	398	42½	2,545	40	40,000	43	400	.....
Total.....	1,795	30,273	18,178	264,508	3,408½	43,924	786	18,008	1,908½	63,193	586½	52,090	13,772	1,802	10,014
PRINCE EDWARD ISLAND.....															
			43	625					8½	900	½	150	35	7	.....
QUEBEC															
Bécancour.....			20	400	1	25			3	150	1	20	25		.....
Berdmis.....			14	75					10	270	2	6	87		.....
Caouima.....			25	500	10	175			15	1,500				800	.....

Caughnawaga.....	6	60	400	6,800	90	2,100	30	330	220	3,520	21	435	1,020	8	7
Jeune Lorette.....															
Maniwaki.....	2	12	120	700	3	14			30	1,050	1	200	155	10	55
Maria.....			18	375	1	18	1	15	20	680	3	31	14		4
Mingan.....															
Oka.....			100	2,000	40	450	15	200	60	840			300	20	80
Pierreville.....			20	150	2	40	4	30	30	600			30	70	
Pointe Bleue.....	16	160	133	1,330	198	1,980	7	65	27	780	18	90	180		17
Restigouche.....	2	6	136	1,050	4	12			32	800			16	44	
Seven Islands.....															
St. Regis.....			482	8,435	274	4,252	66	553	169	4,831	24	313	1,480	215	450
Timiskaming.....	8	30	70	250	6	48	4	20	10	400	1	50	60		20
Total.....	34	268	1,538	22,065	629	9,114	127	1,213	626	15,421	70	1,144	3,367	1,167	633
SASKATCHEWAN															
Battleford.....	1,660	1,346	1,693	7,215	133	163			124	3,681	56	505		3,466	494
Carlton.....	1,702	6,346	1,267	5,339	125	1,560	15	36	72	9,877	11	580	88	4,992	
Crooked Lakes.....	1,561	2,064	1,416	2,803	8				25					4,306	
Duck Lake.....	891	2,697	1,152	4,550	30	70			144	1,476	13	125		4,917	519
File Hills.....	856	2,316	1,279	366	3				21	945				2,233	82
Moose Woods.....	17		118						10					406	
Onion Lake.....	634	9,951	537	20,102					48	8,615	14	588		4,321	211
Pelly.....	742	1,926	1,132	4,043	452	1,031			164	1,500	43	32		1,865	21
Qu'Appelle.....	2,886	1,159	1,355	73	10				10	330				2,232	
Touchwood.....	1,281	1,200	863	1,646	47	48			30	555				3,000	68
Wood Mountain.....	145		80						34						
Total.....	12,384	29,005	10,992	46,137	808	2,872	15	36	374	26,979	87	1,830	88	31,678	1,395
YUKON TERRITORY															
Yukon.....									13	200	1	78		50	

RECAPITULATION

PROVINCES															
Alberta.....	14,528	96,159	8,938	237,269	1,314	29,172			2014	19,862	474	2,481	201	15,665	2,399
British Columbia.....	4,389	109,748	3,473	74,698	3274	7,440	3944	13,133	2,0374	175,667	5404	50,425	20,374	7,581	1,799
Manitoba.....	1,747	25,641	1,855	35,226	1,466	18,911	60	1,182	384	28,624	45	1,212	125	17,646	39
New Brunswick.....			107	900	17	165	93	144	731	3,685	144	1,036	143	21	7
Northwest Territories.....									45	1,376	17	486	3	53	5
Nova Scotia.....			314	287	3	40	17	230	1294	7,100	22	1,3354	1994	1364	36
Ontario.....	1,795	30,273	18,178	264,508	3,4084	43,924	786	18,008	1,9084	63,193	5864	52,090	13,772	1,302	10,014
Prince Edward Island.....			43	625					84	900		150	35	7	
Quebec.....	34	268	1,538	22,065	629	9,114	127	1,213	626	15,421	70	1,144	3,367	1,167	633
Saskatchewan.....	12,384	29,005	10,992	46,137	808	2,872	15	36	3744	26,979	87	1,830	88	31,678	1,395
Yukon Territory.....									13	200	1	78		50	
Total.....	34,877	291,094	45,1554	681,625	7,973	111,638	1,4094	33,946	5,790	343,007	1,4314	112,2674	38,3074	75,5114	16,237

TABLE 3

Land: Private and Public Buildings and Property

RECAPITULATION

Provinces	Total Area of Reserve (Acres)	Acres under Wood	Acres Cleared but not Cultivated	Acres under Actual Cultivation	Acres Fenced	Private Property								Public Property					
						Stone, Brick and Frame Dwellings	Other Dwellings	Outbuildings, etc.	Ploughs, Harrows, Drills, etc.	Mowers, Reapers, Binders, Thrashers, etc.	Carts, Wagons, and Vehicles	Automobiles	Tools and Small Implements	Churches	Council Houses	School Houses	Sawmills	Other Buildings	Engines and Machinery
Alberta.....	1,225,710	346,132	817,704	61,874	414,245½	407	1,894	2,422	2,308	1,463	2,446	66	9,401	6	9	8	1	128	269
British Columbia.....	798,523	474,755	284,095	39,673	291,896	4,437	2,918	4,192	2,867	967	2,563	475	35,179	162	66	50	11	62	154
Manitoba.....	554,605	364,226	181,889	8,490	52,037	139	2,794	1,845	852	650	1,361	48	8,056	57	14	45	3	99	44
New Brunswick.....	37,404	35,591	1,501	312	1,135	361	35	191	66	20	73	21	1,375	6	5	10		1	1
Northwest Territories.....	1,924	1,752	104	68	54½		603	170	4				746		1				
Nova Scotia.....	18,325	18,174	2,588½	562½	1,586	354	141	157	82	17	89	11	1,297	10	4	9	1	22	8
Ontario.....	1,387,492	1,233,066	106,500½	47,925½	120,980	2,400	2,292	5,829	4,545	1,295	3,801	447	46,900	98	37	86	11	88	136
Prince Edward Island.....	1,508	1,397	23	88	188	36		20	13	9	8		15	1	1	1		1	5
Quebec.....	195,528	166,417	20,207	8,904	14,765	1,467	314	2,250	617	277	1,301	102	5,319	15	5	24	1	30	30
Saskatchewan.....	1,283,311	518,890	731,677	32,744	327,402	169	2,217	2,793	2,370	1,719	3,773	63	14,632	35	18	23	3	57	54
Yukon Territory.....	3,550	3,544	3½	2½	160	1		2	2	2	3		30	1		1		4	6
Total.....	5,507,880	3,160,944	2,146,292½	200,643½	1,224,449	9,771	13,208	19,871	13,726	6,419	14,418	1,233	122,950	391	160	257	31	492	707

TABLE 4

Live Stock and Poultry: General Effects

RECAPITULATION

Provinces	Horses			Cattle				Other Stock	Poultry	General Effects					
	Stallions	Geldings and Mares	Foals	Bulls	Steers and Work Oxen	Milch Cows	Young Stock	Pigs, Sheep, etc.		Motor and Sail Boats	Row Boats and Canoes	Rifles and Shot Guns	Steel Traps	Nets	Tents
Alberta.....	104	8,754	886	185	1,812	5,208	3,770	300	5,966	201	647	2,249	18,267	2,105	2,131
British Columbia.....	197	7,856	1,263	276	4,937	2,525	4,230	3,706	27,157	1,796	3,198	8,309	76,212	2,176	2,091
Manitoba.....	3	1,521	8	60	681	2,185	867	356	5,835	108	1,922	3,505	56,940	5,570	1,727
New Brunswick.....		10			2	33	25	22	445	39	167	248	1,202	181	49
Northwest Territories.....		2						710		123	816	1,668	19,440	2,228	687
Nova Scotia.....	1	31	5	5	7	113	38	52	633	8	61	205	1,552	21	18
Ontario.....	36	2,182	200	95	591	2,875	1,786	3,081	32,651	393	2,993	5,597	93,081	4,641	2,180
Prince Edward Island.....		6				10	11		100	2	4	7	60	15	
Quebec.....	3	557	58	115		1,574	738	737	5,950	60	1,054	1,904	18,154	606	801
Saskatchewan.....	12	4,183	230	109	1,026	3,147	2,391	1,048	9,525	38	472	2,413	31,464	1,382	1,925
Yukon Territory.....		3		1		5	5	3	73	1					2
Total.....	356	25,105	2,650	846	9,056	17,675	13,861	10,015	88,335	2,764	11,334	26,105	316,372	18,925	11,611

TABLE 5

Value of Real and Personal Property and Progress During the Year

RECAPITULATION

Provinces	Total Value of Lands in Reserves	Value of Private Fencing	Value of Private Buildings	Value of Public Buildings Property of the Band	Value of Implements and Vehicles	Value of Live Stock and Poultry	Value of General Effects	Value of Household Effects	Total Value of Real and Personal Property	Progress during the Year 1937-8		
										Value of New Land Improvements	Value of Buildings Erected	Total Increase in Value
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Alberta.....	16,283,280	119,336	722,282	192,359	306,717	548,153	151,127	178,050	18,501,304	3,841	11,564	15,405
British Columbia.....	13,551,801	316,620	1,853,085	586,525	416,454	783,468	1,067,200	559,520	19,134,693	24,380	59,555	83,935
Manitoba.....	2,814,964	40,215	470,465	141,233	148,750	205,841	192,650	117,600	4,131,718	13,510	3,550	17,060
New Brunswick.....	74,478	3,144	80,446	83,182	12,805	4,512	7,350	22,470	288,387	.....	3,800	3,800
Northwest Territories.....	1,578	990	92,070	50	855	18,680	217,120	120,240	451,583	385	4,130	4,515
Nova Scotia.....	81,805	3,508	97,750	36,000	6,050	11,732	5,035	16,280	258,160	380	2,630	3,010
Ontario.....	4,468,211	449,001	1,498,930	480,650	480,670	385,149	298,170	567,134	8,602,915	999	25,335	26,334
Prince Edward Island.....	3,600	300	1,500	2,000	800	1,000	1,100	1,500	11,800	.....	200	200
Quebec.....	1,419,235	40,520	913,040	231,636	114,130	105,000	95,675	243,300	3,162,536	970	7,000	7,970
Saskatchewan.....	13,714,878	127,005	571,435	74,550	349,770	421,460	147,373	155,660	15,562,131	15,820	9,105	24,925
Yukon Territory.....	8,300	500	2,800	44,050	600	750	1,000	3,000	61,000	.....	.....	.....
Total.....	52,417,130	1,101,139	6,303,803	1,872,235	1,817,601	2,485,765	2,183,800	1,984,754	70,166,227	60,285	126,869	187,154

TABLE 6

Sources and Value of Income

Agencies	Value of Farm Products Including Hay	Value of Beef Sold also of That Used for Food	Wages Earned	Received from Land Rentals	Received from Timber	Received from Mining	Earned by Fishing	Earned by Hunting and Trapping	Earned by other Industries and Occupations	Annuities Paid and Interest on Indian Trust Funds	Total Income of Indians
	\$	\$	\$	\$ cts.	\$ cts.	\$ cts.	\$	\$	\$	\$ cts.	\$ cts.
ALBERTA											
Athabaska.....	1,920		2,050				600	28,900		7,965 00	41,435 00
Blackfoot.....	14,000	29,500	2,500	1,814 34			472	38,500	121,740 34	208,526 68	
Blood.....	47,034	20,702	5,379	20,398 99		87 90	753	932	8,146 91	103,433 80	
Edmonton.....	34,329	830	1,775	836 67			5,040	2,100	3,575	23,282 16	71,717 83
Hobbema.....	84,400	4,500	10,600	159 00			825	1,500	1,550	16,288 16	119,822 16
Lesser Slave Lake.....	20,033	1,560	2,950	45 50	13 50		3,925	40,180	2,665	22,616 73	93,948 73
Peigan.....	14,786	1,620	1,620	1,108 46				299	2,169	6,236 15	40,274 61
Saddle Lake.....	31,335	3,560	6,910	647 52	0 74		1,760	2,630	3,345	7,239 64	57,477 90
Sarcee.....	11,871	3,526	336	9,296 50		8 00		372	360	2,535 63	28,805 13
Stony.....	6,500	4,225	2,000	9,654 70		707 97		4,000	3,500	5,045 39	35,633 06
Inspectorate (Clareholm School Farm).....				844 86							844 86
Total, Alberta.....	266,258	82,449	36,620	44,806 54	722 21	95 90	12,150	81,176	51,596	221,046 11	796,919 76
BRITISH COLUMBIA											
Babine.....	25,500	5,250		763 00			9,500	27,000	19,000	615 95	87,628 95
Bella Coola.....	6,325	2,800	11,700	200 00	4,002 97		62,000	12,200	7,100	504 67	106,832 64
Cowichan.....	10,600	3,000	49,200	7,204 79	984 12	177 55	9,600	250		5,845 08	86,864 54
Fort St. John.....	100		500					6,500		1,775 00	8,875 00
Kamloops.....	35,300	4,160	23,600	6,279 64	215 73	313 24		3,300	7,200	831 01	81,189 62
Kootenay.....	18,900	2,900	5,500	2,312 38	189 91	15 00	335	3,200	1,750	643 61	35,745 88
Kwawkwalth.....	560		7,300	917 68	14,089 59		101,500	1,035	32,800	3,819 83	162,022 10
Lytton.....	29,305	14,720	32,800	1,143 85	2,209 99	155 00		2,209	110	4,071 19	86,724 03
New Westminster.....	35,100	11,073	59,120	7,406 50	4,987 49	487 46	24,200	12,980	43,000	15,551 20	213,905 59
Nicola.....	42,200	6,950	26,800	225 00	73 56	5 00		1,200	1,500	96 87	79,060 43
Okanagan.....	87,500	21,250	29,500	8,934 58	26 00	191 00		3,100	3,400	1,029 02	154,930 60
Queen Charlotte.....	1,425	700	4,600	340 00				25,000	3,000	147 43	37,012 43
Skeena River.....	22,200	1,200	5,200	105 00	551 67		107,400	17,950	13,800	2,778 06	171,184 73
Stikine.....			22,500				1,050	26,500	1,550	87	51,300 87
Stuart Lake.....	7,100	2,370		85 00	4 20			3,520	290	1,573 47	16,962 67
Vancouver.....	3,250	125	99,000	12,016 29	70 71		24,600	1,250	12,500	10,192 40	163,004 40
West Coast.....	1,460	680	26,354	347 40	3,328 38		67,720	6,000	5,350	1,389 07	113,128 85
Williams Lake.....	41,950	13,600	16,000	963 95	123 20	16 96		13,175		136 08	86,565 19
Total, British Columbia.....	368,775	90,768	422,314	49,245 04	31,857 52	1,861 15	432,905	143,179	152,050	51,003 81	1,742,958 52

TABLE 6—Continued

Sources and Value of Income—Continued

Agencies	Value of Farm Products Including Hay	Value of Beef Sold also of That Used for Food	Wages Earned	Received from Land Rentals	Received from Timber	Received from Mining	Earned by Fishing	Earned by Hunting and Trapping	Earned by other Industries and Occupations	Annuities Paid and Interest on Indian Trust Funds	Total Income of Indians
	\$	\$	\$	\$ cts.	\$ cts.	\$ cts.	\$	\$	\$	\$ cts.	\$ cts.
MANITOBA											
Birtle.....	12,000	1,650	3,300	374 75	16 80			2,850	1,050	3,901 06	25,642 61
Clandeboye.....	15,334	1,825	10,175	174 00	831 45		1,525	8,900	3,850	18,088 35	60,702 80
Fisher River.....	19,635	4,410	8,200	100 00			4,450	1,700	9,000	9,973 17	57,468 17
Fort Churchill.....								2,500		1,000 00	3,500 00
Griswold.....	12,975	406	2,700					500	1,200		17,781 00
Manitowapah.....	26,789	8,118	10,500		1 00		9,500	14,400	9,100	11,181 59	89,559 59
Norway House.....	8,750	75	15,300	3 00			12,250	52,000	10,700	16,154 95	115,232 95
The Pas.....	16,670	1,400	9,750	50 00	157 24		5,750	28,450	3,000	24,636 21	89,863 45
Portage la Prairie.....	19,701	830	1,800	1,794 61	21 80		140	3,650	1,200	8,262 78	37,400 19
Port Nelson.....			750					26,000		2,193 00	26,943 00
Total, Manitoba.....	131,854	18,714	62,975	2,496 36	1,028 29		33,615	140,950	39,100	95,341 11	526,073 76
NEW BRUNSWICK											
Northern Division.....	325	300	6,800				400	100	1,300	983 83	10,208 83
Northeastern Division.....	5,550	50	800	405 00	527 37	45 00	825	210	430	1,254 78	10,097 15
Southwestern Division.....	570		3,700		26 00		40	1,070	2,400	112 16	12,918 16
Total, New Brunswick.....	6,445	350	16,300	405 00	553 37	45 00	1,265	1,380	4,130	2,350 77	33,224 14
NOVA SCOTIA											
Annapolis.....	230		3,200					300	250		3,980 00
Antigonish and Guysborough.....	418	65	900	45 00			270	260	485		2,443 00
Cape Breton (Esksasoni).....	900	300	500				100	200	200		2,200 00
Cape Breton (Sydney).....	1,500		200					100			1,800 00
Colchester.....	700		300					300	2,000		3,300 00
Cumberland.....	65		600					125	500		1,290 00
Digby.....	125		1,500					350	230		2,205 00
Halifax.....	85		1,000						1,000		2,085 00
Hants (Indian Brook).....	600	40	2,000				50	175	1,200		4,065 00
Hants (Windsor).....	10		100					180			290 00
Inverness.....	1,375	150	1,950				275	140	350		4,240 00
Kings.....											
Lunenburg.....	36		230	30 00	13 00	244 70					552 70
Pictou.....	595		3,000				250	125	2,500		6,470 00
Queens.....			400	15 00	10 00						425 00

Richmond.....	1,300	80	3,000				180	80	1,525		6,165 00
Shelburne.....	125		15				50	60	300		550 00
Victoria.....	590	10	350				100	200	600		1,850 00
Yarmouth.....	260		500					10			770 00
Micmacs of Nova Scotia.....										1,692 77	1,692 77
Total, Nova Scotia.....	8,914	645	19,745	90 00	22 00	244 70	1,275	2,605	11,140	1,692 77	46,373 47
NORTHWEST TERRITORIES											
Fort Good Hope.....			2,850				3,100	65 000		6,150 00	76,900 00
Fort Resolution.....			2,750				1,250	12,700	1,000	7,160 00	24,860 00
Fort Simpson.....	9,290		8,720				17,590	53,770	5,790	5,645 00	100,805 00
Total, Northwest Territories.....	9,290		14,120				21,940	131,470	6,790	18,955 00	202,565 00
ONTARIO											
Alnwick.....	5,000	250	11,500			4 90		4,000	3,000	8,998 19	32,753 09
Cape Croker.....	5,850	950	8,900	240 00	534 80		3,025	75	1,600	21,687 73	42,362 53
Caradoc.....	22,922	1,875	42,000	1,933 50			170	1,000	5,700	3,409 78	79,010 28
Chapleau.....	900		5,000		378 00			5,000		2,826 40	14,104 40
Christian Island.....	3,500	500	3,800				2,000	508		14,976 27	25,076 27
Fort Frances.....	4,750		15,500	600 00	2,710 19	27 00	10,000	13,500	13,050	14,748 79	74,885 98
Georgina Island.....	1,000	350	5,000	737 40			1,200	150	350	3,569 31	12,356 71
Golden Lake.....	1,350	100	1,000	38 00				500	500	15 28	2,503 28
Gore Bay.....	8,250	775	11,150		495 62			700	850	10,156 99	33,017 61
James Bay.....	1,660		27,000				1,500	162,500	7,300	111 55	200,071 55
Kenora.....	4,800		9,900	450 00	4,838 13	1,482 00	80,100	9,750	15,600	25,311 30	152,031 43
Manitowaning.....	22,880	5,035	51,910	465 00	4,492 93	386 55	2,940	3,960	10,380	25,762 06	128,211 54
Moravian.....	4,670	150	1,500	386 00			40	100	200	5,872 84	12,918 84
New Credit.....	13,300	825	3,700		4 74			200		4,766 61	22,796 35
Parry Sound.....	1,500		430 00		1,857 20	334 59		300	1,100	17,361 25	22,883 04
Port Arthur.....	1,000		49,440	999 96	137 00	285 00	10,741	6,200	32,499	16,462 68	116,864 64
Rama.....	1,039		3,000	149 00	25 20		100	800	3,000	8,005 42	16,118 62
Rice Lake.....	7,100	550	28,000	2,068 00				9,500	10,000	8,477 06	65,695 06
Sarnia.....	5,973		1,600	160 50			143 88	80		17,207 92	25,135 30
Saugeen.....	6,000	450	6,000	250 00	99 00		80	700	4,030	15,891 83	33,440 83
Sault Ste. Marie.....	13,700	1,250	8,500	175 00	1,109 22	359 11	3,100	1,900	3,500	12,705 99	46,329 32
Savanne.....	1,820		10,500		11,324 69		95,000	30,000	14,000	7,790 00	170,434 69
Scugog.....		350	1,166 50		8 25		75	500	500	1,292 13	3,891 88
Six Nations.....	100,020	2,300	24,000	6,140 08	163 29			1,000		47,701 34	181,324 71
Sturgeon Falls.....	28,003	225	3,600	40 00	1,618 10		950	2,900	5,600	60,062 76	103,015 86
Thessalon.....	10,700	850	24,000	100 00	533 20	583 00	600	4,725	5,900	7,043 06	55,039 26
Tyendinaga.....	78,500	2,700	30,000	6,266 18			2,000	300	4,000	5,444 41	127,210 59
Walpole Island.....	26,251	1,950	65,831	875 65	200 27		3,000	2,500	17,000	3,110 57	120,718 49
District of Patricia.....										16,782 00	16,782 00
Georgian Bay Islands.....											
Total, Ontario.....	377,835	21,085	452,481	23,670 77	30,526 58	3,644 28	217,291	263,460	159,419	387,571 52	1,936,984 15
PRINCE EDWARD ISLAND.....	800	175	1,300				875	160	425	12	3,235 12

TABLE 6—Concluded
Sources and Value of Income—Concluded

Agencies	Value of Farm Products Including Hay	Value of Beef Sold also of That Used for Food	Wages Earned	Received from Land Rentals	Received from Timber	Received from Mining	Earned by Fishing	Earned by Hunting and Trapping	Earned by other Industries and Occupations	Annuities Paid and Interest on Indian Trust Funds	Total Income of Indians
	\$	\$	\$	\$ cts.	\$ cts.	\$ cts.	\$	\$	\$	\$ cts.	\$ cts.
QUEBEC											
Bécancour.....	800	200	900				10	15		340 32	2,265 32
Bersimis.....	459	150	5,920		7,243 85		300	9,500		6,739 94	30,303 79
Cacouna.....	15		5,500							484 81	5,999 81
Caughnawaga.....	11,000	3,300	45,000	7,631 99			500	150	700	861 12	69,143 11
Jeune Lorette.....			12,000					700	6,500	742 83	19,942 83
Maniwaki.....	5,456	200	30,200	339 50	522 02		250	3,000	580	4,066 06	44,643 58
Manowan.....										2,099 06	2,099 06
María.....	650	30	1,200				50		800		2,730 00
Mingan.....								1,600			1,600 00
Oka.....	4,000	1,000	1,000		946 94			200	500	495 52	8,142 46
Pierreville.....	1,500	200	2,000	50 00				200	1,800	348 74	6,098 74
Pointe Bleue.....	10,200	300	12,000	26 00				24,000	3,000	497 17	50,023 17
Restigouche.....	8,500	120	3,500	300 00	40 42				300	234 17	12,994 59
Seven Islands.....				100 00				10,000			10,100 00
St. Régis.....	27,000	2,700	12,000	213 58			1,200	900	11,000	3,019 19	58,032 68
Timiskaming.....	1,000	150	4,000			100 30	50	900		2,413 71	8,614 01
Northern District.....					866 20						866 20
Total, Quebec.....	70,571	8,350	135,220	8,711 07	9,821 43	100 30	2,360	51,165	25,160	22,342 55	333,601 35
SASKATCHEWAN											
Battleford.....	31,770	7,505	6,200	1,503 82			16,600	16,675	2,350	19,121 25	102,025 07
Carlton.....	31,080	9,875	8,475	897 60			1,790	26,950	9,500	23,786 23	112,263 83
Crooked Lakes.....	24,995	7,010	1,155	1,232 99						29,472 57	63,915 56
Duck Lake.....	31,490	12,722	2,227	266 00	484 42		315	1,751	8,085	9,847 18	67,257 60
File Hills.....	20,373	3,600	1,625	31 35				275	5,280	3,723 34	34,807 69
Moose Woods.....	1,100	2,023					25	41	882		4,071 00
Onion Lake.....	39,365	8,410	5,350	30 00			5,000	3,150	5,200	7,166 92	74,271 92
Pelly.....	14,780	4,800	4,900	553 45				1,000	700	12,595 17	30,313 62
Qu'Appelle.....	13,759	5,750	1,590	433 00	1 00		500	310	520	26,533 09	49,401 09
Touchwood.....	17,308	5,503	5,555	40 00				4,627	1,970	19,009 14	54,011 14
Wood Mountain Reserve.....		630							350	3 23	933 23
Inspectorate (Regina Beach).....				145 75							145 75
Total, Saskatchewan.....	225,920	67,897	37,077	5,378 96	485 42		24,830	54,779	84,837	151,263 12	602,467 50
YUKON TERRITORY											
Yukon.....	3,994	73	4,140							15 58	8,222 58

RECAPITULATION

PROVINCES											
Alberta.....	266,268	82,449	36,030	44,806 54	722 21	95 90	12,150	81,176	51,596	221,046 11	796,919 76
British Columbia.....	368,775	90,768	423,314	49,245 04	31,387 52	1,361 15	432,905	149,179	152,050	51,003 81	1,742,958 52
Manitoba.....	131,854	18,714	62,975	2,496 36	1,028 29		33,615	140,950	39,100	95,341 11	526,073 76
New Brunswick.....	6,445	350	16,300	405 00	583 37	45 00	1,265	1,380	4,130	2,350 77	33,224 14
Northwest Territories.....	9,290		14,120				21,940	131,470	6,790	18,955 00	202,565 00
Nova Scotia.....	8,914	645	19,745	90 00	22 00	244 70	1,275	2,605	11,140	1,092 77	46,373 47
Ontario.....	377,835	21,085	452,481	23,670 77	30,526 58	3,644 28	217,291	263,480	159,419	387,571 52	1,936,984 15
Prince Edward Island.....	800	175	1,300				375	160	425	12	3,235 12
Quebec.....	70,571	8,350	135,220	3,711 07	9,621 43	100 30	2,360	51,165	25,160	22,342 55	333,601 35
Saskatchewan.....	225,920	67,897	37,077	5,378 96	485 42		24,830	54,779	34,837	151,263 12	602,467 50
Yukon Territory.....	3,994	73	4,140							15 58	8,222 58
Total, Provinces.....	1,470,656	290,506	1,202,292	134,803 74	74,316 82	5,491 33	748,006	870,324	484,647	951,582 46	6,232,625 35

Expenditure from Vote 169, by Primary Allotments and Provinces, 1937-8

	Adminis- tration	Education	Medical	Welfare	British Columbia Special	Irrigation and Roads	Total
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Nova Scotia.....	5,060 76	38,282 03	31,761 69	73,197 71		1,113 51	149,415 70
Prince Edward Island..	1,334 51	1,000 70	3,635 56	9,008 78		205 40	15,184 95
New Brunswick.....	6,106 27	16,114 16	25,369 61	57,827 72		850 42	106,268 18
Quebec.....	25,636 95	64,440 63	81,954 22	209,168 45		10,612 51	391,812 76
Ontario.....	88,779 12	350,695 56	199,748 86	139,086 00		6,297 71	784,607 25
Manitoba.....	64,251 93	216,271 50	110,572 49	125,911 66		1,084 43	518,092 01
Saskatchewan.....	129,416 96	306,283 72	94,065 46	139,308 98		353 60	669,428 72
Alberta.....	108,932 08	314,303 95	84,745 09	133,890 36			641,872 38
British Columbia.....	133,399 74	390,300 21	198,572 62	112,398 45	83,084 82	5,788 97	923,544 81
Northwest Territories.	21,985 58	38,844 58	53,059 08	26,892 30			140,781 54
Yukon.....	815 85	18,308 17	9,865 46	10,040 18			39,029 66
Triennial Clothing.....				4,174 34			4,174 34
Indian Hospitals and Tuberculosis Control.			125,843 01				125,843 01
General.....	17,883 99	75,226 26	249 80	14,886 62			108,246 67
Total.....	603,604 64	1,830,071 47	1,019,442 95	1,055,791 55	83,084 82	26,306 55	4,618,301 98

Statement of Expenditure from Special Supplementary Votes 321 and 323
by Provinces

Province	Vote 321	Vote 323
	\$ cts.	\$ cts.
Nova Scotia.....	2,557 04	2,596 46
Prince Edward Island.....	21 63	
New Brunswick.....	1,831 36	
Quebec.....	2,439 27	1,000 00
Ontario.....	7,806 78	1,415 65
Manitoba.....	23,753 73	
Saskatchewan.....	5,338 00	999 92
Alberta.....	1,088 77	
British Columbia.....	4,999 40	3,229 74
General.....	516 53	
	55,402 51	9,241 77

Annuities Paid and Interest on Indian Trust Funds, 1937-8

ALBERTA

Athabaska.....	\$ 7,965 00
Blackfoot.....	121,740 34
Blood.....	8,146 91
Edmonton.....	23,232 16
Hobbema.....	16,288 16
Lesser Slave Lake.....	22,616 73
Peigan.....	6,236 15
Saddle Lake.....	7,239 64
Sarcee.....	2,535 63
Stony.....	5,045 39

\$ 221,046 11

Annuities Paid and Interest on Indian Trust Funds, 1937-8—Continued

BRITISH COLUMBIA

Babine.....	\$ 615 95
Bella Coola.....	504 67
Cowichan.....	5,848 08
Fort St. John.....	1,775 00
Kamloops.....	831 01
Kootenay.....	643 61
Kwawkewlth.....	3,819 83
Lytton.....	4,071 19
New Westminster.....	15,551 20
Nicola.....	96 87
Okanagan.....	1,029 02
Queen Charlotte.....	147 43
Skeena River.....	2,778 06
Stikine.....	0 87
Stuart Lake.....	1,573 47
Vancouver.....	10,192 40
West Coast.....	1,389 07
Williams Lake.....	136 08
	<hr/>
	\$ 51,003 81

MANITOBA

Birtle.....	\$ 3,901 06
Clandeboye.....	18,088 35
Fisher River.....	9,973 17
Fort Churchill.....	1,000 00
Manitowapah.....	11,131 59
Norway House.....	16,154 95
Pas.....	24,636 21
Portage la Prairie.....	8,262 78
York Factory.....	2,193 00
	<hr/>
	\$ 95,341 11

NEW BRUNSWICK

Northern Division.....	\$ 983 83
Northeastern Division.....	1,254 78
Southwestern Division.....	112 16
	<hr/>
	\$ 2,350 77

NOVA SCOTIA

Micmacs of Nova Scotia.....	1,692 77
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NORTHWEST TERRITORIES

Fort Good Hope.....	\$ 6,150 00
Fort Resolution.....	7,160 00
Fort Simpson.....	5,645 00
	<hr/>
	\$ 18,955 00

ONTARIO

Alnwick.....	\$ 8,998 19
Cape Croker.....	21,687 73
Caradoc.....	3,409 78
Chapleau.....	2,826 40
Christian Island.....	14,976 27
Kenora District (Patricia Portion).....	16,782 00
Fort Frances.....	14,748 79
Georgina Island.....	3,569 31
Golden Lake.....	15 28
Gore Bay.....	10,156 99
James Bay.....	111 55
Kenora.....	33,101 30
Manitowaning.....	25,762 06
Moravians.....	5,872 84
New Credit.....	4,766 61
Parry Sound.....	17,361 25
Port Arthur.....	16,462 68
Rama.....	8,005 42
Rice Lake.....	8,477 06
Sarnia.....	17,207 92
Saugeen.....	15,891 83

Annuities Paid and Interest on Indian Trust Funds, 1937-8—Concluded

ONTARIO—Concluded

Sault Ste. Marie.....	\$ 12,705 99
Scugog.....	1,292 13
Six Nations.....	47,701 34
Sturgeon Falls.....	60,082 76
Thessalon.....	7,043 06
Tyendinaga.....	5,444 41
Walpole Island.....	3,110 57
	<u>\$ 387,571 52</u>

PRINCE EDWARD ISLAND

Prince Edward Island.....	\$ 0 12
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QUEBEC

Bécancour.....	\$ 340 32
Bersimis.....	6,739 94
Cacouna.....	484 81
Caughnawaga.....	861 12
Lorette.....	742 83
Maniwaki.....	4,066 06
Manowan.....	2,099 06
Oka.....	495 52
Pierreville.....	348 74
Pointe Bleue.....	497 17
Restigouche.....	234 17
St. Régis.....	3,019 10
Timiskaming.....	2,413 71
	<u>\$ 22,342 55</u>

SASKATCHEWAN

Battleford.....	\$ 19,121 25
Carlton.....	23,786 23
Crooked Lakes.....	20,472 57
Duck Lake.....	9,827 18
File Hills.....	3,723 34
Onion Lake.....	7,166 92
Pelly.....	12,595 17
Qu'Appelle.....	26,538 09
Touchwood.....	19,009 14
Wood Mountain.....	3 23
	<u>\$ 151,263 12</u>

YUKON

Yukon Indians.....	\$ 15 58
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Indian Trust Fund
Showing Transactions in Connection with the Fund During the Fiscal Year
Ending March 31, 1938

Services	Debit		Credit	
	\$	cts.	\$	cts.
Balance, March 31, 1937.....			13,997,644	13
Collections on land sales, timber and stone dues, rents, fines, fees, etc.....			487,432	50
Interest for year ending March 31, 1938.....			710,780	65
Credit transfers during year.....			12,603	32
Expenditure during year.....	1,111,464	85		
Transfers by warrant, etc.....	15,090	12		
Balance, March 31, 1938.....	14,081,905	63		
	15,208,460	60	15,208,460	60

Statement of Indian Day Schools in the Dominion for the Fiscal Year Ended March 31, 1938

School	Reserve	Agency	Teacher	Number on Roll			Average Attendance	Grades								
				Boys	Girls	Total		I	II	III	IV	V	VI	VII	VIII	IX
PRINCE EDWARD ISLAND																
Lennox Island.....	Lennox Island.....	Prince Edward Island.....	Mr. J. J. Sark.....	9	6	15	11	4	5	.....	3	2	1	.....	.....	.....
NOVA SCOTIA																
Afton.....	Afton.....	Antigonish.....	Miss J. Forbes.....	12	8	20	15	8	3	.....	3	4	.....	2	.....	.....
Eskasoni.....	Eskasoni.....	Cape Breton.....	Miss J. McMillan.....	12	17	29	19	16	3	9	.....	1	.....	.....	.....	.....
Sydney.....	Sydney.....	".....	Miss C. Gallagher.....	14	21	35	19	11	5	5	8	6	.....	.....	.....	.....
Millbrook.....	Millbrook.....	Colchester.....	Mr. F. B. McKinnon.....	17	7	24	18	7	2	4	3	.....	6	.....	2	.....
Bear River.....	Bear River.....	Digby.....	Mrs. R. L. Ford.....	8	7	15	10	6	1	1	2	.....	2	1	.....	2
Malagawatch.....	Malagawatch.....	Inverness.....	Mr. C. Kennedy.....	8	7	15	13	5	2	2	2	2	.....	.....	.....	.....
Whycocomagh.....	Whycocomagh.....	".....	Mr. A. MacDonald.....	18	25	43	25	19	10	6	3	3	2	.....	.....	.....
Indian Cove.....	Fisher's Cove.....	Pictou.....	Miss G. McGirr.....	19	11	30	23	13	3	3	6	3	2	.....	.....	.....
Salmon River.....	Salmon River.....	Richmond.....	Miss H. Bissett.....	17	13	30	21	20	2	.....	3	4	1	.....	.....	.....
Middle River.....	Middle River.....	Victoria.....	Miss M. E. McLean.....	10	18	28	19	17	9	1	1	.....	.....	.....	.....	.....
Total.....	.....	.....	.....	135	134	269	182	122	40	31	31	23	15	3	4	.....
NEW BRUNSWICK																
Big Cove.....	Big Cove.....	Northeastern.....	Mr. A. L. Fraser.....	30	26	56	44	21	9	8	10	3	3	.....	2	.....
Burnt Church.....	Burnt Church.....	".....	Mrs. A. L. Fraser.....													
Eel Ground.....	Eel Ground.....	".....	Miss V. A. Hogan.....	11	15	26	20	12	3	2	.....	.....	3	4	2	.....
Indian Island.....	Indian Island.....	".....	Miss D. G. Murphy.....													
Red Bank.....	Red Bank.....	".....	Mrs. S. E. F. Savage.....	5	8	13	8	5	2	3	.....	.....	.....	.....	.....	.....
Eel River.....	Eel River.....	Restigouche.....	Miss B. L. Arsenault.....	3	12	15	10	8	1	.....	3	2	.....	1	.....	.....
Kingsclear.....	Eel River.....	Southwestern.....	Miss E. M. O'Brien.....	13	10	23	19	4	3	5	3	2	2	2	2	.....
Oromocto.....	Kingsclear.....	".....	Miss M. E. Scott.....	10	7	17	11	4	1	2	.....	4	4	2	.....	.....
St. Mary's.....	Oromocto.....	".....	Mrs. R. McElligott.....	10	8	18	13	7	.....	.....	3	3	.....	.....	3	.....
Woodstock.....	St. Mary's.....	".....	Sister M. Annette.....	17	22	39	31	6	7	7	5	8	2	4	.....	.....
Tobique.....	Woodstock.....	".....	Sister Catherine.....	11	13	24	15	9	6	2	4	2	1	.....	.....	.....
Tobique.....	Tobique.....	Northern.....	Sister M. Francis Joseph.....	32	25	57	48	12	11	13	7	7	3	2	2	.....
Total.....	.....	.....	Sister M. Doloresa.....													
Total.....	.....	.....	.....	166	171	337	263	104	54	53	38	36	23	18	11	.....

CANADIAN INDIAN AFFAIRS BRANCH

Statement of Indian Day Schools in the Dominion for the Fiscal Year Ended March 31, 1938—Continued

School	Reserve	Agency	Teacher	Number on Roll			Average Attendance	Grades														
				Boys	Girls	Total		I	II	III	IV	V	VI	VII	VIII	IX						
QUEBEC																						
Bersimis	Bersimis	Bersimis	Sister Ste. Jeanne	41	47	88	38	50	24	11	3											
Caughnawaga Bush	Caughnawaga	Caughnawaga	Sister M. du Carmel	14	10	24	16	6	5		7	4	2									
			Miss V. Jocks																			
			Sister M. Cleophas																			
			Sister M. Leander																			
			Miss V. Snow																			
			Sister M. George																			
			Sister M. Rose																			
			Sister M. Norbert																			
			Sister M. Mathilda																			
Caughnawaga R. C.	"	"	Sister Marie	188	166	354	300	85	61	66	23	31	36	9	24	19						
			Sister M. Jeanne																			
			Sister M. John																			
			Sister M. Alma																			
			Sister M. Mechtild																			
			Sister M. Leocadie																			
			Sister M. Lucie																			
			Sister M. Anysie																			
			Sister M. Lawrence																			
			Sister M. Anne-Julia																			
Caughnawaga St. Isidore	"	"	Miss M. Stacey	10	12	22	18	5	2	2	5	2		4		2						
Caughnawaga U. C.	"	"	Miss E. Bryan	31	24	55	35	21	7	8	8	5	4	2								
			Miss E. I. Mann																			
Fort George	At Fort George	James Bay	Miss V. C. Rutherford	1	2	3	1	3														
Rupert's House	At Rupert's House	"	Mr. G. Morrow	27	21	48	15	38		7	2		1									
Lorette	Lorette	Lorette	Sister Ste. Vincent-Ferrier	35	27	62	53	17	11	8	16	10										
			Coeur																			
Maria	Maria	Maria	Miss D. Gideon	23	22	45	32	21	3	13	8											
Congo Bridge	Congo Bridge	Maniwaki	Miss E. Baker	7	14	21	12	11		6	2	2										
Maniwaki	Maniwaki	"	Miss F. White	14	37	51	34	18	10	7	9		7									
Oka Country	Oka	Oka	Mr. A. E. Smith	20	17	37	21	14	9	6	2	3	2	1								
Oka Village	"	"	Mr. M. J. Oke	12	22	34	21	11	4	3	2	7	2	5								
St. Frances C. E.	Pierreville	Pierreville	Mr. A. Emmett	7	7	14	12	2	3	3	3		2	5		3						
			Sister M. Josephine																			
St. Frances R. C.	"	"	Sister C. Ovide	31	37	68	60	6	25	7	10	7	9	4								
			Sister St. Rene																			
Pointe Bleue	Pointe Bleue	Pointe Bleue	Sister Henri Suzo	42	39	81	64	20	36	16	6	1	2									
			Sister St. Angeliqne																			
			Sister St. Leo																			
Restigouche	Restigouche	Restigouche	Sister M. of St. Peter	80	58	138	114	37	35	19	21	11	6	9								
			Sister M. of the Holy Eucharist																			
Chenail	St. Regis	St. Regis	Miss U. Billings	11	20	31	23	13	5	3	4	4						2				
Chetlain	"	"	Miss G. Foisy	9	11	20	13	6	4	4	5				1							
Corwall Island E	"	"	Mr. C. Chisholm	15	27	42	30	15	5	9	3	4	2	2	2							

Cornwall Island W.	"	"	Miss E. Peters	12	11	23	18	4	2	6	5	4	2
St. Regis Island	"	"	Miss H. Fitzpatrick	16	18	19	13	5	4	4	4	1	1
St. Regis Village	"	"	Miss M. McDonald	24	36	60	50	32	9	5	5	6	1
Brennan's Lake	At Brennan's Lake	Timiskaming	Miss H. C. McRae	9	5	14	9	8	2	2	1	1	1
Hunter's Point	At Hunter's Point	"	Miss M. Duquette	2	6	8	6	1	1	1	1	1	1
Long Point	At Long Point	"	Miss C. Nephin	15	19	34	21	9	4	5	2	7	4
Timiskaming	Timiskaming	"	Mrs. J. D. McLaren	17	10	27	20	4	1	6	10	6	4
Waswanipi	At Waswanipi	"	Sister John of the Eucharist	33	46	79	44	79	4	6	10	6	4
Manouan	At Manouan	Outside Treaty	Mr. S. R. Iserhoff	28	22	50	48	40	5	5			
Mistassini	At Mistassini	"	Miss B. Savard	24	23	47	24	47					
Obedjwan	At Obedjwan	"	Mr. G. Iserhoff	28	17	45	36	31	8	6			
Weymontaching	At Weymontaching	"	Miss A. Hubert	18	17	35	18	19	10	6			
			Miss J. Lafrance										
			Miss M. Alie										
			Miss T. Boisvenue										
Total				834	845	1,679	1,219	659	302	248	167	121	81
													46
													36
													19
ONTARIO													
Cape Croker	Cape Croker	Cape Croker	Miss S. J. Burke	20	22	42	37	11	7	11	10		2
Port Elgin	"	"	Mrs. S. M. Bell	12	7	19	11	12	3	2		1	1
Sidney Bay	"	"	Miss G. Edington	9	9	18	12	7	4	2	3	1	1
Back Settlement	Caradoc	Caradoc	Miss H. M. Howe	12	14	26	20	13	5	4	3	1	1
Bear Creek	"	"	Miss M. Stiltz	8	6	14	8	2	4	2	1	2	2
Muncey	"	"	Miss B. Comfort	8	6	14	9	4	3	1	1	4	2
Oneida No. 2	Oneida	"	Mr. V. H. Morris	35	23	58	28	26	11	10	3	5	2
Oneida No. 3	"	"	Mr. L. A. Brayford	20	26	46	26	19	13	5	6	1	2
River Settlement	Caradoc	"	Miss P. Sabin	19	8	27	13	13	2	2	5	2	1
Christian Island R. C.	Christian Island	Christian Island	Miss M. M. O'Toole	13	18	31	26	13	4	1	4	3	4
Christian Island U.C.	Christian Island	Christian Island	Mr. H. S. Rawlings	24	22	46	36	13	8	9	4	3	4
			Miss I. Bell										4
			Miss P. Pratt										1
Manitou Rapids	Manitou Rapids	Fort Frances	Mr. J. Leeder	11	5	16	8	3	4	5	1	1	1
Seine River	Wild Potato	"	Miss D. Ross	15	14	29	24	21	8				
Gull Bay	Gull Bay	Fort William	Mr. G. W. Vesey	9	10	19	11	10	4	1	3		1
Lake Helen	At Lake Helen	"	Miss O. Wright	11	9	20	12	13			4		3
Martin Falls	Long Lake	"	Mr. N. Van Hatten	5	11	16	8	13			1		1
McIntyre Bay	Grand Bay	"	Miss C. Troy	9	10	19	12	6	5	5	2	3	
Mission Bay	Fort William	"	Mr. J. R. Douglas	9	13	22	20	4	8		2	5	2
Mobert	Mobert	"	Mrs. M. H. Reed	14	16	30	14	20	6	1	3		1
Pic	Pic	"	Miss A. McGuire	13	25	38	22	31	3	2	2		
Whitesand	Whitesand	"	Miss E. M. Robicheau	12	7	19	15	10	4	4		1	
Batchawana	Batchawana Bay	Sault Ste. Marie	Miss A. Davies	12	14	26	22	4	1	4	4	1	8
Garden River C.E.	Garden River	"	Miss L. Gattie	7	12	19	12	2	7		5	1	3
Garden River R.C.	Garden River	"	Miss J. Goody	38	37	75	52	26	10	6	13	6	10
			Miss S. A. Fex										3
Goulais Bay	Goulais Bay	"	Mr. R. A. Gibson	10	14	24	18	7	6	4	2	4	1
Georgina Island	Georgina Island	Georgina Island	Miss J. Currier	15	9	24	18	6	6		7		2
Golden Lake	Golden Lake	Golden Lake	Miss A. Straine	18	15	33	24	12	4	8	7	2	2
Sheshegwaning R.C.	Sheshegwaning	Gore Bay	Miss M. Wrinn	8	9	17	13	8	5	2	2		
West Bay	West Bay	"	Rev. R. A. Joselyn	29	21	50	36	26	3	12	4	2	3
Albany River	At Albany River	James Bay	Rev. H. S. Hughes-Caley	20	16	36	12	23	8	5			
Cat Lake	At Cat Lake	"		8	13	21	14	14	7				

¹Seasonal school only.

Statement of Indian Day Schools in the Dominion for the Fiscal Year Ended March 31, 1938—Continued

School	Reserve	Agency	Teacher	Number on Roll			Average Attendance	Grades																
				Boys	Girls	Total		I	II	III	IV	V	VI	VII	VIII	IX								
ONTARIO—Concluded																								
English River	At English River	"	Mr. N. Clarke	11	14	25	16	17	5	3														
Fort Hope	At Fort Hope	"	Rev. D. Macdonald	11	9	20	9	17	3															
Moose Fort	At Moose Fort	"	Rev. L. A. Sampson	20	33	53	22	45	4	1			1	1	1									
Trout Lake	At Trout Lake	"	Rev. L. Garrett	36	39	75	44	75																
Whitefish Bay	Whitefish Bay	Kenora	Mr. A. Lafteche	12	11	23	12	4	6	5			7	1										
Birch Island	Whitefish River	Manitowaning	Miss E. Fortin	13	21	34	27	13	5	6	4		3	2	2									
Buzwah	Buzwah	"	Miss C. Wakegijig	17	11	28	18	16	3	6			2			1								
Kaboni	Kaboni	"	Mrs. S. A. Prudhomme	12	14	26	14	18	4	2			2											
Sucker Creek	Sucker Creek	"	Miss L. Sims	7	14	21	15	7	4	4				3	2		1							
Whitefish Lake	Whitefish Lake	"	Miss D. Sullivan	4	10	14	9	3	3					1										
Wikwemikong	Wikwemikong	"	Miss C. O'Driscoll	34	42	76	44	26	17	11	13	4	5	1										
			Miss R. Trudeau																					
Moraviantown	Moravain	Moravian	Rev. J. A. Ward	18	29	47	22	13	9	3	4	5	6	3	4									
Gibson	Watha	Parry Sound	Mrs. C. O. Sommer	9	16	25	16	7	1	1	5	1	1	6	2	1								
Lower French River	Lower French River	"	Mr. L. McMahon, B.A.	8	15	23	14	17	2	1	1	1												
Maganetawan	Maganetawan	"	Miss E. M. Biaucci	21	12	33	20	4	9		6		8	3	3									
Moose Deer Point	At Moose Deer Point	"	Miss E. Donald	4	5	9	7	2		2														
Ryerson	Parry Island	"	Mr. B. Horne	16	15	31	20	6	11	6	1	2		5										
Shawanaga	Shawanaga	"	Miss J. M. McCaig	18	12	30	21	14		8		8		7										
Rama	Rama	Rama	Miss G. Swerdfeger	30	29	59	47	11	14	6	4	8	7	4	5									
			Miss R. L. McNeice																					
Alwick	Alwick	Rice Lake	Mr. J. Loukes	24	25	49	40	10	13		7	9	7		3									
Mud Lake	Mud Lake	"	Mr. W. G. Rome	26	26	52	43	5	10	9	6	7	4	4	6	1								
			Miss B. V. Long																					
Kettle Point	Kettle Point	Sarnia	Mr. R. V. Howard	14	18	32	23	13	7	4	1	3	4											
St. Clair	St. Clair	"	Mr. R. Smith	11	21	32	23	13	2	1	9	1	4	1	1									
Stoney Point	Stoney Point	"	Mr. H. Tompkins	2	6	8	5	1	4	1			1											
French Bay	Saugeen	Saugeen	Miss E. M. McCulloch	10	6	16	12	3	2		3	3												
Saugeen	Saugeen	"	Mr. W. M. Knechtel	12	6	18	15	3	4		7	3	4											
Scotch Settlement	"	"	Mr. M. J. McIver	12	14	26	20	13	5	4	3			1										
New Credit	New Credit	Six Nations	Mr. J. C. Hill	22	24	46	36	9	6	7	5	7	2	2	3									
Six Nations No. 1	Six Nations	"	Miss J. L. Jamieson	19	22	41	29	6	7		5	5	6	7	5									
Six Nations No. 2	"	"	Miss V. Davis	28	28	56	40	3	8	8	8	5	10	4	10									
			Miss N. Jamieson																					
Six Nations No. 3	"	"	Miss O. A. Hill	36	26	62	39	14	6	16	6	10	7	1	2									
Six Nations No. 4	"	"	Miss M. H. Jamieson	20	10	30	21	6	3		6	3	5	3	4									
Six Nations No. 5	"	"	Miss A. Hill	24	14	38	24	3	4	4	3	8	6	6	4									
Six Nations No. 6	"	"	Miss E. Monture	16	25	41	21	13	12	4	6	1	3	2										
Six Nations No. 7	"	"	Miss H. Miller	32	18	50	41	13	8	3	4	8	5	2	7									
Six Nations No. 8	"	"	Mr. O. Smith	25	18	43	32	13	8		6	2	6	5	3									
Six Nations No. 9	"	"	Miss E. General	18	29	47	32	12	5	4	7	5	4	5	5									
Six Nations No. 10	"	"	Miss S. Jamieson	32	32	64	41	24	11		8	11	7		3									
Six Nations No. 11	"	"	Mr. J. L. Garlow	23	36	59	31	22	5		13	4	7	3	5									
			Mr. H. English																					
Dokis	Dokis	Sturgeon Falls	Miss L. Addey	17	19	36	23	22	6	7	1													
Garden Village	Nipissing	"	Miss M. T. Cox	15	23	38	25	17	6	5	3	2	2	2					1					

Timagami	At Timagami	"	Rev. L. C. Wittig	12	22	34	20	10	1	8	8	7							
Mississauga River	Mississauga	Thessalon	Miss M. MacNulty	14	18	32	21	11	8	5	4							4	
Sagamook	Spanish River	"	Miss H. Kelly	25	18	43	31	22	9	8									
Serpent River	Kenabutch	"	Miss H. Gauvreau	13	15	28	17	2	8	1	4	4	1	4				4	
Spanish River Protestant	Spanish River	"	Miss B. W. Willis	4	7	11	6	2	2	2	2	4	1						
Tyendinga Central	Tyendinga	Tyendinga	Miss L. M. Bell	12	14	26	18	6	6	3	2	2	5	2					
Tyendinga Eastern	"	"	Miss N. H. Stoddart	20	19	39	21	14	9	4	4	3	2	2				1	
Tyendinga Mission	"	"	Miss L. Brant	11	18	29	16	7	4		7	5	4					1	
Tyendinga Western	"	"	Mr. L. Claus	8	9	17	11	10	1	3	3							1	
Walpole Island No. 1	Walpole Island	Walpole Island	Mr. J. W. Daley	41	34	75	62	35	10		11	5	7	3				4	
Walpole Island No. 2	"	"	Mrs. J. W. Daley	20	14	34	24	9	13		9		1					2	
			Mrs. E. E. George																
Total				1,372	1,426	2,798	1,861	1,072	477	293	292	232	199	130	100			3	
MANITOBA																			
Berens River R.C.	Berens River	Clandeboye	Sister Benoit	17	12	29	15	15	3		7								4
Berens River U.C.	Berens River	"	Sister Lacroix	29	24	53	21	18	10	15	1								2
Black River	Black River	"	Mr. C. D. Street	10	10	20	9	5	6	3	4	2							
Bloodvein River	Bloodvein	"	Mr. G. Slater	16	14	30	16	12	2	9	4	3							
Brokenhead	Brokenhead	"	Rev. F. Leach, O.M.I.	14	11	25	14	7	4	5	4	3	2						
Fort Alexander, Upper	Fort Alexander	"	Mr. G. E. Sage	19	17	36	12	26	5	2	1	1	1						
Grand Rapids	Grand Rapids	"	Mrs. C. R. Harbord	17	12	29	16	11	5	3	4	4	2						
Hollowwater River	Hollowwater River	"	Rev. G. M. Armstrong, B.A	16	11	27	16	16	6	1	4								
Little Grand Rapids R.C.	Little Grand Rapids	"	Mr. R. C. Marsh	16	12	28	20	18	7	3									
Little Grand Rapids U.C.	Little Grand Rapids	"	Mr. B. Guimond	25	18	43	21	26	11	3	3								
Pekangikum	Pekangikum	Clandeboye	Mr. L. L. Schuetze	12	14	26	14	25	1										
Poplar River	Poplar River	"	Mr. W. Mutch	14	12	26	10	6	9	9	2								
Fisher River	Fisher River	Fisher River	Mr. J. Taylor	39	34	73	44	40	7	2	11	6	6	1					
			Mr. W. G. Tong																
			Miss M. Stevens	13	8	21	10	10	2	4	3	2							
Jackhead	Jackhead	"	Mr. S. Waller	12	11	23	15	11	2	3	1	1	3	2					
Peguis Centre	Peguis	"	Miss A. L. Clarke	13	9	22	14	12	8	1									
Peguis North	"	"	Miss A. Eaton	23	24	47	42	18	12	4	3	5	5						
Peguis South	"	"	Miss N. Skatfeld	2	8	10	7	5	5										
Oak River Sioux	Oak River	Griswold	Miss W. H. Stapleton	17	12	29	15	21	4	3			1						
Ebb and Flow Lake	Ebb and Flow	Manitowapah	Mrs. H. M. Adam	26	32	58	22	34	15		7		2						
Fairford	Fairford	"	Miss I. G. Fairservice	15	12	27	16	13	6		4	3	1						
Lake Manitoba	Lake Manitoba	"	Miss A. C. E. Field	23	22	45	25	29	6	6	3	1							
Lake St. Martin	Lake St. Martin	"	Sister Cecilia	16	11	27	14	12	9	4			2						
Little Saskatchewan	Little Saskatchewan	"	Mrs. C. R. McKenzie	23	17	40	20	36			3	1							
Shoal River	Shoal River	"	Rev. C. E. Cooke	7	3	10	9	5			3		2						
			Mrs. C. E. Cooke	22	25	47	26	47											
Waterhen River	Waterhen	Norway House	Sister P. Fuller	21	17	38	12	27	7	3	1								
Churchill	At Fort Churchill	"	Rev. E. W. Gardner	12	16	28	15	20	3	5									
Cross Lake R.C.	Cross Lake	"	Sister St. Luc	21	24	45	16	29	10	6									
Cross Lake U.C.	"	"	Miss C. Shoup	6	18	24	13	21	3										
God's Lake R.C.	God's Lake	"	Bro. J. Cordeau	33	29	62	20	25	14	11	6	6							
God's Lake U.C.	"	"	Mr. H. Meadows	46	41	87	23	86											
Island Lake R.C.	Island Lake	"	Mr. J. E. Blackburn	5	7	12	4	6	4	2									
Island Lake U.C.	"	"	Mr. B. Grafton																
Jack River R.C.	Norway House	"	Sister Morin																

† Seasonal school only.

Statement of Indian Day Schools in the Dominion for the Fiscal Year Ended March 31, 1938—Continued

School	Reserve	Agency	Teacher	Number on Roll			Average Attendance	Grades										
				Boys	Girls	Total		I	II	III	IV	V	VI	VII	VIII	IX		
MANITOBA—Concluded																		
Oxford House	At Oxford House	"	Mrs. A. M. Scoates	28	23	51	24	45	2				4					
Rosville	Norway House	"	Miss E. Smith-Windsor	19	20	39	12	29	4			3	3					
York Factory	At York Factory	"	Mr. F. E. Goldring	10	15	25	7	21	3	1								
Big Eddy	The Pas	The Pas	Miss E. McKay	11	7	18	13	7	7	1	1	2						
Chemawawin	Chemawawin	"	Mr. H. Priestly-Barrett	16	8	24	17	13	3	4	2	2						
Nelson House R.C.	Nelson House	"	Mr. R. Lauze	13	10	23	15	12	4	2	3	2						
Nelson House U.C.	"	"	Mr. E. Monias	9	11	20	14	17	3									
The Pas	The Pas	"	Miss A. Wright	14	12	26	15	13	3	3	3	1	2					
Pine Bluff	Pine Bluff	"	Mr. P. Scoote	6	6	12	8	4	2	1	2	2	1					
Red Earth	Red Earth	"	Rev. J. L. Lowe	18	12	30	26	8	5	8	5	2	2					
Shoal Lake	Shoal Lake	"	Mr. C. E. Wilde	9	6	15	12	4	2	2				4	3			
Split Lake	Split Lake	"	Rev. G. C. Cowley	12	17	29	9	29										
Swan Lake	Swan Lake	Portage la Prairie	Rev. J. E. Cooper	11	13	24	11	14	3	1	6							
Total				776	707	1,483	749	908	227	130	104	65	42	5	2			
SASKATCHEWAN																		
Little Pines	Little Pines	Battleford	Miss A. L. Cunningham	22	14	36	25	14	3	2	3	2	3	5	4			
Red Pheasant	Red Pheasant	"	Miss M. Armitage	20	17	37	21	23	5	2	5		2					
Thunderchild	Thunderchild	"	Miss K. Beanland	14	14	28	21	22	1	1	2		2					
Ahtahkakoops	Ahtahkakoops	Carlton	Mr. E. B. Goodman	13	18	31	21	15	8	3	4	1						
Big River	Big River	"	Miss C. Merrett	12	8	20	15	14	2	2	2							
Chitek Lake	Pelican Lake	"	Mr. F. J. Daniels	11	12	23	9	16	4	3								
Little Red River	Little Red River	Carlton	Mr. F. C. Dey	12	8	20	15	14	1	2		3						
Mistawasis	Mistawasis	"	Rev. W. W. Moore	12	17	29	15	25	1	2	1							
Montreal Lake	Montreal Lake	"	Mr. J. N. Stenhouse	30	36	66	42	51	6	8	1							
Sturgeon Lake	Wm. Twatt's	"	Miss D. Brant	15	11	26	16	17	2	3	1	3						
White Bear's	White Bear's	Crooked Lakes	Miss M. McGregor	10	21	31	25	14	7	4	2	4						
Fort-a-la-Corne South	James Smith	Duck Lake	Mr. T. E. MacDonald	11	6	17	11	12	2		3							
James Smith	"	"	Mrs. W. L. Curror	5	12	17	10	7	4	3		2	1					
John Smith	John Smith	"	Rev. G. J. Waite	6	16	22	17	5	2	4	4	3	4					
Kinistino	Kinistino	"	Mr. J. R. Gardner	8	4	12	11	12										
White Cap Sioux	Moose Woods	Moose Woods	Mrs. E. C. Carlin	4	10	14	12	5	2		3	2	1					
Big Island Lake	Bighead	Onion Lake	Mr. J. H. Lirette	11	13	24	14	13	2	9								
Frog Lake	Frog Lake	"	Mr. A. E. Peterson	9	10	19	8	13	1	2	1	2						
Long Lake	Keeheewin's	"	Mr. C. Hebert	12	11	23	16	9	7	3	4							
Ministikwan	Ministikwan	"	Mr. J. Chamberlain	4	8	12	4	9	2	1								
Cote's	Cote's	Pelly	Mr. L. L. Dobbin	9	13	22	14	9	6	2	3	1	1					
Key's	Key's	"	Mrs. L. L. Dobbin															
Key's	Key's	"	Rev. J. Jolley	9	4	13	8	4	3	1	2	2	1					
Assiniboine	Assiniboine	Qu'Appelle	Miss F. M. Hodgson	16	8	24	19	12	5	2	4	1						
Day Star's	Day Star's	Touchwood	Rev. F. E. Torpey	8	9	17	15	9		4	4							
Fishing Lake	Fishing Lake	"	Rev. A. J. Lawes	12	14	26	15	10	5	7	2	2						
Stanley	Stanley	Treaty No. 10	Mr. A. Spence	15	15	30	18	29	1									
Total				310	329	639	417	383	82	70	51	28	15	5	5			

ALBERTA																	
Sarcee	Sarcee	Sarcee	Rev. F. M. R. Gibney	17	14	31	15	13	8	3	6	1					
Morley	Morley	Stony	Miss J. Teller	1	5	6	4	4	2	3	6	1					
Total				18	19	37	19	17	8	2	3	6	1				
NORTHWEST TERRITORIES																	
Fort Smith	At Fort Smith	Athabaska	Sister O. Lavote	5	6	11	3	7	2	2	1	1					
Fort Simpson	At Fort Simpson	Fort Simpson	Sister M. A. Gamache	4	7	11	9	6	1	2	1	1					
St. David's Mission	At St. David's Mission	"	Rev. H. G. Cook	6	8	14	9	13	1								
Total				15	21	36	21	26	4	4	1	1					
BRITISH COLUMBIA																	
Fort Babine	Fort Babine	Babine	Mr. J. J. Moroney	24	16	40	17	14	14	8	4						
Glen Vowell	Sikedakh	"	Mr. A. F. Parkinson	7	14	21	18	8	3	4	5	1					
Hazelton	Hazelton	"	Mr. F. Burling	27	37	64	30	31	10	6	7	1	6				3
Kispiox	Kispiox	"	Miss D. M. Bews	23	40	63	40	36	10	9	6	2					
Kitsegukla	Kitsegukla	"	Rev. B. Black	18	18	36	20	21	4	6	4	1					
Kitwanga	Kitwanga	"	Rev. B. Shearman	13	22	35	24	10	12	4	2	4	2	1			
*Moricietown	Moricietown	"	Miss O. B. Sargent	18	17	35	26	29	6								
Rocher Deboile	Ha gwilget	"	Mrs. J. Macdonald	10	7	17	9	7	4	3	3						
Bella Bella	Bella Bella	Bella Coola	Miss L. Jesop	35	28	63	34	45	12	4	2						
Bella Coola	Bella Coola	"	Mr. T. R. Kelly	14	19	33	15	24	2	5	2						
Kitimat	Kitimat	"	Miss R. Nelson	28	35	63	43	33	11	11	3	4	1				
Klemtut	Klemtut	"	Mr. J. B. Glover	11	7	18	10	15	3								
Cowichan	Cowichan	Cowichan	Mr. D. M. J. Conway	20	15	35	13	20	8	2	3	2					
Koksilah	Koksilah	"	Miss F. L. Perry	11	17	28	13	14	5	5	2	2					
Nanaimo	Nanaimo	"	Miss E. Creighton	26	17	43	21	22	7	1	4	6	3				
Songhees	Somenos	"	Miss M. T. Hughes	7	10	17	9	10		1	2	3	1				
Taartlip	Tsartlip	"	Miss G. M. Lovick	10	15	25	10	19	4		1	1					
Alert Bay	Nimkish	Kwawkewlth	Mr. N. Stewart	34	36	70	31	56	5	5	3	1					
Campbell River	Campbell River	"	Miss H. Earl	14	16	30	16	15	4	4	7						
Cape Mudge	Cape Mudge	"	Miss J. Hill	17	14	31	20	12	5	4	3	5	2				
Kingcome Inlet	At Kingcome Inlet	"	Miss P. M. Arrowsmith	23	20	43	22	31	6	3	1	1	1				
Mamalilikulla	Mamalilikulla	"	Miss M. Bird	8	15	23	10	15	4	3	1						
Quatsino	Quatsino	"	Mr. E. A. Hill-Tout	9	7	16	9	6	4	3	3						
Smith's Inlet	Kwashela	"	Miss M. H. Pennington	5	2	7	3	1	1	3	2						
Boothroyd	Boothroyd	Lytton	Miss L. Blachford	3	12	15	12	3	5	2	5						
Seabird Island	Seabird Island	"	Miss M. Boehr	9	13	22	9	10	2	2	3	1	2	1			1
Seton Lake	Shalalth	"	Miss C. MacLennan	13	7	20	16	7	5	3	2	3					
Chehalis	Chehalis	New Westminster	Mr. J. W. Burns	12	12	24	13	8	5	6	4	1					
Katzie	Katzie	"	Miss M. Winter	5	5	10	8	3	1	2	2	1	1				
Skwah	Skwah	"	Mr. C. O. Daly	11	11	22	13	11	4	2	5						
Shulus	Nicola Mameet	Nicola	Miss E. M. Aylwin	9	9	18	10	10	6	2							
Inkameep	Osoyoos	Okanagan	Mr. A. Walsh	6	8	14	10	5	4	1	2						2
Okanagan	Okanagan	"	Miss E. McDonald	14	21	35	20	18	3	4	10						
Pentiction	Pentiction	"	Miss M. E. Weydert	5	10	15	12	5	1	3	1	4					

¹ Seasonal School only.

² New School opened September 1, 1937.

³ New School opened March 1, 1938.

Statement of Indian Day Schools in the Dominion for the Fiscal Year Ended March 31, 1938—Concluded

School	Reserve	Agency	Teacher	Number on Roll			Average Attendance	Grades									
				Boys	Girls	Total		I	II	III	IV	V	VI	VII	VIII	IX	
BRITISH COLUMBIA—Concluded																	
Massett.....	Massett.....	Queen Charlotte.....	Mrs. P. Moon.....	57	65	122	47	87	19	5	8	2	1				
Skidegate.....	Skidegate.....	".....	Mrs. E. I. Smiley.....	23	19	42	31	16	6	8	5	7					
			Mrs. N. Moses.....														
Gitladamicks.....	Kitladamix.....	Skeena.....	Miss C. A. Vanderveen.....	16	19	35	15	30	3	2							
Gwinoha.....	Gwinoha.....	".....	Rev. S. Kinley.....	6	8	14	8	9	2	2	1						
Hartley Bay.....	Hartley Bay.....	".....	Miss E. A. Jater.....	21	14	35	24	18	3	2	3	4	3	2			
Kincolith.....	Kincolith.....	".....	Mr. J. A. Findlay.....	15	29	44	20	31	5	6		1	1	1			
Kitkatla.....	Kitkatla.....	".....	Mr. N. Green.....	24	22	46	20	27	9	7	1	1	1				
Kitelas.....	Kitelas.....	".....	Rev. G. H. Goodraid.....	9	11	20	14	6	6	2	1	3	1	1			
Lakalsap.....	Lakalsap.....	".....	Mrs. I. M. Wilson.....	16	19	35	20	25	2	2	2	3		1			
			Mr. N. C. Hayhurst.....														
			Mr. J. Hayhurst.....														
Metlakatla.....	Metlakatla.....	".....	Mr. T. A. Bryant.....	12	16	28	17	9	5	6	5	2	1				
Port Essington.....	Port Essington.....	".....	Mr. E. B. Severson.....	13	14	27	16	12	4	3		5	3				
Port Simpson.....	Port Simpson.....	".....	Mr. E. B. Severson.....	70	38	108	42	62	19	8	4	8	3	4			
			Miss L. K. How.....														
			Mr. J. Swartz.....														
Dease Lake.....	Dease Lake.....	Stikine.....	Rev. L. Bosse, O.M.I.....	12	7	19	11	19									
Clappan.....	Iskut Lake.....	".....	Mr. J. E. Moran.....	9	12	21	13	10	8	2	1						
McDames.....	".....	".....	Mr. J. A. E. Anglin.....	12	12	24	8	20	4								
Tahltan.....	Tahltan.....	".....	Mr. W. P. Thorman.....	10	12	22	14	6	10	3	3						
Fort Grahame.....	Fort Grahame.....	Stuart Lake.....	Mr. J. McKenzie.....	14	7	21	15	4	8	5	4						
Fort McLeod.....	Fort McLeod.....	".....	Mr. G. N. Cormack.....	12	5	17	12	3	7	5	2						
Takla Landing.....	Takla Lake.....	".....	Mr. P. J. Downey.....	14	13	27	23	11	4	10	2						
Homalo.....	Aupe.....	Vancouver.....	Mr. D. J. Gallagher.....	15	12	27	11	20	4	3							
Siammon.....	Siammon.....	".....	Miss M. Hepworth.....	7	15	22	11	10	1	1	8	2					
Squamish.....	Squamish.....	Vancouver.....	Sister Mary Amy.....	8	15	23	18	12	3	1	3	1	1			2	
Alberni.....	Near Alberni.....	West Coast.....	Miss K. I. Pitts.....	14	12	26	13	16	2	5		1	2				
Ucluelet.....	Itedse.....	".....	Mr. C. Von Storch.....	18	11	29	16	11	6	5	7						
Total.....				926	950	1,885	1,025	1,048	310	219	132	101	53	15	7		
Yukon																	
Champagne Landing.....	At Champagne Landing.....	Yukon.....	Mr. W. R. Stringer.....	13	24	37	15	29	6	2							
Moosehide.....	At Moosehide.....	".....	Rev. A. Anderson.....	5	10	15	10	8	3	4							
Old Crow Village.....	At Old Crow Village.....	".....	Miss M. McCabe.....	14	16	30	14	30									
Selkirk.....	At Selkirk.....	".....	Rev. C. W. Ward.....	7	9	16	9	12	4								
Tealin Lake.....	At Tealin Lake.....	".....	Mr. F. M. Gilbert.....	19	14	33	21	18	5	4	6						
Total.....				58	73	131	69	97	18	10	6						

¹ Seasonal school only. ² New school opened January 10, 1938. ³ New school opened September 1, 1937.

Statement of Combined White and Indian Day Schools in the Dominion for the Fiscal Year Ended March 31, 1938

School	Reserve	Agency	Number on Roll			Average Attendance	Grades								
			Boys	Girls	Total		I	II	III	IV	V	VI	VII	VIII	IX
ONTARIO															
Hiawatha.....	Near Keene.....	Rice Lake.....	11	4	15	12	1	3	4	1	2	1	3		
Honey Harbour.....	Near Midland.....	Parry Sound.....	28	17	45	33	18	7	5	4	3	3	1		
Mattawa.....	At Mattawa.....	Sturgeon Falls.....	28	22	50	42	13	13	11	9	4				
Michipicoten Harbour.....	At Michipicoten Harbour.....	Sault Ste. Marie.....	6	6	12	7	2	2	2	2	4				
Whitefish River.....	At Whitefish Falls.....	Manitowaning.....	4	10	14	9	1	7	3	1		1		1	
Total.....			77	59	136	103	35	32	25	15	14	5	5	4	1
MANITOBA															
Jack River C.E.....	Norway House.....	Norway House.....	8	12	20	8	12	3	4		1				
Moose Lake.....	At Moose Lake.....	The Pas.....	4	6	10	5	6	1	3						
Patapun.....	At Patapun.....	Clandeboye.....	11	2	13	11	4	3	1	2		3			
Total.....			23	20	43	24	22	7	8	2	1	3			
SASKATCHEWAN															
Round Plain.....	Near Prince Albert.....	Carlton.....	4	5	9	6	5	3			1				
BRITISH COLUMBIA															
Telegraph Creek.....	At Telegraph Creek.....	Stikine.....	7	6	13	9	9	3		1					

Statement of Indian Residential Schools in the Dominion for the Fiscal Year Ended March 31, 1938

School	Post Office Address	Agency	Principal	Denomination	Number on Roll			Average Attendance	Grades								
					Boys	Girls	Total		I	II	III	IV	V	VI	VII	VIII	IX
NOVA SCOTIA																	
Shubenacadie.....	Shubenacadie.....	Hants.....	Rev. J. P. Mackey.....	Roman Catholic.....	90	85	175	161	33	23	35	20	29	21	14	.....	.....
QUEBEC																	
Fort George C.E.....	Moosonee.....	James Bay.....	Rev. B. S. Green.....	Church of England.....	22	31	53	50	7	10	8	9	10	9	.....	.....	.....
Fort George R.C.....	Moosonee.....	James Bay.....	Rev. D. Couture, O.M.I.....	Roman Catholic.....	5	5	10	10	1	3	.....	4	2	.....	.....	.....	.....
Total.....					27	36	63	60	8	13	8	13	12	9	.....	.....	.....
ONTARIO																	
Albany Mission.....	Fort Albany.....	James Bay.....	Rev. A. R. Bilodeau, O.M.I.....	Roman Catholic.....	40	38	78	72	23	19	25	11	.....	.....	.....	.....	.....
Cecilia Jeffrey.....	Kenora.....	Kenora.....	Mr. E. W. Byers.....	Presbyterian.....	75	75	150	146	58	9	13	13	27	12	18	.....	.....
Chapleau.....	Chapleau.....	Chapleau.....	Canon A. J. Vale.....	Church of England.....	46	51	97	91	23	13	14	12	7	16	2	10	.....
Fort Frances.....	Fort Frances.....	Fort Frances.....	Rev. V. de Varenne, O.M.I.....	Roman Catholic.....	55	44	99	97	30	19	16	10	10	9	5	.....	.....
Fort William.....	Fort William.....	Fort William.....	Sister M. Basilla.....	Roman Catholic.....	39	50	89	71	20	14	9	19	13	9	3	2	.....
Kenora.....	Kenora.....	Kenora.....	Rev. J. E. Baillargeon, O.M.I.....	Roman Catholic.....	43	55	98	91	40	20	8	12	10	8	.....	.....	.....
McIntosh.....	McIntosh.....	Kenora.....	Rev. C. Perreault, O.M.I.....	Roman Catholic.....	62	54	116	91	54	14	12	12	14	10	.....	.....	.....
Mohawk.....	Brantford.....	Six Nations.....	Rev. H. W. Snell, B.A.....	Church of England.....	77	90	167	145	17	14	10	23	20	24	22	30	7
Moose Fort.....	Moose Fort, via Moosonee.....	James Bay.....	Rev. G. Thompson.....	Church of England.....	23	32	55	41	24	8	7	4	5	5	2	.....	.....
Mount Elgin.....	Muncey.....	Kenora.....	Rev. O. B. Strapp.....	United Church.....	74	84	158	153	39	3	12	17	31	22	7	27	.....
Shiagwauk.....	Sault Ste. Marie.....	Sault Ste. Marie.....	Rev. C. F. Hives.....	Church of England.....	58	88	146	135	23	22	15	25	15	21	14	11	.....
Sioux Lookout.....	Sioux Lookout.....	Kenora.....	Rev. J. F. J. Marshall.....	Church of England.....	63	82	145	111	79	19	7	18	13	9	.....	.....	.....
Spanish.....	Spanish.....	Kenora.....	Rev. J. Howitt, S. J.....	Roman Catholic.....	142	157	299	247	83	32	36	49	20	33	28	18	.....
Total.....					797	900	1,697	1,491	513	206	184	225	185	178	101	98	7
MANTOBA																	
Birtle.....	Birtle.....	Birtle.....	Rev. E. H. Lockhart.....	Presbyterian.....	61	60	121	110	41	10	31	22	12	3	2	.....	.....
Brandon.....	Brandon.....	Brandon.....	Rev. J. A. Doyle, D.D.....	United Church.....	76	105	181	175	46	16	22	13	21	15	13	9	26
Cross Lake.....	Cross Lake.....	Norway House.....	Rev. A. Chamberland, O.M.I.....	Roman Catholic.....	12	20	32	29	7	10	8	7	.....	.....	.....	.....	.....
Elkhorn.....	Elkhorn.....	Elkhorn.....	Rev. A. E. Minchin.....	Church of England.....	75	68	143	140	35	44	17	16	7	16	6	2	.....
Fort Alexander.....	Fort Alexander.....	Clandeboye.....	Rev. J. Brachet, O.M.I.....	Roman Catholic.....	55	72	127	105	22	20	25	14	18	28	.....	.....	.....
Norway House.....	Norway House.....	Norway House.....	Rev. R. T. Chapin, B.A.....	United Church.....	53	64	117	92	47	21	15	15	6	5	4	4	.....
Pine Creek.....	Camperville.....	Portage la Prairie.....	Rev. L. Gauthier, O.M.I.....	Roman Catholic.....	64	61	125	112	39	34	9	10	10	22	1	.....	.....
Portage la Prairie.....	Portage la Prairie.....	".....	Rev. J. Jones.....	United Church.....	56	55	111	95	35	18	3	19	13	10	8	5	.....
Sandy Bay.....	Marius.....	".....	Rev. O. Chagnon, O.M.I.....	Roman Catholic.....	43	41	84	78	17	22	20	12	4	4	5	.....	.....
Total.....					495	548	1,041	936	289	195	160	128	91	103	39	20	26

SASKATCHEWAN																				
Beauval	Beauval		Rev. F. X. Gagnon, O.M.I.	Roman Catholic	43	47	90	79	38	25	4	15	8							
Cowessess	Marieval	Crooked Lake	Rev. P. Chatelain, O.M.I.	Roman Catholic	41	52	93	86	17	28	15	7	14	12						
Duck Lake	Duck Lake	Duck Lake	Rev. H. Delmas, O.M.I.	Roman Catholic	83	92	175	165	51	40	28	25	20	9	2					
File Hills	Balcarres	File Hills	Mr. F. Rhodes	United Church	46	58	104	91	27	8	7	16	19	12	7	7	1			
Gordon's	Punnichy	Touchwood	Mr. R. W. Frayling	Church of England	59	71	130	121	60	13	12	16	18	7	4					
Guy	Sturgeon Landing		Rev. N. Doyon, O.M.I.	Roman Catholic	54	54	108	97	53	15	18	9	13							
Lac La Ronge	Lac La Ronge		Rev. G. W. Fisher	Church of England	44	62	106	101	37	13	16	22	5	8	5					
Muscowequan	Lestock	Touchwood	Rev. G. Jeannotte, O.M.I.	Roman Catholic	54	68	122	99	64	9	7	14	10	14	3	1				
Onion Lake C.E.	Lloydminster	Onion Lake	Rev. H. Ellis	Church of England	68	74	142	110	66	14	20	10	14	8	9	1				
Onion Lake R.C.	Lloydminster	Onion Lake	Rev. E. Pascal, O.M.I.	Roman Catholic	64	70	134	118	63	16		17	9	12	10	6	1			
Qu'Appelle	Lebret		Rev. M. de Bretagne, O.M.I.	Roman Catholic	143	159	302	257	107	26	33	32	32	29	20	19	4			
Round Lake	Stockholm	Crooked Lake	Rev. R. J. Ross	United Church	42	41	83	76	25	5	11	16	14		7	2	3			
St. Philips	St. Philips	Pelly	Rev. A. Paradis, O.M.I.	Roman Catholic	32	45	77	76	27	9	11	10	7	13						
Thunderchild	Delmas	Battleford	Rev. J. Angin, O.M.I.	Roman Catholic	75	76	151	122	67	13	29	10	14	9	4	4	1			
Total					848	969	1,817	1,598	702	234	211	219	197	133	71	40	10			
ALBERTA																				
Blood	Cardston	Blood	Rev. P. A. Charron, O.M.I.	Roman Catholic	81	73	154	147	25	28	32	29	14	17	5	2	2			
Blue Quills	St. Paul	Saddle Lake	Rev. L. Balter, O.M.I.	Roman Catholic	84	81	165	136	38	25	29	21	12	23	14	1	2			
Crowfoot	Cluny	Blackfoot	Rev. J. Riou, O.M.I.	Roman Catholic	37	58	95	90	27	16	11	13	7	13	8					
Edmonton	Edmonton		Rev. J. F. Woodsworth	United Church	74	90	164	141	28	17	28	36	15	13	11	11	5			
Ermieskins	Hobbema	Hobbema	Rev. P. P. Moulin, O.M.I.	Roman Catholic	70	88	158	141	50	42	36	20	8		2					
Grouard	Grouard	Lesser Slave Lake	Rev. C. Falher, O.M.I.	Roman Catholic	55	54	109	102	37	25	2	17	16	11	1					
Holy Angels	Fort Chipewyan	Athabaska	Sister Kristoff	Roman Catholic	20	26	46	36	14	13	7	7	4	1						
Joussard	Joussard	Lesser Slave Lake	Rev. P. Serrant, O.M.I.	Roman Catholic	59	71	130	123	74	10	13	15	17	1						
Morley	Morley	Stony	Rev. E. J. Staley	United Church	45	46	91	79	40											
Old Sun's	Gleichen	Blackfoot	Rev. J. W. House	Church of England	56	43	99	87	42	11	6	12	16	12						
*Youville	St. Albert		Sister V. M. Corriveau	Roman Catholic	82	71	153	152	40	26	35	15	14	8	10	4	1			
St. Cyprian	Brocket	Peigan	Rev. W. Barlow	Church of England	26	23	49	46	17	17	5		4	6						
St. Paul's	Cardston	Blood	Canon S. Middleton	Church of England	65	81	146	132	18	44	18	13	19	13	8	6	7			
Sacred Heart	Brocket	Peigan	Rev. E. Ruau, O.M.I.	Roman Catholic	31	25	56	55	17	10	3	6	8	9	3					
Sturgeon Lake	Calais	Lesser Slave Lake	Rev. L. Girard, O.M.I.	Roman Catholic	35	45	90	85	25	13	16	8	9	8	5	6				
Vermilion	Fort Vermilion	"	Rev. J. Habay, O.M.I.	Roman Catholic	36	49	85	72	30	11	11	15	6	5	5	2	2			
Wabasca C. E.	Wabasca	"	Rev. K. L. Sandercock	Church of England	17	20	37	35	14	7	6	10								
Wabasca R. C.	Desmarais	"	Rev. L. Beuglet, O.M.I.	Roman Catholic	55	62	117	105	46	19	13	14	11	7	4	3				
Whitefish Lake	Atikameg	"	Rev. R. T. Cathcart	Church of England	19	17	36	35	16	5	1	6	1	7						
Total					957	1,023	1,980	1,799	598	339	272	284	192	163	78	37	17			
NORTHWEST TERRITORIES																				
Aklavik, C. E.	Aklavik	Fort Good Hope	Rev. H. S. Shepherd	Church of England	16	11	27	24	13	5	2	1	4	2						
Aklavik R. C.	Aklavik	"	Sister J. Dussault	Roman Catholic	12	14	26	19	9	4	7	6								
Fort Resolution	Fort Resolution	Fort Resolution	Sister M. L. Champoux	Roman Catholic	29	50	79	63	39	19	9	5	2	5						
Hay River	Hay River	"	Rev. W. B. Singleton	Church of England	9	8	17	13		2	5	4	6							
Providence Mission	Fort Providence	"	Sister Mack	Roman Catholic	32	35	67	59	39	7	8	8	2	3						
Total					98	118	216	178	100	37	31	24	14	10						

INDIAN AFFAIRS BRANCH

* Per Capita Grant allowed from April 1, 1937.

† Formerly St. Albert Residential School.

Statement of Indian Residential Schools in the Dominion for the Fiscal Year Ended March 31, 1938—Concluded

School	Post Office Address	Agency	Principal	Denomination	Number on Roll			Average Attendance	Grades								
					Boys	Girls	Total		I	II	III	IV	V	VI	VII	VIII	IX
BRITISH COLUMBIA																	
Ahousaht.....	Ahousaht.....	West Coast.....	Mr. A. E. Caldwell.....	United Church.....	39	31	70	61	18	8	13	6	3	8	8	6	.....
Alert Bay.....	Alert Bay.....	Kwakwalth.....	Mr. F. E. Anfield.....	Church of England.....	138	120	258	205	68	45	47	39	21	22	12	4	.....
Cariboo.....	150 Mile House.....	Williams Lake.....	Rev. G. Forbes, O.M.I.....	Roman Catholic.....	61	75	136	122	40	23	13	8	17	14	15	6	.....
Christie.....	Kakawis.....	West Coast.....	Rev. H. Melchior, O.S.B.....	Roman Catholic.....	65	56	121	101	26	20	11	7	26	14	11	6	.....
Coqualeetza.....	Sardis.....	New Westminster.....	Rev. R. C. Scott.....	United Church.....	155	108	263	221	55	39	28	39	29	34	19	13	7
Kamloops.....	Kamloops.....	Kamloops.....	Rev. T. M. Kennedy, O.M.I.....	Roman Catholic.....	166	179	345	283	138	52	44	30	47	20	10	4	.....
Kitimat.....	Kitimat Mission.....	Bella Coola.....	Mrs. E. H. Durnin.....	United Church.....	16	28	44	34	13	8	9	9	3	1	1	.....
Kootenay.....	Cranbrook.....	Kootenay.....	Rev. M. Murphy, O.M.I.....	Roman Catholic.....	44	39	83	79	30	14	13	11	9	6	.....	.....
Kuper Island.....	Kuper Island.....	Cowichan.....	Rev. J. Guerts, S.M.M.I.....	Roman Catholic.....	49	49	98	92	40	26	11	9	7	3	2	.....
Lejac.....	Lejac.....	Stuart Lake.....	Rev. W. Byrne-Grant, O.M.I.....	Roman Catholic.....	71	105	176	149	74	29	17	19	22	8	6	1	.....
Port Simpson.....	Port Simpson.....	Skeena.....	Miss L. M. Deacon.....	United Church.....	.....	30	30	29	3	2	7	6	5	3	2	2	.....
St. George's.....	Lytton.....	Lytton.....	Rev. A. R. Lett.....	Church of England.....	75	87	162	140	44	29	21	24	18	15	8	3	.....
St. Mary's Mission.....	Mission City.....	New Westminster.....	Rev. F. O'Grady, O.M.I.....	Roman Catholic.....	91	136	227	177	100	19	37	29	20	2	17	3	.....
Sechelt.....	Sechelt.....	Vancouver.....	Rev. E. J. Cornell, O.M.I.....	Roman Catholic.....	56	41	97	81	27	17	12	12	8	11	6	4	.....
Squamish.....	North Vancouver.....	".....	Sister Mary Amy.....	Roman Catholic.....	34	30	64	60	15	10	8	6	10	7	7	1	.....
Total.....					1,060	1,114	2,174	1,834	691	341	291	254	245	168	124	53	7
YUKON																	
Carcross.....	Carcross.....	Yukon.....	Rev. H. C. M. Grant.....	Church of England.....	24	25	49	46	11	6	12	9	4	7	.....	.....	.....
St. Paul's Hostel.....	Dawson.....	".....	Rev. L. G. Chappell.....	Church of England.....	12	9	21	18	8	3	2	3	2	.....	3	.....	.....
Total.....					36	34	70	64	19	9	14	12	6	7	3	.....	.....

Statement Showing the Enrolment in the Different Classes of Schools for the Fiscal Year Ended March 31, 1938

RESIDENTIAL SCHOOLS

Province	Number of Schools	Denomination				Number on Roll			Average Attendance	Percentage of Attendance	Grades								
		Church of England	Presbyterian	Roman Catholic	United Church	Boys	Girls	Total			I	II	III	IV	V	VI	VII	VIII	IX
Nova Scotia.....	1			1		90	85	175	161	92-00	33	23	35	20	29	21	14	.....
Quebec.....	2	1		1		27	36	63	60	95-23	8	13	8	13	12	9	.....	
Ontario.....	13	5	1	6	1	797	900	1,697	1,491	87-86	513	206	184	225	185	178	101	98	7
Manitoba.....	9	1	1	4	3	495	546	1,041	936	89-91	289	195	150	128	91	103	39	20	26
Saskatchewan.....	14	3		9	2	848	969	1,817	1,698	87-95	702	234	211	219	197	133	71	40	10
Alberta.....	19	5		12	2	957	1,023	1,980	1,799	90-86	598	339	272	284	192	163	78	37	17
Northwest Territories.....	5	2		3		98	118	216	178	82-40	100	37	31	24	14	10	.....	.....
British Columbia.....	15	2		9	4	1,060	1,114	2,174	1,834	84-36	691	341	291	254	245	168	124	53	7
Yukon.....	2	2				36	34	70	64	91-43	19	9	14	12	6	7	3	.....
Total, residential schools.....	80	21	2	45	12	4,408	4,825	9,233	8,121	87-96	2,953	1,397	1,196	1,179	971	792	430	248	67

DAY SCHOOLS

Province	Number of Schools	Number on Roll			Average Attendance	Percentage of Attendance	Grades										
		Boys	Girls	Total			I	II	III	IV	V	VI	VII	VIII	IX		
Prince Edward Island.....	1	9	6	15	11	73-33	4	5	.....	3	2	.....	1	.....	.....	.....	.....
Nova Scotia.....	10	135	134	269	182	67-65	122	40	31	31	23	15	3	.....	.....	.....	.....
New Brunswick.....	11	166	171	337	263	78-04	104	54	53	38	36	23	18	11	.....	.....	.....
Quebec.....	32	834	845	1,679	1,219	72-60	659	302	248	167	121	81	46	36	19	.....	.....
Ontario.....	83	1,372	1,426	2,798	1,861	66-51	1,072	477	293	292	232	199	130	100	3	.....	.....
Manitoba.....	46	776	707	1,483	749	50-50	908	227	130	104	65	42	5	2	.....	.....	.....
Saskatchewan.....	26	310	329	639	417	65-26	383	82	70	51	28	15	5	5	.....	.....	.....
Alberta.....	2	18	19	37	19	51-35	17	.....	8	2	3	.....	6	1	.....	.....	.....
Northwest Territories.....	3	15	21	36	21	58-33	26	4	4	1	1	.....	.....	.....	.....	.....	.....
British Columbia.....	58	926	959	1,885	1,025	54-37	1,048	310	219	132	101	53	15	7	.....	.....	.....
Yukon.....	5	58	73	131	69	52-67	97	18	10	6	.....	.....	.....	.....	.....	.....	.....
Total, day schools.....	277	4,619	4,690	9,309	5,836	62-69	4,440	1,519	1,066	827	612	429	228	166	23	.....	.....

COMBINED WHITE AND INDIAN SCHOOLS

Ontario.....	5	77	59	136	103	75-73	35	32	25	15	14	5	5	4	1	.....	.....
Manitoba.....	3	23	20	43	24	55-81	22	7	8	.....	2	1	3	.....	.....	.....	.....
Saskatchewan.....	1	4	5	9	6	66-66	5	3	.....	.....	1	.....	.....	.....	.....	.....	.....
British Columbia.....	1	7	6	13	9	69-23	9	3	.....	.....	1	.....	.....	.....	.....	.....	.....
Total, combined white and Indian day schools.....	10	111	90	201	142	70-64	71	45	33	15	17	7	8	4	1	.....	.....

Summary of School Statement

Province	Classes of Schools			Total Number of Schools	Number on Roll			Average Attendance	Percentage of Attendance	Grades								
	Day	Residential	Combined		Boys	Girls	Total			I	II	III	IV	V	VI	VII	VIII	IX
Prince Edward Island.....	1	.....	.....	1	9	6	15	11	73-33	4	5	.....	3	2	1	.....	.....
Nova Scotia.....	10	1	.....	11	225	219	444	343	77-25	155	63	66	51	52	36	17	4
New Brunswick.....	11	.....	.....	11	160	171	337	263	78-04	104	54	53	38	36	23	18	11
Quebec.....	32	2	.....	34	861	881	1,742	1,279	73-42	667	315	256	180	133	90	46	36
Ontario.....	83	13	5	101	2,246	2,385	4,631	3,455	74-60	1,620	715	502	532	431	382	236	202	
Manitoba.....	46	9	3	58	1,294	1,273	2,567	1,709	69-33	1,219	429	288	232	158	146	47	22	
Saskatchewan.....	26	14	1	41	1,162	1,303	2,465	2,021	81-58	1,090	319	281	270	225	149	76	45	
Alberta.....	2	19	.....	21	975	1,042	2,017	1,818	90-14	615	339	280	286	195	163	84	38
Northwest Territories.....	3	5	.....	8	113	139	252	199	78-96	126	41	35	25	15	10	.....	.....
British Columbia.....	58	15	1	74	1,993	2,079	4,072	2,868	70-43	1,748	654	510	386	347	221	139	60	
Yukon.....	5	2	.....	7	94	107	201	133	66-17	116	27	24	18	6	7	3	.....
Total.....	277	80	10	367	9,138	9,605	18,743	14,099	75-22	7,348	2,961	2,295	2,021	1,600	1,228	666	418	90

IMMIGRATION BRANCH

F. C. BLAIR, DIRECTOR

Between Confederation in 1867 and March 1892, immigration was under the control of the Department of Agriculture. From 1892 until October 1917, when it was created the Department of Immigration and Colonization, it was a branch of the Department of the Interior. On December 1, 1936, the Department of Immigration and Colonization became the Immigration Branch of the Department of Mines and Resources then created.

The Immigration Branch is responsible for the administration of the Immigration Act and Regulations, the Chinese Immigration Act and Regulations, and all matters related to the encouragement of immigration, the inspection of immigrants, tourists, and other travellers seeking entry to Canada, the exclusion of the prohibited and undesirable classes, the investigation of complaints subsequently arising in Canada, and the deportation of undesirables; also general matters relating to colonization in Canada.

The organization through which the Branch functions under the Minister and the Deputy Minister, consists of a Head Office in Ottawa with four District Offices in Canada and one in London, England. The Head Office organization includes a Director of Immigration, a Commissioner of Immigration and his Assistant with the necessary staff and units dealing with the collection and preparation of statistics, the overseeing of juvenile immigration, and women's work. The four districts in Canada are known as the Atlantic, the Eastern, the Western, and the Pacific.

All immigration work in the British Isles and in Continental Europe comes under the immediate direction of the Commissioner of European Emigration, W. R. Little, Oceanic House, 1A Cockspur Street, London. A special office is maintained at Hong Kong, as required by the Chinese Immigration Act and Regulations. The immigration officer there is a Controller of Chinese Immigration.

The number of immigrants admitted during the year 1937-8 from all countries was 15,645, as compared with 12,023 for the preceding year. Most of those admitted were dependent relatives and farmers bringing their own capital for the purpose of settlement on the land. Were it not for the fact that the Canadian public has become accustomed to small immigration returns from year to year, the statement now published that Canada, with its vast territory and immense natural resources, received last year only 1,300 newcomers per month, would be a matter of comment, having in mind the contribution that immigration has made to the opening up of the Dominion in the past.

One of the greatest problems any immigration country has to face at present is a movement of people without capital. Until recent years the tendency of European states from which Canada received excellent settlers was to discourage the exodus of people; latterly there is an ever increasing effort to discourage the movement of capital while encouraging an exodus of migrants, particularly of certain classes or races. Immigration without capital would be an asset to an immigration country if employment, usually of an industrial character, could be found for the newcomers immediately on their arrival.

The Canadian Immigration regulations provide for the admission of agricultural settlers of good type and good character, but only when they can bring with them capital to begin farming on their own account in Canada. It is to

the credit of many settlers who came from overseas in earlier years and have become established here that they are now extending a helping hand to relatives or friends, whose settlement becomes not only possible but less of a risk than it would otherwise be.

Great credit is due to the colonization branches of the Canadian National Railways and the Canadian Pacific Railway Company for their efforts in settlement work. Overseas representatives of these organizations visit the homes from which settlers come and thus obtain valuable information on the possibilities of successful transplantation of families to Canada—sometimes without, but often with, the aid of settlers already established here. When families arrive they are given valuable advice and assistance in locating and selecting land, stock, and equipment. No charge is made to the settler for this service, and it is available to all regardless of the countries from which they come. Many stories reach the Department from these new Canadians of their appreciation of the opportunities afforded them here to establish new homes under more favourable conditions than prevailed in the countries from which they came.

In 1920 Canada adopted the principle of overseas civil and medical inspection. The first office was opened at Antwerp, Belgium, and the service was gradually extended. It has proved to be a protection to intending immigrants, who are now able to find out whether they can comply with Canadian regulations without a long and expensive journey to a port of entry in Canada. It is also a great protection to Canada against the arrival at Canadian ports of persons who might be found inadmissible on mental, physical, moral, or other grounds, and have to be returned to their former homes in Europe at considerable cost to Canada and great loss to themselves. Medical inspection was later provided in the British Isles, mainly by the use of roster doctors who perform a similar service for the British Government and other overseas dominions. A reference to some statistics supplied by the Commissioner of European Emigration, which will be found on page 315 of this report, shows what is now being accomplished in weeding out the unfit before sailing for Canada.

The discontinuance of immigration propaganda in the British Isles and elsewhere, which for many years had been carried on by the Dominion Government, coupled with the withdrawal of any offer of passage assistance such as existed between 1922 and 1930 for certain classes of immigrants from the British Isles, has undoubtedly resulted in reducing immigration from the Mother Country. There is at present a great pressure at our doors for the admission of many thousands of the distressed people of Europe—a pressure greater than was created by Canada in the earlier years when tens of thousands of dollars were expended annually in propaganda to attract immigrants. Most of the refugees and other distressed people now seeking to leave Continental Europe to find new homes abroad are without funds, and if accepted must leave their capital and equipment behind and arrive here with little more than willing hands accustomed to industrial or clerical work.

Towards the close of the year much interest was aroused by repeated statements in the press and elsewhere that many persons from the Orient had entered British Columbia surreptitiously. In order to determine to what extent this exists the Prime Minister announced in the House of Commons on March 4, 1938, the appointment of a Board of Review to investigate charges that aliens, in particular Oriental aliens, had entered illegally and surreptitiously. The Board of Review has already been set up and is now at work. It consists of one representative each of the Department of External Affairs, the Immigration Service, and the Royal Canadian Mounted Police. It is yet too early to know to what extent, if any, aliens from the Orient have effected illegal entry, or by what means it may have been accomplished.

The Immigration Act has for many years provided for an appeal to the Minister by persons rejected at ports of entry, and also by persons ordered deported at any time after entry. In the year under review seven hundred immigration appeals were reviewed and dealt with by the Minister.

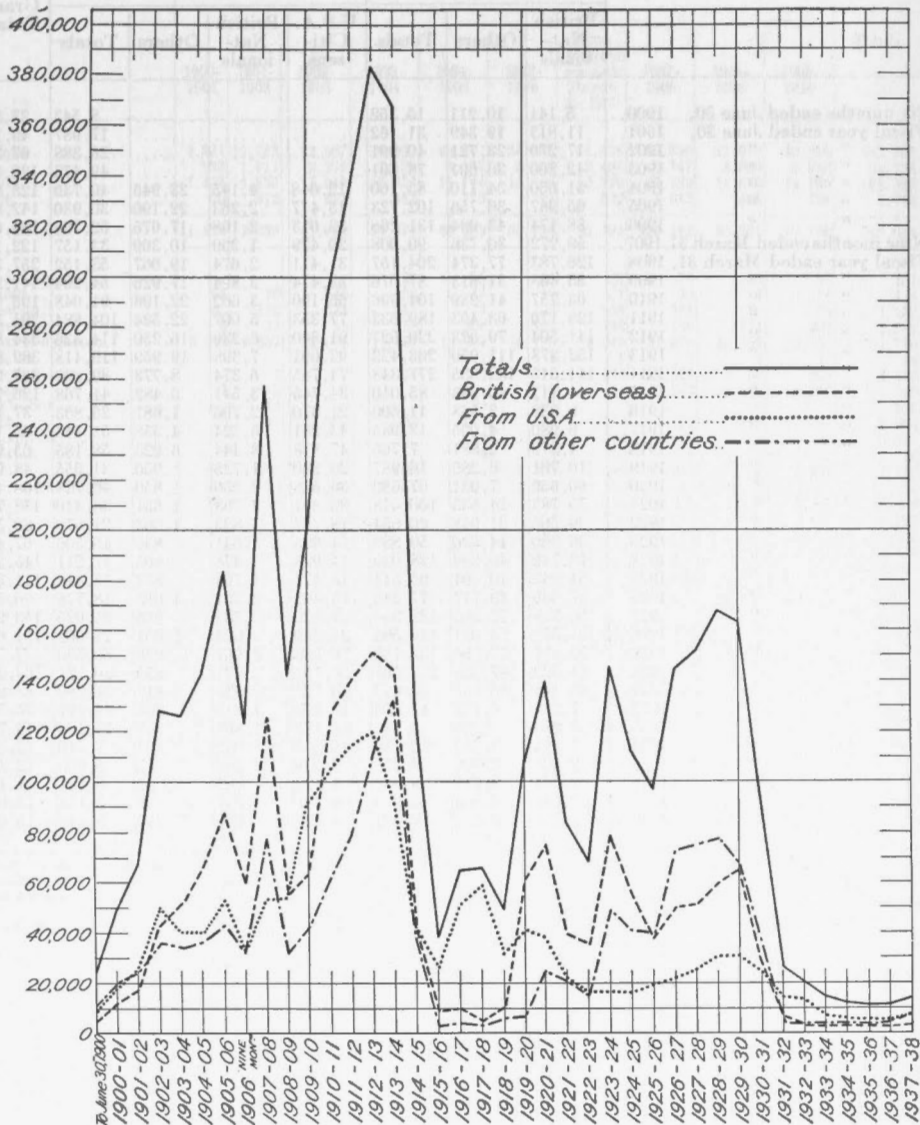
For many years Canadian missionaries and representatives of Canadian business firms serving abroad were called upon to register annually with British Diplomatic or Consular officer in order to protect Canadian domicile. An amendment to the Immigration Act made in June 1936 removed all further need of such registration. This amendment provides that any person while absent from Canada as a representative or employee of a firm, business, company, or organization, religious or otherwise, established in Canada, shall not by such absence be held to have lost Canadian domicile. The protection is now automatic and retroactive, and the length of absence does not endanger the loss of domicile so long as the person concerned continues to represent abroad some organization established in Canada.

A movement not included in the immigration statistics, in other words not counted as immigrants, is that of the returning Canadian. An effort to collect and tabulate this information was commenced at the beginning of the fiscal year 1924-5. The following table shows the number of returning Canadians who left Canada to reside in the United States and who returned to Canada declaring their intention to resume permanent residence in Canada. Canadian citizens as defined in the Immigration Act are divided into three classes, as the headings of the table indicate.

Returning Canadians

	Canadian Born	British Born Outside Canada	Canadians Naturalized	Totals
Fiscal year, 1924-25.....	36,473	4,487	2,815	43,775
Fiscal year, 1925-26.....	40,246	4,102	2,873	47,221
Fiscal year, 1926-27.....	49,255	5,326	2,378	56,957
Fiscal year, 1927-28.....	35,137	3,280	1,470	39,887
Fiscal year, 1928-29.....	30,008	2,795	995	33,798
Fiscal year, 1929-30.....	26,959	2,030	841	29,830
Fiscal year, 1930-31.....	26,811	2,111	1,287	30,209
Fiscal year, 1931-32.....	17,091	1,069	651	19,411
Fiscal year, 1932-33.....	16,320	757	548	17,625
Fiscal year, 1933-34.....	8,366	397	409	9,172
Fiscal year, 1934-35.....	5,811	937	870	7,618
Fiscal year, 1935-36.....	4,854	418	542	5,814
Fiscal year, 1936-37.....	4,522	319	223	5,064
Fiscal year, 1937-38.....	4,524	356	329	5,209

During the year the number of pieces of incoming mail was 303,400 and of outgoing 200,000, or an average of approximately 1,000 incoming and 675 outgoing for each working day.



Immigration to Canada from January 1, 1900, to March 31, 1938.

TABLE 1

Immigration to Canada from 1900 to 1938

	Via Ocean Ports			From U.S.A.				Grand Totals
	British Nationals	Others	Totals	U.S.A. Citizens	British Nationals	Others	Totals	
Six months ended June 30, 1900..	5,141	10,211	15,352				8,543	23,895
Fiscal year ended June 30, 1901..	11,813	19,349	31,162				17,987	49,149
" " 1902..	17,270	23,721	40,991				26,388	67,379
" " 1903..	42,200	36,691	78,891				49,473	128,364
" " 1904..	51,050	34,110	85,160	12,648	4,145	23,946	40,739	125,899
" " 1905..	65,967	36,756	102,723	15,477	2,263	22,190	39,930	142,653
" " 1906..	58,174	43,094	131,268	33,013	2,108	17,675	52,796	184,064
Nine months ended March 31, 1907..	59,272	30,736	90,008	20,479	1,309	10,369	32,157	122,165
Fiscal year ended March 31, 1908..	126,783	77,374	204,157	31,411	2,674	19,067	53,152	257,309
" " 1909..	55,463	31,613	87,076	33,474	2,894	17,926	54,294	141,370
" " 1910..	63,757	41,239	104,996	65,190	3,662	22,196	91,048	196,044
" " 1911..	126,170	63,463	189,633	77,353	5,007	22,524	104,884	294,517
" " 1912..	141,504	79,023	220,527	91,840	6,236	16,250	114,326	334,853
" " 1913..	152,373	111,050	263,423	92,061	7,398	19,959	119,418	382,841
" " 1914..	144,513	132,835	277,348	74,745	6,374	8,773	89,892	367,240
" " 1915..	44,117	40,893	85,010	34,745	3,541	3,482	41,768	126,778
" " 1916..	9,032	2,568	11,600	21,370	2,796	1,687	25,853	37,453
" " 1917..	9,980	4,005	13,985	43,261	3,324	4,558	51,143	65,128
" " 1918..	4,879	2,881	7,760	47,818	3,444	6,923	58,185	65,945
" " 1919..	10,701	6,286	16,987	28,280	1,725	1,950	31,955	48,942
" " 1920..	60,659	7,021	67,680	36,628	2,250	1,850	40,728	108,408
" " 1921..	75,783	24,635	100,418	33,891	2,768	1,651	38,310	138,728
" " 1922..	39,606	21,048	60,654	18,782	1,825	1,063	21,670	82,324
" " 1923..	36,360	14,520	50,880	14,095	1,641	830	16,566	67,446
" " 1924..	78,740	49,299	128,039	14,928	1,478	805	17,211	145,250
" " 1925..	54,943	40,601	95,544	13,171	1,794	853	15,818	111,362
" " 1926..	37,569	39,717	77,286	15,442	2,251	1,085	18,778	96,064
" " 1927..	50,378	72,586	122,964	17,820	2,239	966	21,025	143,989
" " 1928..	51,552	75,041	126,593	21,260	2,696	1,051	25,007	151,600
" " 1929..	59,497	77,666	137,163	26,539	3,061	960	30,560	167,723
" " 1930..	64,962	67,599	132,561	26,751	3,121	855	30,727	163,288
" " 1931..	28,144	35,799	63,943	20,723	2,938	619	24,280	88,223
" " 1932..	7,332	4,123	11,455	12,277	1,815	205	14,297	25,752
" " 1933..	3,283	3,303	6,586	11,172	1,806	218	13,196	19,782
" " 1934..	2,454	3,709	6,163	6,545	1,032	163	7,740	13,903
" " 1935..	2,408	3,768	6,176	5,104	769	87	5,960	12,136
" " 1936..	2,264	3,718	5,982	4,322	709	90	5,121	11,103
" " 1937..	2,521	4,389	6,910	4,301	742	70	5,113	12,023
" " 1938..	3,351	6,651	10,002	4,727	852	64	5,643	15,645

TABLE 2

Immigration to Canada for the Period July 1, 1900, to March 31, 1910

	Fiscal Years										Totals
	1900-1901	1901-1902	1902-1903	1903-1904	1904-1905	1905-1906	Nine Months Ended March 31, 1907	1907-1908	1908-1909	1909-1910	
English.....	9,331	12,783	32,087	36,003	48,847	65,135	41,156	90,380	37,019	40,416	413,157
Irish.....	833	1,311	2,236	3,128	3,998	5,018	3,404	6,547	3,609	3,940	34,124
Scotch.....	1,476	2,853	7,046	10,552	11,744	15,846	10,729	22,223	11,810	14,706	108,985
Welsh.....	70	312	423	691	770	797	502	1,032	463	728	5,788
Totals.....	11,810	17,259	41,792	50,374	65,359	86,796	55,791	120,182	52,901	59,790	562,054
African, South.....				21	35	46	23	76	53	97	351
Arabian.....	98	70	46	58	48	19	31	50	4	14	438
Armenian.....	62	112	113	81	78	52	208	563	79	75	1,453
Australian.....	3	11	49	58	204	322	185	180	171	203	1,383
Austro-Hungarian.....	5,692	8,557	13,095	11,137	10,089	10,170	4,045	21,376	10,798	9,757	104,716
Brazilian.....				2	1	2	5	1			15
Bulgarian.....			7	14	2	71	179	2,529	56	557	3,416
Chinese.....	7	2				18	92	1,884	1,887	2,156	6,046
Doukhobor.....		12			24	204					240
Dutch.....	25	35	223	169	281	389	394	1,212	495	741	3,964
East Indian.....					45	387	2,124	2,623	6	10	5,195
Egyptian.....		3	1	3	2	18	10	8	2	2	50
Finnish.....	682	1,292	1,734	845	1,323	1,103	1,049	1,212	669	1,457	11,366
French and Belgian.....	492	654	1,240	2,392	2,539	2,754	1,964	3,885	2,658	2,637	21,212
German.....	984	1,048	1,887	2,985	2,759	1,796	1,903	2,377	1,340	1,533	18,612
Greek.....	81	161	193	191	98	254	545	1,053	192	452	3,220
Hebrew.....	2,765	1,015	2,066	3,727	7,715	7,127	6,584	7,712	1,636	3,182	43,529
Italian.....	4,710	3,828	3,371	4,445	3,473	7,959	5,114	11,212	4,228	7,118	55,458
Japanese.....	6	5			354	1,922	2,042	7,601	495	271	12,691
Maltese.....											5
Mennonite.....		52	38	11							2
Negro.....					5	42	108	136	73	7	101
Newfoundland.....			395	519	190	340	1,029	3,374	2,108	3,372	371
New Zealand.....			2	23	57	89	30	70	65		11,287
Persian.....		1	40	5	8	7	31	7	1	5	418
Polish.....	162	230	274	669	745	725	1,033	1,593	376	1,407	105
Portuguese.....					1	6	2	2	2	2	7,214
Roumanian.....	152	551	438	619	270	396	431	949	278	293	15
Russian.....	1,044	2,467	5,505	1,955	1,887	3,152	1,927	6,281	3,547	4,564	4,377
Scandinavian.....	1,750	2,451	5,448	4,203	4,118	3,859	2,296	4,073	2,082	3,782	32,329
Serbian.....	23	1	7	10	7	19	4	48	31	76	34,062
Spanish.....	14		2	5	10	12	29	61	32	42	220
Swiss.....	30	17	73	128	150	172	112	195	129	211	213
Syrian.....	464	1,066	847	369	630	336	277	732	189	195	1,217
Turkish.....	37	17	43	29	30	357	232	489	236	517	5,105
U.S.A. citizens, via ocean ports.....	68	73		58	109	123	89	133	94	186	1,987
West Indian.....			23	55	77	194	90	278	159	203	933
Total Continental, etc...	19,352	23,732	37,099	34,786	37,364	44,472	34,217	83,975	34,175	45,206	394,378
From the United States	17,987	26,388	49,473	40,739	39,930	52,796	32,157	53,152	54,294	91,048	457,964
Total immigration.....	49,149	67,379	128,364	125,899	142,653	184,064	122,165	257,309	141,370	196,044	1,414,396

TABLE 3

Immigration to Canada for the Period April 1, 1910, to March 31, 1920

	Fiscal Years										Totals
	1910-1911	1911-1912	1912-1913	1913-1914	1914-1915	1915-1916	1916-1917	1917-1918	1918-1919	1919-1920	
English.....	84,707	95,107	108,082	102,122	30,807	5,857	5,174	2,477	7,954	45,173	487,460
Irish.....	6,877	8,327	9,706	9,585	3,525	818	958	174	336	2,751	43,057
Scotch.....	29,924	32,988	30,735	29,128	8,346	1,887	2,062	473	1,518	10,997	148,058
Welsh.....	1,505	1,699	2,019	1,787	598	102	88	54	106	682	8,640
Totals.....	123,013	138,121	150,542	142,622	43,276	8,664	8,282	3,178	9,914	59,603	687,215
African, South.....	86	144	22	56	23	11	1	4		23	370
Albanian.....				3	4						7
Arabian.....	3	2	10	16							31
Argentinian.....				2	5						9
Armenian.....	20	60	100	139	36		3			10	370
Australian.....	266	184	106	106	51	32	18	34	35	88	920
Austro-Hungarian.....	16,285	21,651	21,875	28,323	7,150	15	1		2	8	95,310
Belgian.....	1,563	1,601	1,826	2,651	1,149	172	126	19	48	1,532	10,587
Brazilian.....	13			5		2					20
Bulgarian.....	1,068	3,295	4,616	1,727	4,048	1				1	14,756
Chinese.....	5,278	6,247	7,445	5,512	1,258	88	393	769	4,333	544	31,887
Cuban.....				10	1		1	3	1		18
Doukhobor.....	41	24	108	4							177
Dutch.....	931	1,077	1,524	1,506	605	186	151	94	59	154	6,287
East Indian.....	5	3	5	88		1					102
Egyptian.....	3		7	5							15
Finnish.....	2,132	1,646	2,391	3,183	459	139	249	113	2	44	10,353
French.....	2,041	2,094	2,755	2,683	1,206	180	199	114	222	1,584	13,078
German.....	2,533	4,664	4,953	5,537	2,472	27	9	1	1	12	20,200
Greek.....	777	663	1,390	1,102	1,147	145	258	45	4	39	5,600
Hebrew.....	5,146	5,322	7,387	11,252	3,107	65	136	32	22	116	32,585
Italian.....	8,359	7,590	16,601	24,722	6,228	388	758	189	49	1,165	66,049
Japanese.....	437	765	724	856	592	401	648	883	1,178	711	7,195
Macedonian.....				17	132						149
Maltese.....			128	402	19	4	109	144	2	405	1,213
Mexican.....		3	9	9				1	3		25
Montenegrin.....			36	13	9						59
Negro.....	12	138	211	266	202	34	98	35	22	61	1,079
Newfoundland.....	2,229	2,598	1,036	496	338	255	1,243	1,199	512	443	10,349
New Zealand.....	116	61	39	24	21	18	12	13	15	31	350
Persian.....	19	19	20	19	7	3		2	2		81
Polish.....	2,177	5,060	9,945	9,793	1,976	8	12		4	76	29,051
Portuguese.....	13	6	9	58	8		1	1		3	99
Roumanian.....	511	793	1,116	1,504	361	4	4			21	4,314
Russian.....	6,621	9,805	18,623	24,485	5,201	40	25	42	42	51	64,985
Scandinavian—											
Danish.....	535	628	798	871	326	167	145	74	44	233	3,821
Icelandic.....	250	205	231	292	145	15	9	3	12	11	1,173
Norwegian.....	2,109	1,692	1,832	1,647	788	232	303	235	91	179	9,198
Swedish.....	3,213	2,394	2,477	2,435	916	177	332	156	101	241	12,442
Serbian.....	50	209	366	193	220	6	1		1	12	1,088
Spanish.....	197	191	296	1,138	755	11	76	28	12	15	2,719
Swiss.....	270	230	246	269	209	42	30	12	11	100	1,419
Syrian.....	124	144	232	278	79	3	9	2		18	889
Turkish.....	469	632	770	187	33		5			1	2,097
U. S. A. citizens, via ocean ports.....	203	143	121	121	41	15	20	28	21	55	768
West Indian.....	455	393	495	719	389	47	815	307	223	66	3,409
Others.....				2	1	1				20	41
Total, Continental, etc.....	66,620	82,406	112,881	134,726	41,734	2,936	5,703	4,582	7,073	8,077	466,738
From the United States.....	104,884	114,326	119,418	89,892	41,768	25,853	51,143	58,185	31,955	40,728	678,152
Total immigration.....	294,517	334,853	382,841	367,240	126,778	37,453	65,128	65,945	48,942	108,408	1,832,106

TABLE 4

Immigration to Canada for the Period April 1, 1920, to March 31, 1925

	Fiscal Years					Totals
	1920-1921	1921-1922	1922-1923	1923-1924	1924-1925	
English.....	47,687	23,225	19,188	37,080	26,466	153,590
Irish.....	6,384	3,573	3,668	9,719	9,379	32,722
Scottish.....	19,248	11,596	11,071	25,067	16,174	83,146
Welsh.....	943	627	581	1,113	1,159	4,423
Totals.....	74,262	39,020	34,508	72,919	53,178	273,887
African, South.....	63	32	41	60	87	283
Albanian.....	6	6	1	7	2	22
Arabian.....	8	5	2	.....	.....	15
Argentinian.....	4	.....	4	.....	.....	8
Armenian.....	25	70	59	486	304	1,004
Australian.....	90	76	67	112	182	507
Austrian.....	26	14	29	82	75	220
Belgian.....	1,045	508	316	1,662	1,800	5,425
Bermudian.....	8	2	7	4	4	25
Brazilian.....	.....	.....	.....	.....	1	1
Bulgarian.....	4	27	19	267	69	396
Chilean.....	.....	.....	.....	.....	8	8
Chinese.....	2,435	1,746	711	674	.....	5,566
Cuban.....	.....	.....	.....	1	.....	1
Czecho-Slovak.....	308	152	101	2,757	2,084	5,402
Dutch.....	595	183	119	1,149	1,637	3,683
East Indian.....	10	13	21	40	46	130
Egyptian.....	9	2	.....	3	3	17
Estonian.....	.....	.....	12	51	49	112
Finnish.....	1,401	274	1,171	7,640	4,261	14,747
French.....	861	332	261	370	326	2,170
German.....	187	178	216	1,799	2,215	4,515
Greek.....	357	209	177	292	237	1,272
Hebrew.....	2,793	8,404	2,793	4,255	4,459	22,674
Hungarian.....	23	48	29	364	1,052	1,510
Italian.....	3,380	2,413	2,074	6,379	2,349	17,095
Jamaican.....	18	13	30	24	8	93
Japanese.....	532	471	369	448	501	2,321
Jugo-Slav.....	89	180	136	1,306	1,620	3,331
Latvian.....	.....	.....	1	11	20	32
Lettish.....	.....	.....	.....	6	2	8
Lithuanian.....	.....	19	106	236	125	486
Luxemburg.....	16	6	3	85	35	144
Maltese.....	140	34	57	148	26	405
Mexican.....	1	.....	.....	1	.....	2
Negro.....	144	42	42	42	39	309
Newfoundland.....	1,042	367	1,552	5,346	1,288	9,595
New Zealand.....	40	25	33	50	107	255
Persian.....	1	9	1	5	18	34
Polish.....	4,061	2,707	2,921	4,211	2,734	16,634
Portuguese.....	4	.....	2	.....	3	9
Roumanian.....	969	759	427	1,431	2,056	5,642
Russian.....	1,077	321	222	3,058	5,411	10,089
Scandinavian--						
Danish.....	511	541	392	1,355	1,830	4,619
Icelandic.....	50	31	21	27	49	178
Norwegian.....	429	450	507	2,424	2,550	6,360
Swedish.....	715	442	948	3,536	2,138	7,779
Spanish.....	202	6	15	39	3	265
Swiss.....	235	187	152	1,585	680	2,839
Syrian.....	443	123	91	286	210	1,153
Turkish.....	8	3	3	27	29	70
Ukrainian.....	491	89	36	832	26	1,474
U. S. A. citizens, via ocean ports.....	110	67	32	134	96	439
Venezuelan.....	.....	.....	1	6	.....	7
West Indian.....	110	24	44	37	37	252
Total, Continental, etc.....	26,156	21,634	16,372	55,120	42,366	161,648
From the United States.....	38,310	21,670	16,586	17,211	15,818	109,575
Total immigration.....	138,728	82,324	67,446	145,250	111,362	545,110

TABLE 5

Immigration to Canada for the Period April 1, 1925, to March 31, 1930

Racial Origin	Fiscal Years					Totals
	1925-1926	1926-1927	1927-1928	1928-1929	1929-1930	
English.....	19,660	24,890	25,991	30,355	32,278	133,203
Irish.....	5,993	9,187	8,756	9,199	10,159	43,294
Scottish.....	10,295	14,296	14,341	16,137	18,640	73,709
Welsh.....	1,053	1,411	1,784	3,189	3,005	10,442
Totals.....	37,030	49,784	50,872	58,880	64,082	260,648
Albanian.....	14	17	30	28	26	115
Arabian.....	10	4	6	1	7	28
Armenian.....	85	65	44	17	14	225
Belgian.....	1,063	2,080	2,171	1,232	696	7,232
Bohemian.....	8	22	7	8	20	65
Bulgarian.....	47	123	249	282	296	1,000
Chinese.....			3	1		4
Croatian.....	1,006	1,085	902	990	771	4,754
Czech.....	805	721	714	844	434	3,520
Dalmatian.....	1			1	7	9
Dutch.....	1,180	1,674	1,923	1,569	1,755	8,136
East Indian.....	62	60	58	52	58	288
Estonian.....	28	23	110	92	117	439
Finnish.....	1,617	5,180	4,765	3,651	4,565	19,778
French.....	498	458	868	745	697	3,356
German.....	7,431	12,641	12,638	13,215	14,718	60,943
Greek.....	217	640	583	736	634	2,510
Hebrew.....	3,587	2,471	4,296	3,301	3,544	19,199
Herzegovinian.....		3	4			7
Italian.....	1,638	2,301	3,592	792	1,277	10,601
Japanese.....	421	475	478	445	194	2,013
Jugo-Slav.....	1,604	2,064	1,450	2,824	921	8,983
Korean.....	1					1
Lettish.....	34	60	77	74	70	305
Lithuanian.....	165	242	1,037	1,608	964	4,616
Magyar.....	4,112	4,663	5,318	6,242	5,668	26,223
Maltese.....	21	33	39	18	40	151
Mexican.....	1					1
Montenegrin.....		5				5
Moravian.....	6	36	23	4	23	102
Negro.....	53	51	38	96	195	483
Persian.....	11	6	4	1		23
Polish.....	2,535	6,505	6,733	8,269	6,610	30,652
Portuguese.....	3	14	7	12	13	49
Roumanian.....	265	292	237	284	333	1,461
Russian.....	925	1,137	943	908	765	4,673
Ruthenian.....	4,259	9,995	10,123	15,571	11,391	51,244
Scandinavian—						
Danish.....	1,112	2,030	3,335	3,311	2,685	12,973
Icelandic.....	33	30	28	24	6	141
Norwegian.....	1,072	3,334	4,327	2,434	2,256	13,473
Swedish.....	1,355	2,623	3,124	3,297	2,918	13,312
Serbian.....	454	895	411	390	375	2,515
Slovak.....	2,046	4,274	3,714	4,306	2,879	17,216
Spanish.....	12	29	23	18	26	113
Spanish American.....		6		3		9
Swiss.....	320	568	614	490	473	2,465
Syrian.....	134	218	82	75	61	570
Turkish.....	17	8	4	3	6	38
Total, Continental, etc.....	40,256	73,180	75,721	78,283	68,479	335,919
From the United States.....	18,778	21,025	25,007	30,560	30,727	126,097
Total immigration.....	96,064	143,989	151,600	167,723	163,288	732,664

TABLE 6

Immigration to Canada for the Period April 1, 1930, to March 31, 1933

Racial Origin	Fiscal Years								Totals
	1930-1931	1931-1932	1932-1933	1933-1934	1934-1935	1935-1936	1936-1937	1937-1938	
English.....	14,662	4,275	1,940	1,375	1,380	1,286	1,445	1,940	28,312
Irish.....	4,233	791	323	283	201	249	262	364	6,796
Scottish.....	7,872	1,843	764	547	472	484	519	604	13,105
Welsh.....	817	179	70	55	55	30	38	55	1,299
Totals.....	27,584	7,088	3,097	2,260	2,198	2,049	2,264	2,972	49,512
Albanian.....	25	5		1	3	1	4	8	47
Arabian.....	2		2		1			4	9
Armenian.....	21	4	1	7			3	4	45
Belgian.....	255	47	37	41	61	72	93	123	729
Bohemian.....	11		7			1	1	5	25
Bulgarian.....	295	15	3	12	5	22	18	28	388
Chinese.....			1	2			1		4
Croatian.....	482	106	98	108	155	157	240	277	1,691
Czech.....	225	69	65	82	77	106	134	188	916
Dalmatian.....							1		1
Dutch.....	344	33	33	27	44	111	90	119	801
East Indian.....	80	47	62	33	33	20	13	14	302
Estonian.....	63	6			2	2	5	2	82
Finnish.....	2,297	92	30	51	59	43	49	79	2,700
French.....	347	87	88	74	86	95	135	134	1,046
German.....	7,840	727	518	401	301	209	367	523	10,886
Greek.....	388	20	37	34	35	53	75	115	767
Hebrew.....	2,908	202	346	599	335	655	391	317	5,753
Italian.....	1,007	414	255	267	325	341	299	408	3,316
Japanese.....	204	195	115	104	93	83	103	139	1,086
Jugo-Slav.....	864	57	56	63	120	106	106	116	988
Letish.....	28	4		4		3	2	11	62
Lithuanian.....	466	45	57	37	37	22	42	37	743
Magyar.....	2,401	397	364	509	362	314	328	622	5,297
Maltese.....	13	5	2				4	2	26
Mexican.....							6	1	7
Montenegrin.....	3							2	5
Moravian.....	2		3					3	8
Negro.....	190	15	9	19	5	3	5	9	185
Persian.....	2		1				1	2	6
Polish.....	3,997	554	360	374	406	362	432	615	7,100
Portuguese.....	5	2	1	2	2	4	2	1	19
Roumanian.....	179	22	26	27	52	33	65	77	481
Russian.....	879	74	62	61	60	84	79	120	1,419
Ruthenian.....	6,413	502	414	421	586	418	855	1,356	10,966
Scandinavian—									
Danish.....	820	53	55	43	21	21	22	40	1,075
Icelandic.....	25		1		1	6		3	36
Norwegian.....	740	70	44	31	37	31	25	27	1,005
Swedish.....	720	79	17	19	10	26	16	47	944
Serbian.....	140	31	26	37	26	29	35	33	407
Slovak.....	1,967	337	252	395	595	432	520	1,249	5,737
Spanish.....	8	9	7	7	7	6	10	14	68
Spanish American.....	1	2		4				3	10
Swiss.....	211	24	17	19	22	32	49	87	461
Syrian.....	54	15	19	14	13	26	19	15	175
Turkish.....	7	1		2			1	1	12
Total, Continental, etc.	36,359	4,367	3,489	3,903	3,978	3,933	4,646	7,030	67,705
From the United States.....	24,280	14,297	13,196	7,740	5,960	5,121	5,113	5,643	81,350
Total immigration..	88,223	25,752	19,782	13,903	12,136	11,103	12,023	15,645	198,567

Immigration to Canada, by Origins, via Ocean Ports, and from

Racial Origin	1928-29			1929-30			1930-31			1931-32		
	Via Ocean Ports	From U.S.A.	Totals	Via Ocean Ports	From U.S.A.	Totals	Via Ocean Ports	From U.S.A.	Totals	Via Ocean Ports	From U.S.A.	Totals
English.....	30,355	9,181	39,536	32,278	9,379	41,657	14,662	7,408	22,160	4,275	4,525	8,800
Irish.....	9,199	3,767	12,966	10,159	3,762	13,921	4,233	2,904	7,137	791	1,716	2,507
Scottish.....	16,137	3,458	19,590	18,640	3,638	22,278	7,872	2,917	10,789	1,843	1,732	3,575
Welsh.....	3,189	300	3,489	3,005	332	3,337	817	231	1,048	179	147	326
Totals.....	58,880	16,701	75,581	64,082	17,111	81,193	27,584	13,550	41,134	7,088	8,120	15,208
Belgian.....	1,222	79	1,301	696	92	788	255	105	360	47	31	78
Danish.....	3,311	351	3,662	2,685	319	3,004	820	184	1,004	53	87	140
Dutch.....	1,599	741	2,340	1,755	703	2,458	344	444	788	33	236	269
Finnish.....	3,651	100	3,751	4,565	82	4,647	2,297	57	2,354	92	38	130
French.....	745	3,934	4,679	697	4,419	5,116	347	4,391	4,738	87	2,734	2,821
German.....	12,806	3,808	16,609	14,281	3,733	18,014	7,724	2,673	10,397	727	1,532	2,259
Icelandic.....	24	23	47	6	28	34	25	17	42			10
Norwegian.....	2,434	1,419	3,853	2,256	1,149	3,405	740	645	1,385	70	171	241
Swedish.....	3,297	874	4,171	2,918	736	3,654	730	366	1,096	79	195	274
Swiss.....	490	156	646	473	117	590	211	83	294	24	28	52
Totals.....	29,579	11,480	41,059	30,332	11,378	41,710	13,493	8,965	22,458	1,212	5,062	6,274
Albanian.....	28	7	35	26	1	27	25	1	26	5		5
Arabian.....	1	1	2	7	2	9	2		2			
Armenian.....	17	10	27	14	16	30	21	1	22	4	1	5
Austrian.....	409	100	509	437	75	512	116	68	184			
Bohemian.....	8	86	94	20	81	101	11	57	68		21	21
Bulgarian.....	282	2	284	296	10	306	295		295	15	3	18
Chinese.....	1		1									
Croatian.....	990	24	1,014	771	11	782	482	2	484	106	5	111
Czech.....	846	5	851	434	14	448	225	8	233	69	9	78
Dalmatian.....	1		1									
East Indian.....	52	1	53	58		58	80		80	47		47
Estonian.....	92		92	117	2	119	63	2	65	6	1	7
Greek.....	736	70	806	634	48	682	388	48	436	20	43	63
Hebrew.....	3,301	547	3,848	3,544	620	4,164	2,908	513	3,421	202	447	649
Italian.....	792	272	1,064	1,277	236	1,513	1,007	228	1,235	414	166	590
Japanese.....	445	1	446	194		194	204	1	205	195		195
Jugo-Slav.....	2,824	32	2,856	921	35	956	364	27	391	57	9	66
Lettish.....	74	3	77	70	8	78	28	1	29	4	2	6
Lithuanian.....	1,608	18	1,626	964	22	986	466	11	477	45	5	50
Magyar.....	6,242	106	6,348	5,688	99	5,787	2,401	71	2,472	397	41	438
Maltese.....	18	1	19	40	1	41	13	6	19	5		5
Mexican.....												1
Montenegrin.....					2	2	3		3			
Moravian.....	4	1	5	23		23	2		2		1	1
Negro.....	96	280	376	195	251	446	120	158	278	15	83	98
North American Indian.....		23	23		22	22		8	8		34	34
Persian.....	1		1	1		1	2		2			
Polish.....	8,269	246	8,515	6,610	227	6,837	3,997	226	4,223	554	103	657
Portuguese.....	12	10	22	13	11	24	5	10	15	2	2	4
Roumanian.....	284	48	332	383	62	445	179	44	223	22	15	37
Russian.....	908	285	1,193	765	173	938	879	97	976	74	32	106
Ruthenian.....	15,571	39	15,610	11,291	41	11,332	6,413	78	6,491	502	38	540
Serbian.....	390	20	410	375	29	404	140	18	158	31	16	47
Slovak.....	4,303	40	4,343	2,879	46	2,925	1,957	32	1,989	337	9	346
Spanish.....	18	49	67	26	37	63	8	26	34	9	11	20
Spanish American.....	3	4	7		4	4		1	2			2
Syrian.....	75	44	119	61	51	112	54	22	76	15	16	31
Turkish.....	3	4	7	6	1	7	7		7	1	1	2
Totals.....	48,704	2,379	51,083	38,147	2,238	40,385	22,866	1,765	24,631	3,155	1,115	4,270
Grand totals.....	137,163	30,560	167,723	132,561	30,727	163,288	63,943	24,280	88,223	11,455	14,297	25,752

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the United States, for the Period April 1, 1928, to March 31, 1938

1932-33			1933-34			1934-35			1935-36			1936-37			1937-38		
Via Ocean Ports	From U.S.A.	Totals	Via Ocean Ports	From U.S.A.	Totals	Via Ocean Ports	From U.S.A.	Totals	Via Ocean Ports	From U.S.A.	Totals	Via Ocean Ports	From U.S.A.	Totals	Via Ocean Ports	From U.S.A.	Totals
1,940	4,153	6,093	1,375	2,623	3,998	1,380	2,053	3,433	1,286	1,744	3,030	1,445	1,738	3,183	1,949	1,870	3,819
323	1,512	1,835	283	905	1,188	291	727	1,018	249	626	875	262	617	879	364	686	1,050
764	1,747	2,511	547	1,038	1,585	472	734	1,206	484	677	1,161	519	639	1,158	604	737	1,341
70	92	162	55	77	132	55	55	110	30	56	86	38	69	107	55	48	103
3,097	7,504	10,601	2,260	4,643	6,903	2,198	3,569	5,767	2,049	3,103	5,152	2,264	3,063	5,327	2,972	3,341	6,313
37	42	79	41	23	64	61	18	79	72	9	81	93	13	106	123	22	145
55	53	108	43	47	90	21	28	49	21	33	54	22	44	66	40	43	53
33	226	259	27	137	164	44	104	148	111	97	208	90	102	192	119	113	232
30	29	59	51	16	67	59	21	80	43	24	67	49	16	65	79	14	93
88	2,702	2,790	74	1,130	1,204	86	809	895	95	724	819	135	711	846	134	774	908
518	1,180	1,698	401	755	1,156	301	656	957	209	471	680	307	529	896	523	571	1,094
6	6	7	7	10	10	1	12	13	6	6	12	2	2	2	3	5	8
44	218	262	31	108	139	37	93	130	31	94	125	25	74	99	27	91	118
17	165	182	19	110	129	10	83	93	26	89	115	16	73	89	47	95	142
17	41	58	19	30	49	22	21	43	32	18	50	49	16	65	87	18	105
840	4,662	5,502	706	2,366	3,072	642	1,845	2,487	646	1,565	2,211	846	1,580	2,426	1,182	1,746	2,928
2	2	4	1	1	3	3	3	3	1	1	4	4	4	4	8	1	9
1	4	5	7	3	10	1	4	5	4	1	5	3	1	4	4	3	7
7	16	23	10	10	20	9	9	18	6	7	13	13	14	5	6	11	11
3	5	8	12	2	14	5	5	10	2	24	18	1	19	28	2	30	30
1	1	2	2	2	4	2	2	4	2	2	4	1	1	2	2	2	4
96	4	100	106	6	114	155	155	157	157	157	240	240	277	4	281	281	281
65	7	72	52	7	59	77	4	81	106	1	107	134	4	138	188	3	191
62	1	63	33	2	35	33	2	35	20	1	21	13	13	14	14	14	14
1	1	2	2	2	4	2	2	4	2	2	4	2	2	4	2	2	4
37	32	69	34	26	60	35	17	52	53	19	72	75	20	95	5	2	1
346	426	772	599	344	943	335	289	624	655	225	880	391	228	619	317	267	584
255	142	397	267	109	376	325	56	381	341	49	390	299	58	357	408	69	477
115	115	104	1	105	93	93	83	83	83	83	103	103	103	103	139	139	139
56	11	67	63	3	66	120	2	122	106	3	109	106	3	109	116	9	125
1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
57	6	63	37	2	39	37	5	42	22	3	25	2	10	52	37	6	43
364	20	384	509	18	527	362	20	382	314	22	336	328	11	339	622	24	646
2	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
3	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
9	60	69	19	67	76	5	16	21	3	20	23	5	17	22	9	17	26
1	20	21	8	8	8	6	6	6	2	2	2	2	2	2	2	2	2
360	99	459	374	50	424	406	40	446	362	42	404	1	35	467	615	46	661
1	6	7	2	4	6	2	3	5	4	3	7	2	2	7	1	2	3
26	11	37	27	7	34	52	5	57	33	4	37	65	2	67	17	11	88
62	35	97	61	16	77	60	25	85	84	13	97	79	19	98	70	22	142
414	47	461	421	8	429	586	15	601	418	8	426	855	15	870	1,356	13	1,869
26	18	44	37	10	47	26	3	29	29	29	35	3	38	53	4	57	
252	8	260	395	6	401	595	12	607	432	11	443	520	7	527	1,249	13	1,862
7	16	23	7	6	13	7	7	14	6	5	11	10	11	21	14	2	16
19	26	45	14	26	40	13	7	20	26	10	36	19	5	24	15	8	23
2,649	1,030	3,679	3,197	731	3,928	3,336	546	3,882	3,287	453	3,740	3,800	470	4,270	5,848	556	6,404
6,586	13,196	19,782	6,163	7,740	13,903	6,176	5,960	12,136	5,982	5,121	11,103	6,910	5,113	12,023	10,002	5,643	15,645

TABLE 8

Number of Arrivals via Ocean Ports, Classified by Port of Entry and Class, for the Fiscal Year Ended March 31, 1938

Port of Entry	Number of Arrivals	Rejections	Admissions	Returned Canadians				Tourists	Professional	Students	Theatrical	Diplomatic Corps	Other Transients
				Totals	Canadian Born	British Born	British National							Alien National
Halifax	7,611	36	2,792	3,642	1,356	1,494	416	376	977				164
North Sydney	666	23	484	70	30	2	17	21	62				27
Pictou	1	1	13	4	3	1			4				
Sydney	27	6	13	9	6	2	1						
Louisburg	15		15										
Charlottetown	9		9										
St. John	896	15	53	611	366	191	48	6	205				12
Montreal	1,974	16	91	1,514	1,033	376	89	16	345				8
Quebec	38,829	62	4,930	24,196	10,347	11,556	1,399	894	8,983	14	4	1	639
Sorel	5		5	3			2	1	2				
Boston	5		5										
New York	1,221	30	1,191										
Vancouver	5,456	8	294	2,110	1,166	291	348	305	905	2			2,137
Victoria	950	1	51	274	154	63	50	7	277				356
New Westminster	5	1	3	3	1	1	1	1	1				
Not given	99	11	83	2		2			3				
Totals	57,778	210	10,002	32,438	14,462	13,979	2,371	1,626	11,764	14	6	1	3,343

TABLE 9

Immigration to Canada, for the Fiscal Year Ended March 31, 1938, Showing Sex, Occupation, and Destination

	Via Ocean Ports	From United States	Totals
Sex—			
Adult males	1,973	1,697	3,670
Adult females	4,022	2,297	6,319
Children under 18 years	4,007	1,649	5,656
Totals	10,002	5,643	15,645
Occupation—			
Farming Class—			
Males	943	357	1,300
Females	607	160	767
Children	1,260	166	1,426
Labouring Class—			
Males	221	118	339
Females	33	37	75
Children	68	32	100
Mechanics—			
Males	205	290	495
Females	34	113	197
Children	42	116	158
Trading Class—			
Males	229	449	678
Females	124	260	384
Children	44	113	157
Mining Class—			
Males	24	36	60
Females	6	12	18
Children	6	7	13
Female Domestic Servants—			
18 years and over	617	80	697
Under 18 years	145		145
Other Classes—			
Males	351	447	798
Females	2,546	1,635	4,181
Children	2,442	1,215	3,657
Destination—			
Nova Scotia	501	331	832
New Brunswick	65	227	292
Prince Edward Island	4	52	56
Quebec	1,685	1,014	2,699
Ontario	4,065	2,794	6,859
Manitoba	1,209	191	1,400
Saskatchewan	461	157	618
Alberta	935	285	1,220
British Columbia	1,068	534	1,647
Yukon Territory	10	8	18
Northwest Territories	4		4

TABLE 10

Immigration to Canada for the Fiscal Year 1937-8, Showing Racial Origin and Sex

Racial Origin	Via Ocean Ports				From the United States				Grand Totals		
	Totals	18 Years and Over		Under 18 Years		Totals	18 Years and Over			Under 18 Years	
		M.	F.	M.	F.		M.	F.		M.	F.
Albanian.....	8		4	3	1	1	1				9
Arabian.....	4			3	1						4
Armenian.....	4	1	2	2	1	3	2	1			7
Belgian.....	123	45	41	15	22	22	9	8	3	2	145
Bohemian.....	5	1	2		2	6	1	3	1	1	11
British—											
English.....	1,949	609	901	225	214	1,870	548	759	276	287	3,819
Irish.....	364	154	147	31	32	686	180	293	97	116	1,050
Scotch.....	604	191	294	52	67	737	240	293	98	106	1,341
Welsh.....	55	13	34	3	5	48	16	19	9	4	103
Bulgarian.....	28	2	14	5	7	2	1			1	30
Croatian.....	277	2	123	86	66	4	1	3			281
Czech.....	188	33	75	41	39	3	1	2			191
Dutch.....	119	30	21	37	31	113	37	51	12	13	232
East Indian.....	14		6	7	1						14
Estonian.....	2	1	1			1		1			3
Finnish.....	79	9	30	18	22	14	6	5	3		93
French.....	134	49	56	14	15	774	193	319	116	146	908
German.....	523	93	186	117	127	571	182	242	80	67	1,004
Greek.....	115	13	51	25	26	11	5	2	3	1	126
Hebrew.....	317	80	113	68	56	267	101	97	34	35	584
Italian.....	408	26	198	91	93	69	27	24	9	9	477
Japanese.....	139	23	83	20	13						139
Jugo-Slav.....	116	9	46	35	26	9		7	1	1	125
Lettish.....	11	1	5	1	4						11
Lithuanian.....	37	3	22	8	4	6	2	3		1	43
Magyar.....	622	35	247	184	156	24	7	11	3	3	646
Maltese.....	2	1			1						2
Mexican.....	1		1								1
Montenegrin.....	2		1		1						2
Moravian.....	3		2	1							3
Negro.....	9	3	5		1	17	4	8	4	1	26
North American Indian.....						11	1	3	2	5	11
Persian.....	2		1		1	1	1				3
Polish.....	615	59	229	160	167	46	15	22	4	5	661
Portuguese.....	1	1				2		2			3
Roumanian.....	77	9	27	20	21	11	4	4	2	1	88
Russian.....	120	18	42	34	26	22	12	2	5	3	142
Ruthenian.....	1,356	190	469	352	345	13	3	5	3	2	1,369
Scandinavian—											
Danish.....	40	9	21	5	5	43	17	10	7	9	83
Icelandic.....	3	2	1			5	2	1	1	1	8
Norwegian.....	27	10	12	3	2	91	34	38	12	7	118
Swedish.....	47	16	17	9	5	95	30	36	13	16	142
Serbian.....	83	7	31	32	13	4	1	3			87
Slovak.....	1,249	184	420	328	317	13	5	6		2	1,262
Spanish.....	14	5	4	4	1	2	1	1			16
Spanish American.....	3	2			1						3
Swiss.....	87	31	25	17	14	18	5	8	4	1	105
Syrian.....	15	3	8	3	1	8	2	5		1	23
Turkish.....	1		1								1
Totals.....	10,002	1,973	4,022	2,056	1,951	5,643	1,697	2,297	802	847	15,645

TABLE 11

Comparative Statement—Immigration to Canada via Ocean Ports, by Months, for the Fiscal Year 1937-8, Compared with that of the Preceding Fiscal Year

	1936-7				1937-8			
	M.	F.	C.	Totals	M.	F.	C.	Totals
April.....	157	234	208	599	243	394	390	1,027
May.....	177	339	351	867	250	401	439	1,090
June.....	129	276	268	673	211	381	391	983
July.....	140	324	296	760	169	347	338	854
August.....	112	242	202	556	202	420	430	1,052
September.....	127	308	280	715	214	412	394	1,020
October.....	141	306	334	781	202	449	457	1,108
November.....	87	187	204	478	103	289	284	676
December.....	65	147	142	354	60	272	277	609
January.....	52	133	106	291	62	165	155	382
February.....	55	141	122	318	70	187	147	404
March.....	110	221	187	518	187	305	305	797
Totals.....	1,352	2,858	2,700	6,910	1,973	4,022	4,007	10,002

TABLE 12

Comparative Statement—Immigration from the United States to Canada, by Months, for the Fiscal Year 1937-8, Compared with that of the Preceding Fiscal Year

	1936-7				1937-8			
	M.	F.	C.	Totals	M.	F.	C.	Totals
April.....	117	158	141	416	162	185	108	455
May.....	123	192	158	473	174	202	151	527
June.....	134	206	142	482	165	252	206	623
July.....	117	210	152	479	134	217	152	503
August.....	142	204	127	473	169	209	145	523
September.....	135	216	161	512	168	251	196	615
October.....	153	209	152	519	158	234	152	544
November.....	128	181	114	423	122	180	132	434
December.....	103	133	105	341	108	122	106	336
January.....	115	141	68	324	94	137	73	304
February.....	103	112	84	299	98	149	107	354
March.....	124	161	87	372	145	159	121	425
Totals.....	1,499	2,123	1,491	5,113	1,697	2,297	1,649	5,643

TABLE 13

Comparative Statement—Total Immigration to Canada, by Months, for the Fiscal Year 1937-8, Compared with that of the Preceding Fiscal Year

	1936-7				1937-8			
	M.	F.	C.	Totals	M.	F.	C.	Totals
April.....	274	392	349	1,015	405	579	498	1,482
May.....	300	531	509	1,340	424	603	590	1,617
June.....	263	482	410	1,155	376	633	597	1,606
July.....	257	534	448	1,239	303	564	490	1,357
August.....	254	446	329	1,029	371	629	575	1,575
September.....	262	524	441	1,227	382	633	590	1,605
October.....	299	515	486	1,300	360	683	609	1,652
November.....	215	368	318	901	225	469	416	1,110
December.....	168	280	247	695	168	394	383	945
January.....	167	274	174	615	156	302	228	686
February.....	158	253	206	617	168	336	254	758
March.....	234	382	274	890	332	464	426	1,222
Totals.....	2,851	4,981	4,191	12,023	3,670	6,319	5,656	15,645

Immigration via Ocean Ports, Showing Country of

Country of Birth	Totals	Bohemian	Moravian	Slovak	Hebrew	Arabian	English	Irish	Scotch	Welsh	Mexican	Spanish American	Croatian	Montenegrin	Serbian	Belgian	Bulgarian	Czech	Finnish	French	
Africa (British)	24				5		9		4											1	
Africa (not British)	2																				
Albania	3																				
Arabia	1																				
Argentine	3																				
Asia	2																				
Australia	31						22	1	2	1											
Austria	57	1		1	1		1		2	1									1		
Barbados	10						7		1												
Bahamas	5						4														
Belgium	142				1			1								118					18
Bermuda	6						6														
Brazil	6						6														
Bulgaria	25			3													22				
Canada	5								1												2
Central America	5						2														
China	32						19	3		5											
Cuba	4						2			1											
Czecho-Slovakia	1,592	1	3	1,106	1				1									140			
Danzig	1																				
Denmark	39				1		1														
Egypt	5						1														
England	1,296				22		1,199	16	45	5									1		
Esthonia	2																				
Finland	104																			77	
France	88			2	1		1		1							2					80
Germany	164	3			22		2														
Greece	113						1											3			
Guiana (British)	1																				
Holland	66				1		2		2												
Honduras (British)	2						2		2												
Hong Kong	3						3														
Hungary	445				1																1
Iceland	3																				
India (British)	44						20		5	4											
Ireland (Free State)	110						4	105	1	1											
Ireland (Northern)	169						4	160	5												
Italy	404						2	2													
Jamaica	7						7														
Japan	152						6	3	4												
Jugo-Slavia	673			120										273	2	55			3		
Java	6						4														
Latvia	12				1																1
Lesser British Isles	5						4														
Lithuania	51				12												1				
Malta	1																				
Mexico	59						8				1										
Newfoundland	584						509	46	12	1											13
New Zealand	8						4		4												
Norway	26						1														1
Palestine	7				4																
Persia	1																				
Peru	12						2		6				2								
Poland	2,114			4	212		2		2										43		
Porto Rico	1																				1
Philippine Islands	5						5														
Roumania	319				3	9							2		27			3			
Russia	41					16	2			1											6
St. Pierre and Miquelon	7						1														1
Scotland	519						6	10	499												
Siam	1						1														
South America	4						1														
Spain	7						1														
Straits Settlements	3						3														
Sweden	18																				
Switzerland	148																				7
Syria	17					4							1								
Trinidad	3						1														
Turkey	9						1														
United States	87			10			42	3	9				2		1	1				2	
Wales	69				1		17	1	2	48											
West Indies (British)	4						1										1				
Born at Sea	3							1													
Totals	10,002	5	3	1,249	317	4	1,949	364	604	55	1	3	277	2	83	123	28	188	79	134	

Birth by Racial Origin, for the Fiscal Year 1937-8

German	Greek	Dutch	Magyar	Italian	Jugo-Slav	Polish	Roumanian	Russian	Danish	Icelandic	Norwegian	Swedish	Swiss	Ruthenian	Albanian	Esthonian	Lettish	Lithuanian	Maltese	Portuguese	Spanish	Negro	Armenian	East Indian	Japanese	Persian	Syrian	Turkish	
1				1			1								8						2	1							
		1											1									2							
48	1	4	4																			2							
1				1																	3								
3			69		31	6		1						238							1								
1								4																					
3	1			2		2			37																				
131						3				1			27																
	109													1															
		62												1							1								
21			421				1				3																		
														2											13				
				402																									
50	2	2	43	2	84		23							16											139				
2																		11											
7		43																36			1								
1		2																											
						1						25																	
2																											1		
87						592		103						1,071													1		
97		4	81		1	5	52	11						35								1							
4		1	1			3		1						1															
						1												1		1									
										1												2							
																						6							
													17																
														80															
523	115	119	622	408	116	615	77	120	40	3	27	47	87	1,356	8	2	11	37	2	1	14	9	4	14	139	2	15	1	

Immigration from the United States, Showing Country

Country of Birth	Totals														
		Bohemian	Slovak	Hebrew	English	Irish	Scottish	Welsh	N.A. Indian	Croatian	Serbian	Belgian	Bulgarian	Czech	Finnish
Africa (British).....	9			1	4	2	1								
Albania.....	1														
Argentina.....	2														
Armenia.....	1														
Asia.....	1														
Australia.....	6				2	2	2								
Austria.....	10			4											
Barbados.....	1														
Belgium.....	14			1								11			
Bermuda.....	1				1										
Brazil.....	3				1										
Bulgaria.....	1												1		
Canada.....	563			6	194	78	127	2							
China.....	2				1		1	2							
Czecho-Slovakia.....	9		6	1										1	
Denmark.....	7														
Egypt.....	1														
England.....	329			12	296	13	7	1							
Finland.....	6				1										5
France.....	12				1	1									
Germany.....	44			1											
Greece.....	4				1										
Holland.....	5														
Hungary.....	16		1	3											
Iceland.....	2														
India (British).....	7				6										
Ireland (Free State).....	29				2	26	1								
Ireland (Northern).....	27				1	25	1								
Italy.....	23														
Jamaica.....	4				4										
Japan.....	2				1		1								
Jugo-Slavia.....	8		2		1						2	1		1	
Latvia.....	1			1											
Lesser British Isles.....	1				1										
Lithuania.....	4			2											
Mexico.....	2				2										
Newfoundland.....	23				14	3	3								
New Zealand.....	3				2		1								
Norway.....	20				2										
Persia.....	1														
Peru.....	1				1										
Poland.....	31	2		16											
Roumania.....	12			2							1				
Russia.....	53			36											
Scotland.....	137			1	2	2	132								
Spain.....	1						1								
Straits Settlements.....	1				1										
Sweden.....	18														
Switzerland.....	9														
Syria.....	3														
Trinidad.....	1				1										
Turkey.....	1														
Ukraine.....	2														
United States.....	4,159	4	4	179	1,327	534	457	40	11	2	2	11		2	9
Wales.....	6			1				5							
West Indies (British).....	2				2										
Other countries (not British).....	2						2								
Totals.....	5,643	6	13	267	1,870	686	737	48	11	4	4	22	2	3	14

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Table 1
 Total Immigrants to Canada, by Country of Birth by Racial Origin, for the Fiscal Year 1937-8

French	German	Greek	Dutch	Magyar	Italian	Jugo-Slav	Polish	Roumanian	Russian	Danish	Icelandic	Norwegian	Swedish	Swiss	Ruthenian	Albanian	Estonian	Lithuanian	Portuguese	Spanish	Negro	Armenian	Syrian	Persian
					1																			
	1												1										1	
1	3						2														1			
2		1			1																			
124	20		7								1			1	2						1			
				1						7													1	
11																								
	43																							
	3	3	5																					
		8		8				1			1													
		1			23																			
	1					1																		
												17	1											1
							7		1						3									
							1	8		9														
																			2					
									1															
	1	3			1							2	16	4									3	
			1																					
634	486	6	101	15	43	8	36	2	11	36	3	72	76	13	7			1	3	2	2	15		5
774	571	11	113	24	69	9	46	11	22	43	5	91	95	18	13	1	1	6	2	2	17	3	8	1

Total Immigration to Canada, Showing Country of

Country of Birth	Totals	Bohemian	Moravian	Slovak	Hebrew	Arabian	English	Irish	Scottish	Welsh	N. A. Indian	Spanish American	Croatian	Montenegrin	Serbian	Belgian	Bulgarian	Czech	Finnish	French	
Africa (British)	33				6		13	2	5											1	
Africa (not British)	2																				
Albania	9																				
Arabia	1																				
Argentina	6								1												3
Armenia	1																				
Asia	3																				
Australia	37				3		24	1	4	1											
Austria	67	1		1	5		1												1		1
Barbados	11						7	1													
Bahamas	5						4														
Belgium	156				2			1								129					20
Bermuda	7						7														
Brazil	9						7														
Bulgaria	26			3																	
Canada	568				6		194	78	128	2							23				126
Central America	5						2														
China	34				3		20	3	6												
Cuba	4						2		1												
Czecho-Slovakia	1,601	1	3	1,112	2													141			
Danzig	1																				
Denmark	46				1		1														
Egypt	6						1														
England	1,625				34		1,495	29	52	6									1		
Estonia	2																				
Finland	110				1		1												83		
France	100			2	1		1	1	1							2					91
Germany	208	3			23		2														
Greece	117						2										3				
Guiana (British)	1																				
Holland	71				1		2														
Honduras (British)	2						2														
Hong Kong	3						3														
Hungary	461			1	4																1
Iceland	5																				
India (British)	51						26	5	4												
Ireland (Free State)	139						6	131	2												
Ireland (Northern)	196						5	185	6												
Italy	427						2														
Jamaica	11						11														
Japan	154						7	3	5												
Jugo-Slavia	681			122									275	2	56		1	3			
Java	6						4														
Latvia	13				2																
Lesser British Isles	6						5														1
Lithuania	55				14											1					
Malta	1																				
Mexico	61						10														
Newfoundland	606						523	49	15	1											14
New Zealand	11						6		5												
Norway	46						3														1
Palestine	7				4																
Persia	2																				
Peru	13						3	6					2								
Poland	2,145	2		4	228		2												43		1
Porto-Rico	1																				
Philippine Islands	5						5														
Roumania	331			3	11								2		28		3				
Russia	94				52		2		1												6
St. Pierre and Miquelon	7						1														1
Scotland	656				1		8	12	631				1								1
Siam	1						1														
South America	4						1														
Spain	8								1												
Straits Settlements	4						4														
Sweden	36																				
Switzerland	157																				8
Syria	20					4															
Trinidad	4						2														
Turkey	10						1														
Ukraine	2																				
United States	4,246	4		14	179		1,369	537	466	40	11		4		3	12		2	11	634	
Wales	75				2		17	1	2	53											
West Indies (British)	6						3														
Other Countries (not British)	2								2												
Born at Sea	3							1								1					
Totals	15,645	11	3	1,262	584	4	3,819	1,050	1,341	103	11	3	281	2	87	145	30	191	93	908	

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Birth by Racial Origin, for the Fiscal Year 1937-8

	German	Greek	Dutch	Magyar	Italian	Jugo-Slav	Polish	Roumanian	Russian	Danish	Icelandic	Norwegian	Swedish	Swiss	Ruthenian	Albanian	Estonian	Lettish	Lithuanian	Maltese	Portuguese	Spanish	Negro	Armenian	East Indian	Japanese	Persian	Syrian	Turkish	Mexican	
1	1				1			1														2	1								
1													1										1								
51		1	4				2								1																
1			4																												
21		7			1						1				1	2							1								
3				70		31	6		4						228								3								
1										44																					
3		1			2		2								1								1								
174							3				1						2														
	112														1																
		67																													
24			429					2																							
		1									4		1																		
					425																										
51	2	2	43	2	85			23							16																
																			11												
2																			38	1											
7		43																													
2		2										42	1																		
							1																								
2																															
89						599		104							1,074																
98		4	81		1	5	60								35																
10		1	1			4	20		1						1				1	1											
							1																								
64					1					1		2	33		84																
		3																													
489	6	101	18	43	8	38	2	11	37	3	73	79	13	11								2	2	15							
																						6									
1,094	126	232	646	477	125	661	88	142	83	8	118	142	105	1,369	9	3	3	11	43	2	3	16	26	7	14	139	3	23	1	1	

TABLE 17

Immigration via Ocean Ports, Showing Destination by Intended Occupation and Sex, for the Fiscal Year Ended March 31, 1938

Destination	Totals	Farming Class				Labouring Class				Mechanics				Trading and Clerical Classes				Mining Class				Female Domestics		Other Classes			
		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years			
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
Nova Scotia.....	501	13	6	4	5	101	3	4	2	13	3	.....	2	10	2	.....	1	3	.....	.....	157	39	27	58	23	25
New Brunswick.....	65	3	.....	1	1	5	1	.....	.....	4	1	.....	.....	5	1	.....	.....	.....	.....	.....	5	.....	5	13	11	9
Prince Edward Island.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	2	.....	.....
Quebec.....	1,685	141	96	106	76	37	4	9	2	56	15	7	1	79	31	9	7	2	.....	.....	118	25	81	397	196	190
Ontario.....	4,065	262	142	204	121	54	13	24	6	108	48	12	14	106	65	9	10	15	2	1	2	225	41	107	1,195	650	629
Manitoba.....	1,209	242	193	235	185	.....	1	2	.....	5	1	1	.....	3	.....	.....	.....	.....	.....	.....	28	11	32	136	63	71
Saskatchewan.....	461	75	50	42	53	2	1	2	2	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	18	7	13	111	45	38
Alberta.....	935	110	82	105	74	2	1	3	1	2	3	.....	.....	2	3	1	3	1	1	.....	17	16	20	259	106	123
British Columbia.....	1,063	97	38	34	14	19	14	8	3	17	13	2	3	22	22	2	2	3	3	3	48	6	61	371	129	129
Yukon Territory.....	10	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	3	2
Northwest Territories.....	4	4
Totals.....	10,002	943	607	731	529	221	38	52	16	205	84	22	20	229	124	21	23	24	6	4	2	617	145	351	2,546	1,226	1,216

TABLE 18

Immigration from the United States to Canada, Showing Destination by Intended Occupation and Sex, for the Fiscal Year Ended March 31, 1938

Destination	Totals	Farming Class				Labouring Class				Mechanics				Trading and Clerical Classes				Mining Class				Female Domestic		Other Classes			
		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years			
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
Nova Scotia.....	331	39	20	12	13	5	2	6	2	2	12	8	3	1	6	30	77	45	48	
New Brunswick.....	227	18	4	4	3	7	3	1	1	3	2	5	3	3	16	75	40	39	
Prince Edward Island.....	52	8	3	2	4	.....	.....	.....	.....	1	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	5	20	3	4
Quebec.....	1,014	38	12	14	9	31	5	4	1	54	29	20	11	79	43	5	4	6	1	14	82	327	107	118	
Ontario.....	2,794	104	43	20	18	57	17	11	8	183	58	32	39	292	162	38	37	14	5	1	47	210	793	295	310
Manitoba.....	191	23	14	12	10	2	1	.....	.....	8	5	1	.....	13	11	4	7	1	.....	.....	.....	15	39	8	17
Saskatchewan.....	157	28	13	4	5	.....	.....	.....	.....	3	2	1	1	2	2	.....	.....	.....	.....	.....	.....	15	39	14	25
Alberta.....	285	54	29	9	16	1	1	.....	.....	11	4	1	1	9	3	1	.....	.....	.....	.....	.....	18	76	21	29
British Columbia.....	584	45	22	3	8	15	10	4	21	11	4	3	36	26	11	2	14	6	6	5	56	184	51	41	
Yukon Territory.....	8	1	5	
Totals.....	5,643	357	160	80	86	118	37	16	16	290	113	59	57	449	260	62	51	36	12	1	6	80	447	1,635	584	631

TABLE 19

Total Immigration, Showing Destination by Intended Occupation and Sex, for the Fiscal Year Ended March 31, 1938

Destination	Totals	Farming Class				Labouring Class				Mechanics				Trading and Clerical Classes				Mining Class				Female Domestics		Other Classes			
		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years			
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
Nova Scotia.....	832	52	26	16	18	106	3	4	4	19	5	.....	4	22	10	3	2	3	.....	.....	163	39	57	135	68	73
New Brunswick.....	292	21	4	5	4	12	4	1	1	7	3	.....	.....	10	4	.....	.....	.....	.....	8	.....	21	88	51	48	
Prince Edward Island.....	56	8	3	2	4	.....	.....	.....	.....	1	.....	.....	.....	1	1	.....	.....	.....	.....	1	.....	6	22	3	4	
Quebec.....	2,699	179	108	120	85	68	9	13	3	110	44	27	12	158	74	14	11	8	1	.....	132	25	163	724	303	308
Ontario.....	6,859	366	185	224	139	111	30	35	14	291	106	44	53	398	227	47	47	29	7	2	2	272	41	317	1,988	945	939
Manitoba.....	1,400	265	207	247	195	2	2	2	.....	13	6	2	.....	16	11	4	7	1	.....	.....	28	11	47	175	71	88
Saskatchewan.....	618	103	63	46	58	2	1	2	2	3	2	1	1	4	2	.....	.....	.....	.....	21	7	28	150	59	63	
Alberta.....	1,220	164	111	114	90	3	2	3	1	13	7	1	1	11	6	2	3	1	1	.....	18	16	38	335	127	152
British Columbia.....	1,647	142	60	37	22	34	24	8	7	38	24	6	6	58	48	13	4	17	9	3	6	53	6	117	555	180	170
Yukon Territory.....	18	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	1	.....	.....	9	3	2
Northwest Territories.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	15,645	1,300	767	811	615	339	75	68	32	495	197	81	77	678	384	83	74	60	18	5	8	697	145	798	4,181	1,810	1,847

DEPARTMENT OF MINES AND RESOURCES

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Table showing the total immigration, showing destination by intended occupation and sex, for the fiscal year ended March 31, 1938

TABLE 20

Immigration via Ocean Ports, Showing Intended Occupation by Province of Destination, for the Fiscal Year Ended March 31, 1938

Intended Occupation	Totals	Province of Destination										
		Nova Scotia	Prince Edward Island	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon Territory	Northwest Territories
Farming class.....	1,126	15		4	170	350	262	80	132	113		
Clerical class.....	131	8			35	66		1	2	15		
Professional class.....	222	17	1		59	68	25	5	14	28		3
Merchant class.....	175	3		3	60	88	3	1	28	15		
Miscellaneous.....	67	5	1	1	20	18	5	4	2	10		1
SKILLED WORKERS												
Skilled workers, N.E.S.....	85	2		1	25	44	2		2	9		
Bakers.....	9					8				1		
Barbers.....	13				1	9			1	2		
Blacksmiths.....	4				3	1				2		
Butchers.....	3					3						
Cabinetmakers.....	1						1					
Carpenters.....	19	4			2	12	1					
Dressmakers.....	11				3	4	1			4		
Engineers, marine.....	9	2			3	2				2		
Electricians.....	3	2				1				2		
Fur workers.....	4				2	2						
Harness and saddle makers.....	1			1								
Jewellers, goldsmiths, silver-smiths.....	2	1				1						
Locksmiths.....	1				1							
Machinists.....	6	1				5						
Masons and bricklayers.....	10				3	4	1			2		
Painters and glaziers.....	8				6	2						
Photographers.....	4				1	2				1		
Plasterers.....	1				1	1						
Plumbers.....	9	2			2	4	1					
Printers, pressmen and printing trades.....	4				1	2				1		
Shoemakers.....	1					1						
Seamstresses.....	2				2							
Tailors.....	7					7						
Tanners.....	1			1								
Textile workers, including weavers and spinners.....	19				5	14						
Watch and clock makers.....	1					1						
Automobile mechanics.....	9				4	4				1		
Ironworkers, N.E.S.....	8	1		1	1	4				1		
Moulders.....	1					1						
UNSKILLED AND SEMI-SKILLED WORKERS												
Unskilled and semi-skilled, N.E.S.....	25				9	10				6		
Lumbermen.....	6			1	1	3				1		
Miners.....	24	3			2	14			1	4		
Fishermen.....	45	39				1				5		
General labourers.....	65	7			3	10	33	1	2	3	5	1
Manufacturing.....	18	1				3	13			1		
Transportation.....	86	54		1	18	9			1	3		
Apprentices to skilled trades.....	14	1			1	8	1			3		
Domestic servants.....	762	196	1	5	143	266	39	25	33	54		
Dependent children.....	3,595	60		21	560	1,547	534	176	391	301	5	
Dependent wives.....	2,536	49	1	13	399	1,083	280	136	262	310	3	
Occupation not given.....	849	28		4	130	349	53	31	88	165	1	
Totals.....	10,002	501	4	65	1,685	4,065	1,209	461	935	1,063	10	4

TABLE 21

Immigration from the United States, Showing Intended Occupation by Province of Destination, for the Fiscal Year Ended March 31, 1938

Intended Occupation	Totals	Nova Scotia	Prince Edward Island	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon Territory
Farming class.....	377	39	8	21	42	110	25	28	58	46	.....
Clerical class.....	183	6	.....	4	36	112	6	2	5	11	.....
Professional class.....	224	11	2	10	51	98	12	9	13	18	.....
Merchant class.....	356	8	1	4	61	233	10	2	6	30	1
Miscellaneous.....	171	9	1	1	59	67	6	2	7	19	.....
SKILLED WORKERS											
Skilled workers, N.E.S.....	132	3	.....	1	21	83	3	3	6	12	.....
Bakers.....	9	.....	.....	.....	1	4	.....	.....	1	3	.....
Barbers.....	11	.....	.....	1	3	4	1	.....	1	1	.....
Blacksmiths.....	6	.....	.....	.....	1	3	.....	.....	2	.....	.....
Bookbinders.....	2	.....	.....	.....	.....	1	.....	.....	.....	1	.....
Butchers.....	5	.....	.....	.....	.....	4	1	.....	.....	.....	.....
Cabinetmakers.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Carpenters.....	11	2	1	.....	2	3	1	.....	1	1	.....
Dressmakers.....	5	.....	.....	1	1	3	.....	.....	.....	.....	.....
Engravers.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Engineers, locomotive.....	3	.....	.....	.....	2	1	.....	.....	.....	.....	.....
Engineers, marine.....	3	.....	.....	.....	.....	3	.....	.....	.....	.....	.....
Engineers, stationary.....	3	.....	.....	.....	1	2	.....	.....	.....	.....	.....
Electricians.....	13	1	.....	.....	.....	11	.....	.....	.....	1	.....
Fur workers.....	2	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Harness and saddle makers.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Jewellers, goldsmiths, silversmiths.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Locksmiths.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Machinists.....	19	.....	.....	1	5	10	.....	.....	1	2	.....
Masons and bricklayers.....	3	.....	.....	.....	1	2	.....	.....	.....	.....	.....
Milliners.....	3	.....	.....	.....	2	1	.....	.....	.....	.....	.....
Painters and glaziers.....	12	.....	.....	.....	1	11	.....	.....	.....	.....	.....
Photographers.....	4	.....	.....	.....	1	2	1	.....	.....	.....	.....
Plasterers.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Plumbers.....	3	.....	.....	.....	2	1	.....	.....	.....	.....	.....
Printers, pressmen and printing trades.....	6	.....	.....	.....	2	4	.....	.....	.....	.....	.....
Shoemakers.....	5	.....	.....	.....	2	3	.....	.....	.....	.....	.....
Seamstresses.....	2	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Sheet metal workers.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tailors.....	5	.....	.....	.....	1	4	.....	.....	.....	.....	.....
Textile workers, including weavers and spinners.....	15	.....	.....	.....	.....	4	10	.....	.....	1	.....
Woodworkers, N.E.S.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Automobile mechanics.....	10	.....	.....	1	.....	8	1	.....	.....	.....	.....
Ironworkers, N.E.S.....	11	.....	.....	.....	1	10	.....	.....	.....	.....	.....
UNSKILLED AND SEMI-SKILLED WORKERS											
Unskilled and semi-skilled, N.E.S.....	21	.....	.....	.....	.....	2	16	.....	.....	3	.....
Lumbermen.....	8	.....	.....	1	.....	2	.....	.....	.....	5	.....
Miners.....	36	.....	.....	1	6	14	1	.....	.....	14	1
Fishermen.....	4	1	.....	.....	.....	.....	1	.....	.....	1	.....
General labourers.....	33	4	.....	3	8	16	.....	.....	.....	2	.....
Manufacturing.....	24	.....	.....	.....	10	12	.....	.....	1	1	.....
Construction.....	2	.....	.....	.....	.....	2	.....	.....	.....	.....	.....
Transportation.....	31	.....	.....	2	13	12	1	.....	.....	3	.....
Apprentices to skilled trades.....	3	.....	.....	.....	1	.....	.....	.....	.....	1	.....
Domestic servants.....	80	6	.....	3	14	47	.....	3	1	5	.....
Dependent children.....	1,584	126	13	82	268	788	58	47	76	131	.....
Dependent wives.....	1,535	81	13	64	224	800	50	43	76	183	1
Occupation not given.....	660	34	13	26	188	276	13	18	30	88	4
Totals.....	5,643	331	52	227	1,014	2,794	191	157	285	584	8

TABLE 22

Total Immigration to Canada, Showing Intended Occupation by Province of Destination, for the Fiscal Year Ended March 31, 1938

Intended Occupation	Totals	Nova Scotia	Prince Edward Island	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon Territory	Northwest Territories
Farming class.....	1,503	54	8	25	212	460	287	108	190	159		
Clerical class.....	314	14		7	71	179	6	3		8		
Professional class.....	446	28	3	12	110	166	37	14	27	46		3
Merchant class.....	531	11	1	7	121	321	13	3	8	45	1	
Miscellaneous.....	238	14	2	2	79	85	11	6	9	29		1
SKILLED WORKERS												
Skilled workers, N.E.S.....	217	5		2	46	127	5	3	8	21		
Bakers.....	18				1	12			1	4		
Barbers.....	24			1	4	13	1		2	3		
Blacksmiths.....	10				4	4						
Bookbinders.....	2				1	1				1		
Butchers.....	8				7	1						
Cabinetmakers.....	2				1	1						
Carpenters.....	30	6	1		4	15	2		1	1		
Dressmakers.....	16			1	4	7				4		
Engravers.....	1					1						
Engineers, locomotive.....	3				2	1						
Engineers, marine.....	12	2			3	5				2		
Engineers, stationary.....	3				1	2						
Electricians.....	16	3				12				1		
Fur workers.....	6				4	2						
Harness and saddle makers.....	2			1	1	1						
Jewellers, goldsmiths, silversmiths.....	3	1			1	1						
Locksmiths.....	2				2							
Machinists.....	25	1		1	5	15				2		
Masons and bricklayers.....	13				4	6	1		1	2		
Milliners.....	3				2	1						
Painters and glaziers.....	20				7	13						
Photographers.....	8				2	4	1			1		
Plasterers.....	2				1	1				1		
Plumbers.....	12	2			4	5	1					
Printers, pressmen and printing trades.....	10				3	6				1		
Shoemakers.....	6				2	4						
Seamstresses.....	4				4							
Sheet metal workers.....	1				1							
Tailors.....	12				1	11						
Tanners.....	1			1								
Textile workers, including weavers and spinners.....	34				9	24				1		
Watch and clock makers.....	1				1							
Woodworkers, N.E.S.....	1				1							
Automobile mechanics.....	19			1	4	12	1			1		
Ironworkers, N.E.S.....	19	1		1	2	14				1		
Moulders.....	1					1						
UNSKILLED AND SEMI-SKILLED WORKERS												
Unskilled and semi-skilled, N.E.S.....	46				11	26				9		
Lumbermen.....	14			2	1	5				6		
Miners.....	60	3			8	28	1		1	18	1	
Fishermen.....	49	40		1		1	1			6		
General labourers.....	98	11		6	18	49	1	2	3	7	1	
Manufacturing.....	42	1			13	25			1	2		
Construction.....	2					2						
Transportation.....	117	54		3	31	21	1		1	6		
Apprentices to skilled trades.....	17	1			2	9	1			4		
Domestic servants.....	842	202	1	8	157	313	39	28	34	59	1	
Dependent children.....	5,179	186	13	103	828	2,330	592	223	467	432	5	
Dependent wives.....	4,071	130	14	77	623	1,883	330	179	338	493	4	
Occupation not given.....	1,509	62	13	30	288	625	66	49	118	253	5	
Totals.....	15,645	832	56	292	2,699	6,859	1,400	618	1,220	1,647	18	4

TABLE 23

*Immigration, Showing Nationality and Sex, for the Fiscal Year Ended
March 31, 1938*

Nationality	Via Ocean Ports					From the United States					Grand Totals
	Totals	18 Years and Over		Under 18 Years		Totals	18 Years and Over		Under 18 Years		
		M.	F.	M.	F.		M.	F.	M.	F.	
African (not British).....	1	1									1
Albanian.....	8		4	3	1						8
Argentinian.....	1		1								1
Austrian.....	50	8	21	5	16	1		1			51
Belgian.....	132	48	42	17	25	5	1	4			137
Brazilian.....	1		1								1
British.....	3,351	1,022	1,601	362	366	852	254	518	50	30	4,203
Bulgarian.....	27	2	14	4	7	1				1	28
Cuban.....	1	1									1
Czecho-Slovakian.....	1,608	232	550	424	402	2	1	1			1,610
Danish.....	38	9	19	5	5	1	1				39
Danish.....	1	1									1
Dutch.....	69	26	21	10	12	3	2	1			72
Estonian.....	2	1	1								2
Finnish.....	102	17	38	24	23	1	1				103
French.....	83	37	33	7	6	5		5			88
German.....	139	40	52	31	16	11	4	4	2	1	150
Greek.....	104	10	44	23	27						104
Guatemalan.....	2			2							2
Hungarian.....	439	10	179	132	118	4	2	1	1		443
Italian.....	328	22	142	79	85	4	1	2	1		332
Japanese.....	99	23	53	16	7						99
Jugo-Slavian.....	658	58	247	213	140						658
Latvian.....	10	1	4	1	4						10
Lithuanian.....	42	5	21	10	6	1		1			43
Mexican.....	25		1	14	10						25
Norwegian.....	20	9	8	1	2	2	1	1			22
Peruvian.....	2	1			1						2
Polish.....	2,105	277	740	546	542	4	2	2			2,109
Roumanian.....	316	38	113	78	87	1		1			317
Russian.....	12	4	5	1	2	6	4	2			18
Spanish.....	8	4	2	1	1						8
Swedish.....	13	5	4	1	3	5	3	1		1	18
Swiss.....	154	49	44	30	31	7	6	1			161
Syrian.....	14	1	8	4	1						14
Turkish.....	3	1	1	1							3
U.S.A. citizens.....	34	10	8	11	5	4,727	1,414	1,751	748	814	4,761
Totals.....	10,002	1,973	4,022	2,056	1,951	5,643	1,697	2,297	802	847	15,645

TABLE 24

Immigration from the United States, Showing State of Last Residence, by Intended Occupation and Sex, for the Fiscal Year 1937-8

State of Last Residence	Farming Class				Labouring Class				Mechanics				Trading and Clerical Classes				Mining Class				Female Domestic		Other Classes			
	18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years			
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
Alabama.....	1	1																			1	1	2	1		
Alaska.....													1													
Arizona.....								1	1				1								2	1	1	3		
Arkansas.....																							1			
California.....	41	20	3	6	2	1				14	9	2	3	14	17	4	1	4	1		2	30	75	29	29	
Colorado.....	3	3	2	1																	2	9	1	3		
Connecticut.....	4		3	1						2	3	1		7	7	1	1				4	19	16	10		
Delaware.....					1	1																				
District of Columbia.....	1	1			1					1	1			1							1	3	5	1	1	
Florida.....	2	1								1	1			4	3		1				1	3	14	9	6	
Georgia.....			1							1				1								3	5		1	
Hawaii.....														2	2	4								1		
Idaho.....	5	6	2	4										1	1	1		1				2	2	3		
Illinois.....	15	5	3	3	8	2				13	7	2	5	32	17	7	4	2			7	20	80	24	35	
Indiana.....	3	2	1	5	1					5	2	4		6	2	2	1					8	17	5	1	
Iowa.....	6	3		1	1					1	1											5	9	5	6	
Kansas.....	4	4	3	5								1	1	1	1							2	6	3	1	
Kentucky.....	1			2								1		1								1	6		1	
Louisiana.....										1													4	2		
Maine.....	20	4	4	4	10	2	1			5	2	1		4	4			1			3	13	76	34	44	
Maryland.....										2	3	1	3		1							3	10	3	5	
Massachusetts.....	41	20	14	10	6	3	2	3		19	6	1	5	24	14		3	2	1			8	46	155	53	52
Michigan.....	49	24	10	12	28	6	3	1		76	23	20	20	129	63	13	14	1			10	70	275	122	144	
Minnesota.....	18	7	4	7	2	1				7	1			7	10		1	1	1			2	6	38	6	7
Mississippi.....																								1	1	3
Missouri.....	5	1					1							3	2	1						1	3	12	2	
Montana.....	5	2	3	5						4	2	2	1				3					3	19	4	6	
Nebraska.....	5	1	1	1						1				1	1								8		3	

TABLE 24—Conc.

Immigration from the United States, Showing State of Last Residence, by Intended Occupation and Sex, for the Fiscal Year 1937-8—Conc.

State of Last Residence	Farming Class				Labouring Class				Mechanics				Trading and Clerical Classes				Mining Class				Female Domestics		Other Classes						
	18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		18 Years and Over		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	18 Years and Over	Under 18 Years	M.	F.	M.	F.	M.	F.	
Nevada.....																													
New Hampshire.....	7		3		1		2		2	2		1	4	1											1	1			
New Jersey.....	1	2	2	1	2	1	1		9	6	4	2	9	6	4	2									10	44	10	11	
New Mexico.....					1	1																			13	39	11	11	
New York.....	31	16	3	6	30	4	4	7	56	17	8	4	104	49	13	8	7	4	1		26			89	300	109	97		
North Carolina.....	1	1	2						3	1	1		3	2											1	3	1	1	
North Dakota.....	13	8	2	2					3	4	1	1	2	1											4	15	4	2	
Ohio.....	11	4	1	2			1		14	4	5	3	21	13	2	4	2				8				15	66	18	23	
Oklahoma.....	1								2	1				1											1	4			
Oregon.....	8	4			4	2			3	1	1		3	1															
Pennsylvania.....	4	2	1	3	3				13	4	2	3	18	9	2	6	2	1			1				10	36	9	10	
Rhode Island.....	1		1		1				7	2	1		6	2		1										14	33	12	4
South Carolina.....														1	1	1	1									1			1
South Dakota.....	2	1	1											1							2				2	7		3	
Tennessee.....									2	1		3	1	3		2					1					6			1
Texas.....	3	2												1												1			
Utah.....														1												1	4	1	5
Vermont.....	6	2	2	1		1							1	1							1					1	4	3	3
Virginia.....	10	7	2	3					5	1		1	4	3	1						2					20	15	22	
Washington.....	18	4	1		8	7		4	9	2			20	14	4	2	7	2			6				1	3	6	5	
West Virginia.....	1								1																		1	2	
Wisconsin.....	5	1	4	1	1	2	1	1	3	1	1		5	2	2										5	19	8	7	
Wyoming.....									2	2	1	1	1													2	2	1	2
Not given.....	5	1	1		6	2	1		2				3	3			1				2				4	22	5	4	
Totals.....	357	160	80	86	118	37	16	16	290	113	59	57	449	260	62	51	36	12	1	6	80				447	1,635	584	631	

TABLE 25

Immigration via Ocean Ports, Showing Age Groups by Racial Origin, Sex, and Literacy, for the Fiscal Year 1937-8

Racial Origin	10 to 14 Years				15 to 19 Years				20 to 24 Years				25 to 29 Years				30 to 39 Years				40 to 49 Years				50 Years and Over			
	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		Male		Female	
	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.
Albanian	1		1		1						1									1	1					1		1
Arabian	1														2													1
Armenian														1														
Belgian	6		4		3		5		5		4		11		11		15		14		7	1	9		5		1	
Bohemian																												
British																												
English	61		38		86		158		119		167		132		129		154	1	183	1	71		122		101		208	
Irish	11		8		14		20		41		34		31		18		39		33		17		22		19	1	72	
Scotch	8		14		22		29		47		41		26		42		51		75		23		52		37		28	
Welsh	1		3				2		3		7		5		7		4		10		1		5				4	
Bulgarian	1		7		2											1		9		1		2						
Croatian	40		38	1	27		22		1		9	1			22	2			65	4	1		10	3			2	
Czech	14		15		9		13		6		14		7		10		12		30		5		11		2		4	
Dutch	9		2		6		1		5		2		6		6		11		5		2		5		3		3	
East Indian	2				3		1				4																1	
Estonian														1		1												
Finnish	5		9		7		9				4		1		4		3		15		3		5		1			
French	3		1		1		6		8		8		13		9		17		11		6		8		5		16	
German	39		33	1	24		27		8		24		19		39		33		82	1	23		22		6		12	
Greek	7		10		6		9		3		5		2		7	3	2		20	1	2		7		3		1	
Hebrew	24		24		27		23		7		17		15		21		27		24	1	13		15	3	13		21	
Italian	35		40		33		29		2		25		6		31		8		84		3		36	1	4		13	
Japanese	3		2		15		13		8		43		4		13		3		10		1		6				2	
Jugo-Slav	19		13		5		6		1		15		2		5		3		20		2		4		1		1	
Lettish			2		1		1												4								1	
Lithuanian	7						3				6				4		1		10		1		1		1			
Magyar	78	2	79		64		37		6		16		5		48		12		127		4		38		2		10	
Maltese																					1							
Mexican													1															
Montenegrin			1																1									
Moravian	1												1						1									
Negro																	2		2				1					2
Persian																												
Polish	73	1	84	1	25		35		6		17		15		45	1	25		103	4	9		34	3	4		6	
Portuguese													1															5
Roumanian	3		16		7		2		1					6		5		16	1	1		1					2	
Russian	13	1	9		3		4	1			2		2		8	1	9		16	7	3		3	1	2		2	
Ruthenian	166	1	144	3	58		63	2	19		40	2	41		89	5	74		201	26	30		46	10	17	2	23	
Scandinavian—																												
Danish	2		2		2		1				5		3		6		4		7				2		2		1	
Icelandic											1										1					1		
Norwegian	1				3		1				2		1		1		5		6				2					
Swedish	1		3		4						2		7		5		6		7		2		3				1	
Serbian	15		2		7		4		1		3		6		6	1	6		9	4			3	2			1	
Slovak	117	1	131	3	69		57		11		42		46		90	1	64		202	1	32		43	1	22		31	
Spanish	2										1		1		2		3								1		1	
Spanish American																					1							
Swiss	6		2		6		4		3		2		4		8		12		5		5		6		3		2	
Syrian		1		1	1				1		2				2		1		1	1					1		2	
Turkish																							1					
Totals	775	7	737	10	541		585	3	312		566	4	406		700	14	616	1	1,412	53	274	1	526	25	256	3	473	

TABLE 26

Immigration from the United States, Showing Age Groups by Racial Origin, Sex, and Literacy, for the Fiscal Year 1937-8

Racial Origin	10 to 14 Years				15 to 19 Years				20 to 24 Years				25 to 29 Years				30 to 39 Years				40 to 49 Years				50 Years and Over			
	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		Male		Female	
	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.	Lit.	Ill.
Albanian.....																												
Armenian.....																												
Belgian.....	1		1					2				2		2		2		4		2		1		1		1		
Bohemian.....												1								1								
British—																												
English.....	53		65		41		44		50		89		84		123		196		118		133		152		196			
Irish.....	29		24		14		27		14		29		29		61		46		69		34		57	1	50		65	
Scotch.....	20		18		13		16		15		31		24		34		69		87		56		57		72		77	
Welsh.....	2		1		1		3				2		1		4		3		7		7		2		5		2	
Bulgarian.....			1																		1							
Croatian.....								1		2												1						
Czech.....								1		1																		
Dutch.....	3		4		2		4		2		8		2		15		10		8		9		11		13		1	
Estonian.....																											7	
Finnish.....	1																										1	
French.....	27		33		23		70		31		61		32		50		41		69		43		38		42		55	
German.....	17		13		9		13		17		37		27		40		60		80		38		42		40		37	
Greek.....					1				1		2										4							
Hebrew.....	6		6		5		10		9		21		18		21		38		30		22		11		11		8	
Italian.....	2		1		4		4		1		6		2		5		10		8		6		1		5		2	
Jugo-Slav.....	1						1				3				2		2		1									
Lithuanian.....											1				1		1		1									
Magyar.....					1		1				4		2		3		5		2		1				1			
Negro.....			1		1		1				4				1		2		3		1		1					
North American Indian.....					1		1				1				1		2		3		1		1		1		2	
Persian.....					1		1														1							
Polish.....	2		1		1		2		2		5		3		7		3		1		2		3		4		3	
Portuguese.....																												
Roumanian.....	1										1				2		1		1		1							
Russian.....	2		2		1				2		1		1		1		4		4		1				1			
Ruthenian.....											2				1				1									
Scandinavian—																												
Danish.....	1		2		1		4		4		3		2		1		4		2		1		2		6			
Icelandic.....																												
Norwegian.....	1		2		4				3		10		4		8		4		4		9		6		12		10	
Swedish.....	4		1		1		1		1		5		7		11		11		8		6		2		4		9	
Serbian.....											3																	
Slovak.....					1										3													
Spanish.....																												
Swiss.....	3				1		2		1		1		1		1		2		1		1		1				3	
Syrian.....											1				1				2								1	
Totals.....	176		176		125		203		156		331		245		403		456		598		372	1	371	1	424		431	

TABLE 27

Immigration via Ocean Ports, Showing Language of Immigrants 10 Years and Over by Origin, for the Fiscal Year 1937-8

Origins	Totals	French	English	German	Norwegian	Swedish	Flemish	Dutch	Danish	Finnish	Lettish	Lithuanian	Russian	Hebrew	Ruthenian Russian Ukrainian	Polish	Roumanian	Slovenian	Croat (Serbian)	Czech (Bohemian)	Hungarian (Magyar)	Italian	Spanish	Greek	Albanian	Turkish	Bulgarian	Japanese	East Indian	Armenian (Armate)	Syrian (Arabic)			
		Albanian.....	7																										7					
Arabian.....	4																																	
Armenian.....	3																																	
Belgian.....	101	19	1				80	1																										
Bohemian.....	3			3																														
British—																																		
English.....	1,731	1	1,730																															
Irish.....	337		337																															
Scotch.....	539		539																															
Welsh.....	52		52																															
Bulgarian.....	26							3																										
Croatian.....	248																2			240	6													
Czech.....	153		2													21			2	2	128													
Dutch.....	66		2		12			52																										
East Indian.....	11																													11				
Estonian.....	2				2																													
Finnish.....	66		3							63																								
French.....	112	92	16	2				1																										
German.....	393		14	326				1				1				19	11		11		9			1										
Greek.....	89	2	2																						83									
Hebrew.....	277	3	43	24				1				3	3	87		107	4		1		1													
Italian.....	353	3	5																		1		347											
Japanese.....	123																													123				
Jugo-Slav.....	97																		1	75	21													
Lettish.....	10			1							9																							
Lithuanian.....	34		1										33																					
Magyar.....	528		2	11													24		11	4	475			1										
Maltese.....	1		1																															
Mexican.....	1																							1										
Montenegrin.....	2																		2															
Moravian.....	3																				3													
Negro.....	8		8																															
Persian.....	1																																	
Polish.....	496		6	5									1		1	481					2													
Portuguese.....	1																																	
Roumanian.....	61			3													44		11		1													
Russian.....	89	1	1										28		2	9	46				3								1					
Ruthenian.....	1,074		2									1	4		458	573	7		2	27														

TABLE 27—*Conc.*Immigration via Ocean Ports, Showing Language of Immigrants 10 Years and Over by Origin, for the Fiscal Year 1937-8—*Con.*

Origins	Totals	French	English	German	Norwegian	Swedish	Flemish	Dutch	Danish	Finnish	Letish	Lithuanian	Russian	Hebrew	Ruthenian Rusniak Ukrainian	Polish	Roumanian	Slovenian	Croat (Serbian)	Czech (Bohemian)	Hungarian (Magyar)	Italian	Spanish	Greek	Albanian	Turkish	Bulgarian	Japanese	East Indian	Armenian (Armate)	Syrian (Arabic)				
		Scandinavian—																																	
Danish.....	37		3						34																										
Icelandic.....	3		3																																
Norwegian.....	23		3		20																														
Swedish.....	40					40																													
Serbian.....	65																11																		
Slovak.....	964		3	2															54	891															
Spanish.....	11		3																59		5														
Spanish American.....	2		2												2								8				2								
Swiss.....	68	8		54																															
Syrian.....	14	3	2																															9	
Turkish.....	1																																		
Totals.....	8,330	129	2,792	446	20	40	80	59	34	63	9	38	36	87	472	1,247	103	1	470	1,086	491	348	12	83	7	1	25	123	11	1	16				

TABLE 28

Immigration from the United States, Showing Language of Immigrants 10 Years and Over by Origin, for the Fiscal Year 1937-8

Origins	Totals	Language of Immigrants																							
		French	English	German	Norwegian	Swedish	Flemish	Dutch	Danish	Finnish	Lithuanian	Russian	Hebrew	Ruthenian Rusniak Ukrainian	Polish	Roumanian	Croat (Serbian)	Czech (Bohemian)	Hungarian (Magyar)	Italian	Greek	Bulgarian	Armenian (Arամաե)	Syrian (Arabic)	
Albanian	1		1																						
Armenian	3		1																					2	
Belgian	19		13				6																		
Bohemian	4		2												2										
British—																									
English	1,471		1,471																						
Irish	549		549																						
Scotch	589		589																						
Welsh	39		39																						
Bulgarian	2																1						2		
Croatian	4		3														1								
Czech	3		3																						
Dutch	98		94					4																	
Estonian	1		1																						
Finnish	12		10						2																
French	614	380	234																						
German	470		433	35																					
Greek	8		5																2			3			
Hebrew	216		189	3								1	18			2			2						
Italian	58	1	37																	20					
Jugo-Slav	8		8																						
Lithuanian	5		3							2															
Magyar	19	1	14																4						
Negro	14		14																						
North American Indian	7		7																						
Persian	1		1																						
Polish	40		29											11											
Portuguese	2		2																						
Roumanian	9		6										1		1				1						
Russian	19		14	1								3													
Ruthenian	8		5										2												
Scandinavian—																									
Danish	33		25									8													
Icelandic	3		3																						
Norwegian	77		72				4																		
Swedish	71		67																						
Serbian	4		2															2							
Slovak	11		4	1															6						
Spanish	2		2																						
Swiss	18	3	15																						
Syrian	7		6																						1
Totals	4,519	385	3,973	40	4	5	6	4	8	2	2	4	19	3	15	3	3	6	9	20	3	2	2	1	

TABLE 29

Immigration via Ocean Ports, Showing Conjugal Condition by Age Groups and Sex, for the Fiscal Year 1937-8

Age Groups	Males					Females				
	Married	Single	Widowed	Divorced	Totals	Married	Single	Widowed	Divorced	Totals
Years 0-14.....		1,619			1,619		1,582			1,582
" 15-19.....	2	539			541	49	539			588
" 20-24.....	22	290			312	226	342	2		570
" 25-29.....	157	248	1		406	461	243	6	4	714
" 30-39.....	459	151	7		617	1,240	198	21	6	1,465
" 40-49.....	229	40	5	1	275	417	87	41	6	551
50 years and over	178	28	52	1	259	188	65	246	4	503
Totals.....	1,047	2,915	65	2	4,029	2,581	3,056	316	20	5,973

TABLE 30

Immigration from the United States, Showing Conjugal Condition by Age Groups and Sex, for the Fiscal Year 1937-8

Age Groups	Males					Females				
	Married	Single	Widowed	Divorced	Totals	Married	Single	Widowed	Divorced	Totals
Years 0-14.....		720			720		756			756
" 15-19.....	1	124			125	61	142			203
" 20-24.....	36	119	1		156	229	101		1	331
" 25-29.....	151	92		2	245	308	82	6	7	403
" 30-39.....	351	90	4	11	456	483	70	25	20	598
" 40-49.....	316	46	6	5	373	274	42	41	15	372
50 years and over	297	45	70	12	424	230	60	182	9	481
Totals.....	1,152	1,236	81	30	2,499	1,585	1,253	254	52	3,144

TABLE 31

*Rejections at Ocean Ports, Showing Nationality and Sex, for the Fiscal
Year 1937-8*

Nationality	Totals	18 Years and Over		Under 18 Years	
		Male	Female	Male	Female
Austrian.....	5	3	2		
Belgian.....	4	2	2		
British.....	86	60	16	10	
Chilean.....	2	2			
Chinese.....	1	1			
Cuban.....	1	1			
Czecho-Slovakian.....	2	1	2		
Danish.....	5	4	1		
Dutch.....	5	2	2	1	
Finnish.....	1	1			
French.....	3	3			
German.....	10	9	1		
Greek.....	3	2	1		
Hungarian.....	2	2			
Italian.....	19	17	1	1	
Japanese.....	2	2			
Jugo-Slavian.....	5	5			
Lithuanian.....	2	2			
Luxemburg.....	2	2			
Mexican.....	5	1		1	3
Norwegian.....	3	2	1		
Panamanian.....	1	1			
Persian.....	1	1			
Polish.....	15	12	1	1	1
Portuguese.....	3	3			
Roumanian.....	4	4			
Russian.....	1			1	
Spanish.....	3	3			
Swedish.....	4	3		1	
Swiss.....	3	2	1		
Turkish.....	2		2		
U.S.A. Citizens.....	4	4			
Totals.....	210	157	33	16	4

Origin, Sex, Occupation, and Destination of Immigrant Arriv

Racial Origin	Sex				Totals	Trade or								
	18 Years and Over		Under 18 Years			Farming Class			Labouring Class			Mechanics		
	Males	Females	Males	Females		Males	Females	Children	Males	Females	Children	Males	Females	Children
Albanian.....		4	3	1	8									
Arabian.....		3	1		4									
Armenian.....	1	2	1		4									
Belgian.....	45	41	15	22	123	37	24	24		1		1		
Bohemian.....	1	2		2	5	1	1	2						
British—														
English.....	609	901	225	214	1,949	97	22	51	128	12	21	109	40	21
Irish.....	154	147	31	32	364	63	4	10	25	2	1	19	6	5
Scotch.....	191	294	52	67	604	41	4	10	23	5	4	44	14	9
Welsh.....	13	34	3	5	55	3		1	1			4		
Bulgarian.....	2	14	5	7	28	1	1	1						
Croatian.....	2	123	86	66	277	1		7			2			
Czech.....	33	75	41	39	188	30	28	42						
Dutch.....	30	21	37	31	119	25	14	38	1					
East Indian.....		6	7	1	14			1	2		1		1	
Estonian.....	1	1			2	1	1							
Finnish.....	9	30	18	22	79	6	5	4	3	1	1		2	
French.....	49	56	14	15	134	6	6	6	4	3	2	3	1	
German.....	93	186	117	127	523	68	54	106	2		3	6	4	2
Greek.....	13	51	25	26	115	1		1	5		1	1		
Hebrew.....	80	113	68	56	317	2	2	7	4	1		9	11	3
Italian.....	26	198	91	93	408	4	2	8	9	2	11	2		1
Japanese.....	23	83	20	13	139	18		4	5	4				
Jugo-Slav.....	9	46	35	26	116	8	6	18						
Lettish.....	1	5	1	4	11	1	1							
Lithuanian.....	3	22	8	4	37	2	2	4			1			
Magyar.....	35	247	184	156	622	30	17	53	2	1	7			
Maltese.....	1			1	2			1	1					
Mexican.....		1			1									
Montenegrin.....		1		1	2									
Moravian.....		2	1		3									
Negro.....	3	5		1	9				2					
Persian.....		1		1	2		1	1						
Polish.....	59	229	160	167	615	51	51	113	1	1	5	2	3	
Portuguese.....	1				1									
Roumanian.....	9	27	20	21	77	9	6	13						
Russian.....	18	42	34	26	120	14	12	25				1		
Ruthenian.....	190	469	352	345	1,356	181	159	348		2	2			
Scandinavian—														
Danish.....	9	21	5	5	40	6	4	4				1		1
Icelandic.....	2	1			3	1			1					
Norwegian.....	10	12	3	2	27	4	1	1	1	1		1		
Swedish.....	16	17	9	5	47	13	10	9				1		
Serbian.....	7	31	32	13	83	7	6	10			1			
Slovak.....	184	420	328	317	1,249	180	143	306	2	1	6		1	
Spanish.....	5	4	4	1	14	2	2	2	1					
Spanish American.....	2			1	3	1								
Swiss.....	31	25	17	14	87	27	16	26					1	
Syrian.....	3	8	3	1	15	1	1	2				1		
Turkish.....		1			1									
Totals.....	1,973	4,022	2,056	1,951	10,002	943	607	1,260	221	38	68	205	84	42

als at Ocean Ports, for the Fiscal Year Ended March 31, 1938

Occupation											Destination											
Trading and Clerical Classes			Mining Class			Female Domestic Servants		Other Classes			Nova Scotia	New Brunswick	Prince Edward Island	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon Territory	Northwest Territories	
Males	Females	Children	Males	Females	Children	18 Years and Over	Under 18 Years	Males	Females	Children												
						1			4	4			1	7								
								1	2	1			1	1	2							
								1	2	1				1	3							
1						1	1	6	15	12			11	103	8		1					
	1										4									1		
114	75	14	14	2	1	311	42	147	439	289	385	29	1	311	724	58	38	72	330	1		
19	6	4	2		3	55	3	26	74	37	32	8	1	66	180	10	11	10	45	1		
25	19	5	5	1		110	12	53	141	79	19	13	1	106	301	20	9	36	99			
	1		3			7		2	26	7	2			5	28	2	1	4	13			
1									13	11				4	23				1			
1				1		1	3		121	140				26	175	2	1	19	54			
1						3	3	2	44	35				22	65	77	3	17	4			
2	2	1						2	5	29	3	1		17	25	33	15	15	10			
	1								3	5									14			
																		2				
						6	2		16	33				7	52	1	2	2	15			
3	3	1				13	1	33	30	19	9			66	22	10	5	6	13		3	
6	4	3				12	9	11	112	121		1		84	161	61	53	98	65			
5						2	1	1	49	48	2			10	95	1	2		5			
38	10	14				14	3	27	75	97	7	3		116	148	25	2	10	6			
3				2	2	6	4	8	186	158	3	3		85	244	7	6	9	51			
						3			76	29									139			
1						2			38	43				10	58	25	3	9	11			
						1			3	5					8	2			1			
1									18	8				7	16	6	1	6	1			
						9	10	3	220	270	7	2		139	321	11	35	96	11			
														1	1							
									1	1					1							
									2	1					2							
1									5	1	2			4	2							
		1				11	10	5	163	198	8	1		82	223	94	80	115	11		1	
1									21	28					1							
1	2					2	2	2	26	33				6	28	21	22	28	14	1		
						20	12	9	288	335	4			132	382	424	134	241	39			
						4		2	13	5	3		1	4	3	2	3	12	12			
									1					1		1			1			
2								2	10	4		1		5	2		2	7	10			
						1		2	6	5				13	20		3	3	8			
						2	1		23	33				29	50	4						
1						14	24	2	261	309	9	2		240	549	275	23	106	38	7		
1								1	2	3				8	5				1			
1								1		1				2	1							
1						4	2	3	4	3				14	11	17		6	39			
1		1				1			6	1	2	1		7	1	2		2				
									1					1								
229	124	44	24	6	6	617	145	351	2,546	2,442	501	65	4	1,685	4,065	1,209	461	935	1,063	10	4	

Origin, Sex, Occupation, and Destination of Immigrant Arrivals

Racial Origin	Sex				Totals	Trade or								
	18 Years and Over		Under 18 Years			Farming Class			Labouring Class			Mechanics		
	Males	Females	Males	Females		Males	Females	Children	Males	Females	Children	Males	Females	Children
Albanian.....	1				1									
Armenian.....	2	1			3									
Belgian.....	9	8	3	2	22	5	2	1	1		1	2	1	
Bohemian.....	1	3	1	1	6	1	1	2						
British—														
English.....	548	759	276	287	1,870	107	55	50	34	11	10	100	33	44
Irish.....	180	293	97	116	686	45	17	14	15	2	3	24	17	16
Scotch.....	240	293	98	106	737	43	23	23	12	6	2	49	18	16
Welsh.....	16	19	9	4	48	2	2	3	2		1	1		
Bulgarian.....	1			1	2									
Croatian.....	1	3			4				1					
Czech.....	1	2			3									
Dutch.....	37	51	12	13	113	9	8	7	3	1		6	2	4
Ethonian.....		1			1		1							
Finnish.....	6	5	3		14	3	2	3				1		
French.....	193	319	116	146	774	51	16	30	23	7	9	23	15	4
German.....	182	242	80	67	571	28	13	15	9	3	3	35	13	15
Greek.....	5	2	3	1	11	2						1		
Hebrew.....	101	97	34	35	267	3			5	2	2	16	5	6
Italian.....	27	24	9	9	69	5		1	4	1	1	7	3	3
Jugo-Slav.....		7	1	1	9									
Lithuanian.....	2	3	1		6	1	1							
Magyar.....	7	11	3	3	24	2	1	1				3	1	1
Negro.....	4	8	4	1	17					1		2		
North American Indian.....	1	3	2	5	11	1		2						
Persian.....	1				1							1		
Polish.....	15	22	4	5	46	5	2		1	1		3	2	1
Portuguese.....		2			2									
Roumanian.....	4	4	2	1	11	2	1	2				1		
Russian.....	12	2	5	3	22	6		3	1					
Ruthenian.....	3	5	3	2	13	1	2					1		
Scandinavian—														
Danish.....	17	10	7	9	43	7	3	4	1			2		2
Icelandic.....	2	1	1	1	5	1								
Norwegian.....	34	38	12	7	91	14	4	1	2	1		8	2	2
Swedish.....	30	36	13	16	95	8	4	4	2			2	1	2
Serbian.....	1	3			4	1	1							
Slovak.....	5	6		2	13	2			2	1		1		
Spanish.....	1	1			2	1								
Swiss.....	5	8	4	1	18	1	1							
Syrian.....	2	5		1	8							1		
Totals.....	1,697	2,297	802	847	5,643	357	160	166	118	37	32	290	113	116

from the United States, for the Fiscal Year Ended, March 31, 1938

Occupation										Destination											
Trading and Clerical Classes			Mining Class			Female Domestic Servants		Other Classes			Nova Scotia	New Brunswick	Prince Edward Island	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon Territory	Northwest Territories
Males	Females	Children	Males	Females	Children	18 Years and Over	Under 18 Years	Males	Females	Children											
1													1								
1	1							1													
						1		1	4	3		1		21							
									2					1	4					1	
153	92	34	12	2	1	30		142	536	424	153	106	21	199	1,005	41	33	88	224		
42	35	20	3	3		14		51	205	160	25	25	4	72	369	24	16	50	98	3	
61	38	12	7	3		11		68	194	151	69	27	14	81	382	19	17	29	97	2	
4	3	2	2					5	14	7		3		3	29	2		3	8		
1										1				1					1		
									3					4							
1									2		1			1							
7	7	1	1					11	33	13	6	2	2	12	53	12	1	11	14		
																			1		
			1			1		1	2		1			7	3			1	2		
37	24	12	4	2	5	10		55	245	202	34	41	6	461	185	12	3	6	26		
57	26	15	2	1		5		51	181	99	20	3	1	51	342	28	32	50	43	1	
2									2	4		1		4	4				2		
55	15	9	2			1		20	74	52	6			78	158	10	3	4	8		
5	3		1		1			5	17	12	1	1		19	33	1		2	12		
									7	2					6			1	2		
								1	2	1				3	1	2					
	1		1					1	8	4				19	1	2	1	1			
						2		2	5	5	3	1		1	11	1					
	1								2	5		1	3	4	3						
														1							
2	3	1				1		4	13	7					32	6	2	4	1	1	
									2										1		
1									3	1				9	1			1			
1		3						4	2	2				2	12		1	5	2		
1	1								2	5				8	4	1					
3	1	1				1		4	5	9		12		1	11	3	1	4	11		
1									1	2						3			2		
2	4	2				1		8	26	14	1	1		6	26	5	27	9	16		
7	5	1		1		1		11	24	22	9		1	11	34	8	15	6	10	1	
									2						2	2					
									5	2				1	11			1			
									1		1							1			
4						1			6	5				3	7		1	6	1		
									1	5	1		2	2					2		
449	260	113	36	12	7	80		447	1,635	1,215	331	227	52	1,014	2,794	191	157	285	584	8	

Origin, Sex, Occupation, and Destination of Total Immi

Racial Origin	Sex				Totals	Trade or								
	18 Years and Over		Under 18 Years			Farming Class			Labouring Class			Mechanics		
	Males	Females	Males	Females		Males	Females	Children	Males	Females	Children	Males	Females	Children
Albanian	1	4	3	1	9									
Arabian		3	1		4									
Armenian	3	3	1		7									
Belgian	54	49	18	24	145	42	26	25	1	1	1	3	1	
Bohemian	2	5	1	3	11	2	2	4						
British—														
English	1,157	1,660	501	501	3,819	204	77	101	182	23	31	209	73	65
Irish	334	440	128	148	1,050	108	21	24	40	4	4	43	23	21
Scotch	431	587	150	173	1,341	84	27	33	35	11	6	93	32	25
Welsh	29	53	12	9	103	5	2	4	3		1	5		
Bulgarian	3	14	5	8	30	1	1	1						
Croatian	3	126	86	66	281	1		7	1		2			
Czech	34	77	41	39	191	30	28	42						
Dutch	67	72	49	44	232	34	22	45	4	1		6	2	4
East Indian		6	7	1	14		1	2			1		1	
Estonian	1	2			3	1	2							
Finnish	15	35	21	22	93	9	7	7	3	1	1	1	2	
French	242	375	130	161	908	57	22	36	27	10	11	26	16	4
German	275	428	197	194	1,094	96	67	121	11	3	6	41	17	17
Greek	18	53	28	27	126	3		1	5		1	2		
Hebrew	181	210	102	91	584	5	2	7	9	3	2	25	16	9
Italian	53	222	100	102	477	9	2	9	13	3	12	9	3	4
Japanese	23	83	20	13	139	18		4	5	4				
Jugo-Slav	9	53	36	27	125	8	6	18						
Lettish	1	5	1	4	11	1	1							
Lithuanian	5	25	8	5	43	3	3	4		1				
Magyar	42	258	187	159	646	32	18	54	2	1	7	3	1	1
Maltese	1			1	2			1	1					
Mexican		1			1									
Montenegrin		1		1	2									
Moravian		2	1		3									
Negro	7	13	4	2	26				2	1		2		
North American Indian	1	3	2	5	11	1								
Persian	1	1		1	3		1	1				1		
Polish	74	251	164	172	661	56	53	113	2	2	5	5	5	1
Portuguese	1	2			3									
Roumanian	13	31	22	22	88	11	7	15				1		
Russian	30	44	39	29	142	20	12	28	1			1		
Ruthenian	193	474	355	347	1,369	182	161	348		2	2	1		
Scandinavian—														
Danish	26	31	12	14	83	13	7	8	1			3		3
Icelandic	4	2	1	1	8	2			1					
Norwegian	44	50	15	9	118	18	5	2	3	2		9	2	2
Swedish	46	53	22	21	142	21	14	13	2			3	1	2
Serbian	8	34	32	13	87	8	7	10			1			
Slovak	189	426	328	319	1,262	182	143	306	4	2	6	1	1	
Spanish	6	5	4	1	16	3	2	2	1					
Spanish American	2			1	3	1								
Swiss	36	33	21	15	105	28	17	26					1	
Syrian	5	13	3	2	23	1	1	2				2		
Turkish		1			1									
Totals	3,670	6,319	2,858	2,798	15,645	1,300	767	1,426	339	75	100	495	197	158

grant Arrivals, for the Fiscal Year Ended March 31, 1938

Occupation										Destination											
Trading and Clerical Classes			Mining Class			Female Domestic Servants		Other Classes			Nova Scotia	New Brunswick	Prince Edward Island	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon Territory	Northwest Territories
Males	Females	Children	Males	Females	Children	18 Years and Over	Under 18 Years	Males	Females	Children											
1									4	4			2	7							
						1			2	1			1	1	2						
1	1							2	2	1	1			3	3						
1						2	1	7	19	15	1		11	124	8		1				
	1								2		4			1	4					2	
267	107	48	26	4	2	341	42	289	975	713	538	135	22	510	1,729	99	71	160	554	1	
61	41	24	5	3	3	69	3	77	279	197	57	33	5	138	549	34	27	60	143	4	
86	57	17	12	4		121	12	121	335	230	88	40	15	187	683	39	26	65	196	2	
4	4	2	5			7		7	40	14	2	3		8	57	4	1	7	21		
2									13	12				4	24					2	
1				1		1	3		124	140				26	179	2	1	19	54		
2						3	3	2	46	35	1			23	66	77	3	17	4		
9	9	2	1					13	38	42	9	3	2	29	78	45	16	26	24		
	1								3	5									14		
			1			7	2	1	18	33	1			7	59	4	2	3	17		
40	27	13	4	2	5	23	1	88	275	221	43	41	6	527	207	22	8	12	39		3
63	30	18	2	1		17	9	62	293	220	20	4	1	135	503	89	85	148	108	1	
7						2	1	1	51	52	2	1		14	99	1	2		7		
93	25	23	2			15	3	47	149	149	13	3		194	306	35	5	14	14		
8	3		1	2	3	6	4	13	203	170	4	4		104	277	8	6	11	63		
						3			76	29									139		
1						2			45	45				10	64	25	3	10	13		
						1			3	5					8	2			1		
1						1		1	20	9				7	19	7	3	6	1		
	1		1			9	10	4	228	274	7	2		139	340	12	37	97	12		
									1					1	1						
									2	1											
1						2		2	10	6	5	1		5	13	1			1		
	1								2	5		1	3	4	3						
									1												
2	3	2				12	10	9	176	205	8	1		82	255	100	82	119	12	1	1
1									2					1	1				1		
1									24	29				42	34	6	5	1			
2	2	3				2	2	6	28	35				8	40	21	23	33	16	1	
1	1					20	12	9	290	340	4			132	390	428	135	241	39		
3	1	1				5		6	18	14	3	12	1	5	14	5	4	16	23		
1									2	2				1		4			3		
4	4	2				1		10	36	18	1	2		11	28	5	29	16	26		
7	5	1		1		2		13	30	27	9		1	24	54	8	18	9	18	1	
						2	1		25	33				29	52	6					
						14	24	2	266	311	9	2		241	560	275	23	107	38	7	
1								1	3	3	1			8	5			1	1		
								1		1				2	1						
5						5	2	3	10	8				17	18	17	1	12	40		
1		1				1		1	11	2	2	3		9	3	2		2	2		
									1					1							
678	384	157	60	18	13	697	145	798	4,181	3,657	832	292	56	2,699	6,859	1,400	618	1,220	1,647	18	4

Immigration via Ocean Ports, Showing Origin

Racial Origin	Totals												
		British	U.S.A. Citizens	Danish	Peruvian	Cuban	Mexican	Guatemalan	Argentinian	Brazilian	Austrian	Belgian	Bulgarian
Albanian	8												
Arabian	4												
Armenian	4	1											
Belgian	123	8	1									113	
Bohemian	5	1											
British—													
English	1,949	1,922	20				3						
Irish	364	363	1										
Scotch	604	601	2										
Welsh	55	55											
Bulgarian	28												23
Croatian	277	8											
Czech	188	2											
Dutch	119	22	3				22					1	
East Indian	14	14											
Estonian	2												
Finnish	79	7	1										
French	134	30							1			18	
German	523	40	2	1							45		
Greek	115	12											
Hebrew	317	63											
Italian	408	79	1										
Japanese	139	40											
Jugo-Slav	116	6											
Lettish	11	1											
Lithuanian	37	3											
Magyar	622	5	1								5		
Maltese	2	2											
Mexican	1	1											
Montenegrin	2												
Moravian	3												
Negro	9	7											
Persian	2	2											
Polish	615	11											
Portuguese	1	1											
Roumanian	77	2											
Russian	120	3								1			1
Ruthenian	1,356	5											
Scandinavian—													
Danish	40	4											
Icelandic	3	3											
Norwegian	27	6	1										
Swedish	47	3	1										
Serbian	83	1											
Slovak	1,249	6											3
Spanish	14	3				1		2					
Spanish American	3	1		2									
Swiss	87	2											
Syrian	15	4											
Turkish	1	1											
Totals	10,002	3,351	34	1	2	1	25	2	1	1	50	132	27

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by Nationality, for the Fiscal Year 1937-8

Czecho-Slovak	Finnish	French	German	Greece	Dutch	Hungarian	Italian	Jugo-Slavian	Polish	Roumanian	Russian	Danish	Norwegian	Swedish	Swiss	Albanian	Estonian	Latvian	Lithuanian	Spanish	African	Japanese	Syrian	Turkish
																8							4	
		1																						3
4												1												
			1		1																			
				2																				
147								267		3	36													
					67						4													
	71																	2						
	1	1	77				1								6									
			117		1	22		49	84	98					62				1					
	1	1	22	102			1				212	4	5	1					7					
							326	2															99	
31								78		1														
																		10						
69						416		43		83									34					
									2															
3												1												
																					1			
2									597	5														
								23		52														
4		2							103	6														
229								16	1,072	34														
												36												
														20										
		30												13										
1,117								55		27													8	
								119	1	3														
															85									
		1																					10	
1,608	102	83	139	104	69	439	328	658	2,105	316	12	38	20	13	154	8	2	10	42	8	1	99	14	3

TABLE
Immigration from the United States, Showing Racial

Racial Origin	Totals	British	U.S.A. Citizens	Austrian	Belgian	Bulgarian	Czecho-Slovakian	Finnish
Albanian.....	1		1					
Armenian.....	3	1	2					
Belgian.....	22	2	16		4			
Bohemian.....	6	1	5					
British—								
English.....	1,870	358	1,511					
Irish.....	686	97	589					
Scotch.....	737	153	582					
Welsh.....	48	9	39					
Bulgarian.....	2		1			1		
Croatian.....	4	2	2					
Czech.....	3	1	2					
Dutch.....	113	11	100					
Estonian.....	1		1					
Finnish.....	14	3	10					1
French.....	774	44	724		1			
German.....	571	52	503	1				
Greek.....	11	2	9					
Hebrew.....	267	42	217				1	
Italian.....	69	19	45					
Jugo-Slav.....	9	2	7					
Lithuanian.....	6	1	5					
Magyar.....	24	10	13					
Negro.....	17	3	14					
North American Indian.....	11		11					
Persian.....	1	1						
Polish.....	46	8	36					
Portuguese.....	2		2					
Roumanian.....	11	2	8					
Russian.....	22	2	18					
Ruthenian.....	13	1	12					
Scandinavian—								
Danish.....	43	3	39					
Icelandic.....	5	1	4					
Norwegian.....	91	8	81					
Swedish.....	95	4	87					
Serbian.....	4	2	2					
Slovak.....	13	6	6				1	
Spanish.....	2		2					
Swiss.....	18	1	13					
Syrian.....	8		8					
Totals.....	5,643	852	4,727	1	5	1	2	1

Origin by Nationality, for the Fiscal Year 1937-8

French	German	Dutch	Hungarian	Italian	Polish	Roumanian	Russian	Danish	Norwegian	Swedish	Swiss	Lithuanian
	1											
		1	1									
		2										
	4											
	11		2							1		1
					3		3					1
				4							1	
			1									
					1		1					
						1						
							2					
								1				
									2			
										4		
											4	
5	11	3	4	4	4	1	6	1	2	5	7	1

Immigration, via Ocean Ports, Showing Intended

Intended Occupation	Totals																			
		Bohemian	Moravian	Slovak	Jewish	Arabian	English	Irish	Scottish	Welsh	Mexican	Spanish American	Croatian	Montenegrin	Serbian	Belgian	Bulgarian	Czech	Finnish	French
Farming class.....	1,126	1		207	3		140	67	43	3	1	8		8	39	2	35	8	6	
Clerical class.....	131						82	17	22										3	
Professional class.....	222				14		92	12	33	4	1				6				2	
Merchant class.....	175				39		78	9	21	1		1			1	1			2	
Miscellaneous.....	67				4		29	7	5	1							1		12	
SKILLED WORKERS																				
Skilled workers, N.E.S.....	85				2		55	6	16	2					1				1	
Bakers.....	9						1		5											
Barbers.....	13						8		2											
Blacksmiths.....	4						1	2	1											
Butchers.....	3						1	1	1											
Cabinetmakers.....	1							1	1											
Carpenters.....	19				1		10	3	3											
Dressmakers.....	11				2		7													
Engineers, marine.....	9						2	1	5	1										
Electricians.....	3						2												1	
Fur workers.....	4						1													
Harness and saddle makers.....	1								1											
Jewellers, goldsmiths, silversmiths.....	2				2															
Locksmiths.....	1								3											
Machinists.....	6						3		3											
Masons and bricklayers.....	10						4	2	3											
Painters and glaziers.....	8						6													
Photographers.....	4						3													
Plasterers.....	1						1													
Plumbers.....	9						6	1	1											
Printers, pressmen and printing trades.....	4				1		2		1											
Shoemakers.....	1							1												
Seamstresses.....	2						1													
Tailors.....	7				3		3												1	
Tanners.....	1																			
Textile workers, including weavers and spinners.....	19				5		10	2	2										1	
Watch and clock makers.....	1							2											1	
Automobile mechanics.....	9						5		1										1	
Iron workers, N.E.S.....	8						3	1	3											
Moulders.....	1						1													
UNSKILLED AND SEMI-SKILLED WORKERS																				
Unskilled and semi-skilled, N.E.S.....	25				1		6	3	1										3	
Lumbermen.....	6						1	1	1										2	
Miners.....	24						14	2	5	3									1	
Fishermen.....	45						37	6	1										1	
General labourers.....	65			7			12	9	6			2		1					1	
Manufacturing.....	18				3		7	5	5											
Transportation.....	86						65	6	10	1										
Apprentices to skilled trades.....	14				1		6	1	2										8	
Domestic servants.....	762			38	17	1	353	58	122	7		4		3	2		6	8	14	
Dependent children.....	3,595	2	1	589	116	1	331	53	96	8	1	136	1	42	35	11	72	33	27	
Dependent wives.....	2,536	2	1	370	60	1	271	38	77	15	1	104	1	23	39	10	59	21	26	
Occupation not given.....	849		1	38	43	1	289	53	106	8		22		6		4	14	3	15	
Totals.....	10,002	5	3	1,249	317	4	1,949	364	604	55	1	3	277	2	83	123	28	188	79	134

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Occupation by Racial Origin, for the Fiscal Year 1937-8

German	Greek	Dutch	Magyar	Italian	Jugo-Slav	Polish	Roumanian	Russian	Danish	Icelandic	Norwegian	Swedish	Swiss	Ruthenian	Albanian	Eethonian	Lettish	Lithuanian	Maltese	Portuguese	Spanish	Negro	Armenian	East Indian	Japanese	Persian	Syrian	Turkish
81	1	27	52	7	8	59	10	16	6	1	4	14	30	209		1	1	2		2	2		1	1	22		1	
11	2	1	2	1	1	3		2	1		2	2	2	8					1	1	1							
6	5	1	2	2	2	2		1			1		1					1			1							
		1		2		2			1												1		1					
3								1				1																
1						2																						
1				1		1																						
1									1																			
	1					1																						
											1																	
													1															
523	115	119	622	408	116	615	77	120	40	3	27	47	87	1,356	8	2	11	37	2	14	9	4	14	139	2	15	1	

Immigration from the United States, Showing Intended

Intended Occupation	Totals													
		Bohemian	Slovak	Jewish	English	Irish	Scottish	Welsh	North American Indian	Croatian	Serbian	Belgian	Bulgarian	Czech	Finnish
Farming class.....	377	1	2	3	115	46	45	3	1		1	5		3
Clerical class.....	183			7	81	15	21	2						
Professional class.....	224			9	63	19	29	2						1
Merchant class.....	356			52	115	37	51	5				1	1	1
Miscellaneous.....	171			9	38	33	20	4			1			
SKILLED WORKERS														
Skilled workers, N.E.S.....	132			2	45	15	23	1			1			
Bakers.....	9			2	3	1								
Barbers.....	11				2	2	1							
Blacksmiths.....	6				2	1								
Bookbinders.....	2				1	1								
Butchers.....	5				1	1	1				1			
Cabinetmakers.....	1													
Carpenters.....	11				3		3							
Dressmakers.....	5			1	1	1								
Engravers.....	1						1							
Engineers, locomotive.....	3				1		2							
Engineers, marine.....	3				1		1							
Engineers, stationary.....	3				2		1							
Electricians.....	13			1	4		2							
Fur workers.....	2						2							
Harness and saddle makers.....	1				1									
Jewellers, goldsmiths, silversmiths.....	1													
Locksmiths.....	1						1							
Machinists.....	19				9		2							
Masons and bricklayers.....	3						2							
Milliners.....	3			1			1							
Painters and glaziers.....	12				1	9	1							1
Photographers.....	4			1	1	2								
Plasterers.....	1						1							
Plumbers.....	3				3									
Printers, pressmen and printing trades.....	6			1	2		1							
Shoemakers.....	5			2	1									
Seamstresses.....	2													
Sheet metal workers.....	1				1									
Tailors.....	5			3	1									
Textile workers, including weavers and spinners.....	15			3	5	2	1							
Woodworkers, N.E.S.....	1						1							
Automobile mechanics.....	10				6		2							
Iron workers, N.E.S.....	11		1		1	1	4							
UNSKILLED AND SEMI-SKILLED WORKERS														
Unskilled and semi-skilled, N.E.S.....	21			1	4		2	1		1				
Lumbermen.....	8				1	1	4							
Miners.....	36			2	12	3	7	2						1
Fishermen.....	4				3		1							
General labourers.....	33		2	1	8	8	2				1			
Manufacturing.....	24		1	4	9	1	1	1						
Construction.....	2				2		1							
Transportation.....	31				9	5	2							
Apprentices to skilled trades.....	3			1	2									
Domestic servants.....	80			1	30	14	11				1			1
Dependent children.....	1,584	2	2	68	553	204	200	12	7		5	1		3
Dependent wives.....	1,535	3	5	82	498	188	199	14	3	3	3	6	1	2
Occupation not given.....	660			10	223	84	89	1			1		1	2
Totals.....	5,643	6	13	267	1,870	686	737	48	11	4	4	22	2	14

Total Immigration, Showing Intended Occupation

Intended Occupation	Totals																			
		Bohemian	Moravian	Slovak	Jewish	Arabian	English	Irish	Scotch	Welsh	North American Indian	Mexican	Spanish American	Croatian	Montenegrin	Serbian	Belgian	Bulgarian	Czech	Finnish
Farming class.....	1,503	2		209	6		255	113	88	6	1	1	8		9	44	2	35	11	
Clerical class.....	314				7		163	32	43											
Professional class.....	446				23		155	31	62			1					6		1	
Merchant class.....	531				91		193	46	72				1				1	2	2	
Miscellaneous.....	238				13		67	40	25	5							1		1	
SKILLED WORKERS																				
Skilled workers, N.E.S..	217				4		100	21	39	3							1			
Bakers.....	18				2		4	1	5								1		1	
Barbers.....	24						10	2	3											
Blacksmiths.....	10						3	3	1											
Bookbinders.....	2						1	1												
Butchers.....	8						2	2	2								1			
Cabinetmakers.....	2								1											
Carpenters.....	30				1		13	3	6											
Dressmakers.....	16				3		8	1												
Engravers.....	1								1											
Engineers, locomotive.....	3							1												
Engineers, marine.....	12						3	1	5	1										
Engineers, stationary.....	3						2		1											
Electricians.....	16				1		6		3											
Fur workers.....	6						1		2											
Harness and saddle makers.....	2							1	1											
Jewellers, goldsmiths, silversmiths.....	3				2															
Locksmiths.....	2								1											
Machinists.....	25						12		5											
Masons and bricklayers.....	13						4	2	5											
Milliners.....	3				1				1											
Painters and glaziers.....	20				1		15	1												
Photographers.....	8				1		4	2												
Plasterers.....	2						1		1											
Plumbers.....	12						9	1	1											
Printers, pressmen and printing trades.....	10				2		4		2											
Shoemakers.....	6				2		1	1												
Seamstresses.....	4						1		1											
Sheet metal workers.....	1						1		1											
Tailors.....	12				6		4												1	
Tanners.....	1																			
Textile workers, including weavers and spinners.....	34				8		15	4	3											
Watch and clock makers.....	1																			
Woodworkers, N.E.S..	1								1											
Automobile mechanics.....	19						11	2	2	1										
Iron workers, N.E.S..	19				1		4	2	7											
Moulders.....	1						1													
UNSKILLED AND SEMI-SKILLED WORKERS																				
Unskilled and semi-skilled, N.E.S..	46				2		10	3	3	1			1							
Lumbermen.....	14						2	2	5										2	
Miners.....	60				2		26	5	12	5									1	
Fishermen.....	49						40	6											1	
General labourers.....	98				9		40	17	8				2			1	1		1	
Manufacturing.....	42				1		16	1	6	1										
Construction.....	2								1											
Transportation.....	117						74	11	12	1										
Apprentices to skilled trades.....	17				1		8	1	2											
Domestic servants.....	842				38	18	383	72	133	7			4		3	3		6	9	
Dependent children.....	5,179	4	1	591	184	1	884	257	296	20	7	1	136	1	42	40	12	72	36	
Dependent wives.....	4,071	5	1	375	142	1	769	226	276	29	3	1	107	1	26	45	10	60	23	
Occupation not given.....	1,509		1	38	53	1	512	137	195	9			22		6	1	4	15	5	
Totals.....	15,645	11	3	1,262	584	4	3,819	1,050	1,341	103	11	1	3	281	2	87	145	30	191	93

by Racial Origin, for the Fiscal Year 1937-8

French	German	Greek	Dutch	Magyar	Italian	Jugo-Slav	Polish	Roumanian	Russian	Denish	Icelandic	Norwegian	Swedish	Swiss	Ruthenian	Albanian	Estonian	Lithuanian	Maltese	Portuguese	Spanish	Negro	Armenian	East Indian	Japanese	Persian	Syrian	Turkish	
61	112	3	36	54	12	8	64	12	22	14	2	18	22	31	210		1	1	3		3			1	22		1		
27	25		2	3	3	1			1			2	2	2							1								
57	43		2	1	8				6			3	3	2							1								
27	42		2	1	6				2			3	3	2							1								
60	12		2		2					1		1	3							1	1								
7	20		4	2	1		2			2		5	3		1							1					1		
1	2		1		3																								
1	2																												
2	2				2		1	1																					
1												1																	
1	4						1			1		1																	
1		1																											
1																													
3	1		1		1							1																	
1																													
1																													
1	1																												
1	2				1																								
1																													
1																													
1																													
1																													
3	1																												
1																													
1	1																												
1	3				1																	1							
7	4	2	1		2		1		1				1						1			1			5				
1	1									1																			
4	2		1	1	1																								
9	3	3	1	3	14		3														1	1							
2	3		1	2	1																								
1																													
9	3		1		1						1	3		1															
1																													
24	26	3		19	10	2	22		4	5		1	2	7	32			1	1			2			3		1		
258	360	53	92	310	180	62	314	42	64	25	2	24	42	32	662	4	5	12	1	5	6	1	6	27	1	4			
171	322	35	65	219	193	38	203	30	35	17	2	39	43	23	403	3	2	3	12	4	7	3	6	80	1	11	1		
159	89	16	13	31	32	14	37	2	6	10		10	10	4	51	1	1	1	13	1	1	4	1	2		2			
908	1,094	126	232	646	477	125	661	88	142	83	8	118	142	105	1,369	9	3	11	43	2	3	16	26	7	14	139	3	23	1

Immigration via Ocean Ports, Showing Racial Origin, Sex, and Age, 18 Years and

Racial Origin	Nova Scotia		New Brunswick		Prince Edward Island		Quebec		Ontario									
	18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years		18 Years and Over		Under 18 Years							
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.						
Albanian.....								1			3	3	1					
Arabian.....								1			1							
Armenian.....											1							
Belgian.....																		
Bohemian.....	1	1		2				5	5	1	35	33	14	21				
British—																		
English.....	130	184	16	55	10	9	3	7		1	108	136	45	22	218	330	98	78
Irish.....	16	11	2	3	3	5				1	30	32	2	2	79	67	18	16
Scotch.....	7	9	1	2	6	1	5	1	1		31	56	9	10	95	144	22	40
Welsh.....	2										1	4			7	15	2	4
Bulgarian.....											1	2	1		1	11	4	7
Croatian.....											1	12	9	4		77	58	40
Czech.....											4	9	4	5	6	30	17	12
Dutch.....	2	1			1						5	4	3	5	10	7	5	3
East Indian.....																		
Estonian.....																		
Finnish.....												3	2	2	4	17	14	17
French.....	1	5	2	1							21	28	7	10	6	9	4	3
German.....					1						27	27	11	19	17	60	43	41
Greek.....		1		1							5	5			6	42	22	25
Hebrew.....	3	2	1	1		1	1	1			33	38	23	22	33	59	33	23
Italian.....		1	1	1		1	1	1			8	37	20	20	13	124	55	52
Japanese.....																		
Jugo-Slav.....											1	6	1	2	1	23	21	13
Lettish.....															1	2	1	4
Lithuanian.....											1	6			2	7	5	2
Magyar.....		3	2	2		2					18	45	40	36	8	131	99	83
Maltese.....											1							1
Mexican.....																1		
Montenegrin.....																1		1
Moravian.....																		
Negro.....	1	1									2	2				2		
Persian.....																		
Polish.....	1	2	2	3		1					3	27	29	23	7	95	56	65
Portuguese.....																1		
Roumanian.....											5	15	12	10	2	9	6	8
Russian.....											1	2		3	4	10	9	5
Ruthenian.....		1	1	2							8	52	37	35	23	152	110	97
Scandinavian—																		
Danish.....	2	1						1				2	2			2		1
Icelandic.....											1							
Norwegian.....					1						5				2			
Swedish.....											4	3	5	1	5	8	3	4
Serbian.....											7	10	4	8		20	26	4
Slovak.....		5	3	1		1	1				49	77	56	58	59	192	146	152
Spanish.....											4	2	1	1	1	1	3	
Spanish American.....											1				1	1		
Swiss.....											4	6	2	2	4	4	3	
Syrian.....	1	1			1						1	5	1		1			
Turkish.....																		
Totals.....	167	229	31	74	22	21	12	10	1	3	396	661	327	301	652	1,690	900	823

¹Note.—In the Northwest Territories, 18 years and over: 3 French male, 1 Polish male.

TABLE 42

Immigration via Ocean Ports, Showing Origin and Person to Whom Destined, for the Fiscal Year 1937-8

Racial Origin :	Totals	Husband	Parent	Brother	Sister	Fiancée	Friend	Relative	Employer	Others
Albanian.....	8	3	4					1		
Arabian.....	4	1	1	1				1		
Armenian.....	4	1		1				2		
Belgian.....	123	11	11	10	2		7	32		50
Bohemian.....	5		1					3		1
British—										
English.....	1,949	105	208	120	110	37	183	557	261	368
Irish.....	364	16	30	36	31	13	44	110	25	59
Scotch.....	604	32	97	45	56	20	61	191	42	60
Welsh.....	55	12	6	5	3	6	4	12	2	5
Bulgarian.....	28	9	12			3				4
Croatian.....	277	98	143	1		21	3	6		5
Czech.....	188	31	42	5		6	8	29		67
Dutch.....	119	3	24	5	1		10	29	1	46
East Indian.....	14	1	5					2	3	3
Estonian.....	2			2						
Finnish.....	79	15	37	1	4	1	8	8		5
French.....	134	5	10	4	3	3	10	28	17	54
German.....	523	67	138	14		23	44	83	7	147
Greek.....	115	32	50	1		15		8	1	8
Hebrew.....	317	32	92	24	5	14	21	87	4	38
Italian.....	408	161	182	7	1	13	5	18	4	17
Japanese.....	139	71	32	4			6	20	4	2
Jugo-Slav.....	116	25	44	2		13		9		23
Lettish.....	11	1	5	1		1		2		1
Lithuanian.....	37	7	8	4		11	4	3		
Magyar.....	622	189	310	1	2	29	3	18	2	68
Maltese.....	2								1	1
Mexican.....	1	1								
Montenegrin.....	2	1	1							
Moravian.....	3	1	1			1				
Negro.....	9	2			1	1	1	3		1
Persian.....	2	1	1							
Polish.....	615	132	228	19	3	28	21	103	2	79
Portuguese.....	1							1		
Roumanian.....	77	19	28	2				7		21
Russian.....	120	20	36	5		4	11	28		16
Ruthenian.....	1,356	251	399	39	2	37	67	191	1	369
Scandinavian—										
Danish.....	40	6	6	5		5	5	9	1	3
Icelandic.....	3	1						2		
Norwegian.....	27	7	7		1	1	2	5	1	3
Swedish.....	47	5	6	1		1	6	12	2	14
Serbian.....	83	17	35	1		5		1		24
Slovak.....	1,249	227	350	10		23	24	67	1	547
Spanish.....	14		2					6		6
Spanish American.....	3							2		1
Swiss.....	87		2	2				7	4	72
Syrian.....	15	3	3	2				5		2
Turkish.....	1	1								
Totals.....	10,002	1,623	2,597	380	225	335	560	1,709	383	2,190

TABLE 43

Immigration from the United States, Showing Origin and Person to Whom Destined, for the Fiscal Year 1937-8

Racial Origin	Totals	Hus-band	Parent	Brother	Sister	Fiancée	Friend	Rela-tive	Em-ployer	Others
Albanian.....	1						1			
Armenian.....	3							2		1
Belgian.....	22	2	4	1			2	4		9
Bohemian.....	6	1								5
British—										
English.....	1,870	244	392	56	52	22	99	327	85	593
Irish.....	686	99	149	20	20	12	22	103	35	226
Scotch.....	737	82	169	24	20	11	36	130	39	226
Welsh.....	48	10	9		2		2	5	5	15
Bulgarian.....	2		1				1			
Croatian.....	4	2	2							
Czech.....	3	1						1		1
Dutch.....	113	21	15	1	1	1	3	17	4	50
Estonian.....	1	1								
Finnish.....	14	1	6	1			1	1		4
French.....	774	79	157	16	13	15	13	115	38	328
German.....	571	99	83	3	7	16	23	92	43	205
Greek.....	11	2	5	1				1		2
Hebrew.....	267	58	58	7	4	3	8	46	20	63
Italian.....	69	15	12				3	11	2	25
Jugo-Slav.....	9	6	2			1				
Lithuanian.....	6	3	1				1	1		
Magyar.....	24	8	3	2				5	2	4
Negro.....	17	4	3				1	1	2	6
North American Indian.....	11	2	3					4		2
Persian.....	1	1								
Polish.....	46	11	12		1	2	1	6	3	10
Portuguese.....	2									2
Roumanian.....	11	3	1				5	1		1
Russian.....	22	1	5	1				2	3	10
Ruthenian.....	13	1	8			1	1		1	1
Scandinavian—										
Danish.....	43	2	5	1		1		5	3	26
Icelandic.....	5	1	2	2						
Norwegian.....	91	12	13	5		3	1	19	10	28
Swedish.....	95	14	12		2	1	11	20	5	30
Serbian.....	4	2	1					1		
Slovak.....	13	5	2				3			3
Spanish.....	2					1				1
Swiss.....	18	3				1	2	6		6
Syrian.....	8	4	1	1				1	1	
Totals.....	5,643	799	1,137	142	122	92	240	927	302	1,882

TABLE 44

Immigration via Ocean Ports, 18 Years of Age and Over, Showing Racial Origin, Sex, and Conjugal Condition, for the Fiscal Year 1937-8

Racial Origin	Adult Males					Adult Females				
	Totals	Married	Single	Widowed	Divorced	Totals	Married	Single	Widowed	Divorced
Albanian.....						4	4			
Arabian.....						3	1	1	1	
Armenian.....	1	1				2	2			
Belgian.....	45	30	14	1		41	39	1	1	
Bohemian.....	1	1				2	2			
British—										
English.....	609	258	324	27		901	295	460	139	7
Irish.....	154	40	106	8		147	40	93	14	
Scotch.....	191	69	112	10		294	94	152	56	2
Welsh.....	13	6	7			34	15	18	1	
Bulgarian.....	2	2				14	10	3	1	
Croatian.....	2		2			123	103	20		
Czech.....	33	26	7			75	59	11	5	
Dutch.....	30	18	12			21	19		2	
East Indian.....						6	6			
Estonian.....	1	1				1	1			
Finnish.....	9	7	2			30	21	9		
French.....	49	23	25	1		56	28	21	7	
German.....	93	66	25	1	1	186	138	38	7	3
Greek.....	13	2	10	1		51	32	16	1	2
Hebrew.....	80	42	34	3	1	113	63	37	11	2
Italian.....	26	10	14	2		198	169	19	10	
Japanese.....	23	4	19			83	80	3		
Jugo-Slav.....	9	7	1	1		46	31	14	1	
Lettish.....	1	1				5	3	1	1	
Lithuanian.....	3	3				22	8	14		
Magyar.....	35	19	15	1		247	209	31	5	2
Maltese.....	1	1								
Mexican.....						1	1			
Montenegrin.....						1	1			
Moravian.....						2	1	1		
Negro.....	3	1	2			5	2	1	2	
Persian.....						1	1			
Polish.....	59	46	13			229	185	39	5	
Portuguese.....	1	1								
Roumanian.....	9	7	2			27	25		2	
Russian.....	18	14	4			42	33	5	3	1
Ruthenian.....	190	144	40	6		469	401	50	17	1
Scandinavian—										
Danish.....	9	5	4			31	11	9	1	
Icelandic.....	2	1		1		1	1			
Norwegian.....	10	3	7			12	10	2		
Swedish.....	16	12	4			17	15	2		
Serbian.....	7	6	1			31	23	5	3	
Slovak.....	184	147	36	1		420	370	33	17	
Spanish.....	5	3	2			4	4			
Spanish American.....	2	1	1							
Swiss.....	31	16	14	1		25	18	5	2	
Syrian.....	3	2	1			8	6	1	1	
Turkish.....						1	1			
Totals.....	1,973	1,046	860	65	2	4,022	2,571	1,115	316	20

TABLE 45

Immigration from the United States, 18 Years of Age and Over, Showing Racial Origin, Sex, and Conjugal Condition, for the Fiscal Year 1937-8

Racial Origin	Adult Males					Adult Females				
	Totals	Married	Single	Widowed	Divorced	Totals	Married	Single	Widowed	Divorced
Albanian.....	1	1								
Armenian.....	2	2				1	1			
Belgian.....	9	7	2			8	6		1	1
Bohemian.....	1	1				3	3			
British—										
English.....	548	384	129	21	14	759	507	109	117	26
Irish.....	180	111	61	7	1	293	188	61	37	7
Scotch.....	240	159	58	18	5	293	209	37	39	8
Welsh.....	16	14	1	1		19	14	4		1
Bulgarian.....	1	1								
Croatian.....	1		1			3	3			
Czech.....	1	1				2	1		1	
Dutch.....	37	30	6	1		51	47	2	2	
Estonian.....						1	1			
Finnish.....	6	2	3		1	5	3	1	1	
French.....	193	115	63	13	2	319	152	143	22	2
German.....	182	128	42	7	5	242	186	34	17	5
Greek.....	5	5				2	2			
Hebrew.....	101	74	22	3	2	97	84	9	4	
Italian.....	27	19	8			24	21	2	1	
Jugo-Slav.....						7	6	1		
Lithuanian.....	2	1		1		3	3			
Magyar.....	7	7				11	10	1		
Negro.....	4	4				8	6	2		
North American Indian.....	1	1				3	3			
Persian.....	1		1							
Polish.....	15	11	4			22	17	2	2	1
Portuguese.....						2		2		
Roumanian.....	4	4				4	4			
Russian.....	12	7	4	1		2	2			
Ruthenian.....	3	2			1	5	3	2		
Scandinavian—										
Danish.....	17	8	7	2		10	6	4		
Icelandic.....	2	2				1	1			
Norwegian.....	34	21	10	3		38	29	5	4	
Swedish.....	30	21	7	2		36	28	1	6	1
Serbian.....	1	1				3	3			
Slovak.....	5	3	2			6	6			
Spanish.....	1		1			1		1		
Swiss.....	5	3	2			8	6	2		
Syrian.....	2	2				5	5			
Totals.....	1,697	1,152	434	80	31	2,297	1,566	425	254	52

TABLE 46

Admissions and Rejections, by Divisions, for the Fiscal Year 1937-8

	Ocean Ports		International Boundary Ports		Ocean Ports and International Boundary Ports	
	Admissions	Rejections	Admissions	Rejections	Admissions	Rejections
Atlantic Division—						
Quebec.....	4,930	62				
Halifax.....	2,792	36				
North Sydney.....	484	23				
Montreal.....	91	16				
Saint John.....	53	15				
Sydney.....	13	6				
Louisburg.....	15					
Pictou.....		1				
New York.....	1,191	30				
Boston.....	5					
International Boundary ports.....			1,503	2,535		
Totals.....	9,574	189	1,503	2,535	11,077	2,724
Eastern Division—						
International Boundary ports.....			2,888	7,336	2,888	7,336
Western Division—						
International Boundary ports.....			658	502	658	502
Pacific Division—						
Vancouver.....	294	8				
Victoria.....	51	1				
New Westminster.....		1				
International Boundary ports.....			594	721		
Totals.....	345	10	594	721	939	731
Other ocean ports.....	83	11			83	11
Grand totals.....	10,002	210	5,643	11,094	15,645	11,304

TABLE 47

Rejections, at Ocean Ports, by Causes and Nationalities, from 1902-3 to 1937-8

	Fiscal Years																Totals	
	1902-3 to 1912-3	1913-4 to 1922-3	1923- 1924	1924- 1925	1925- 1926	1926- 1927	1927- 1928	1928- 1929	1929- 1930	1930- 1931	1931- 1932	1932- 1933	1933- 1934	1934- 1935	1935- 1936	1936- 1937		1937- 1938
<i>By Causes</i>																		
Medical causes.....	4,162	1,029	130	83	40	95	104	94	78	39	26	16	17	9	13	11	8	5,954
Civil causes.....	5,094	5,604	862	948	226	594	215	266	243	444	298	213	177	206	183	236	202	16,011
Totals.....	9,256	6,633	992	1,031	266	689	319	360	321	483	324	229	194	215	196	247	210	21,965
<i>By Nationalities</i>																		
British.....	1,240	978	187	199	109	209	150	154	160	251	180	126	123	150	123	138	86	4,563
American.....	175	134	6	11	5	2	3	8	6	4	13	11	13	7	7	4	4	409
Other countries.....	7,841	5,521	799	821	157	475	167	203	153	226	140	90	60	52	66	102	120	16,993
Totals.....	9,256	6,633	992	1,031	266	689	319	360	321	483	324	229	194	215	196	247	210	21,965

TABLE 48

Deportations, After Having Been Admitted, by Causes, Nationalities, and Provinces, from 1902-3 to 1937-8

	Fiscal Years																	Totals
	1902-3 to 1912-3	1913-4 to 1922-3	1923- 1924	1924- 1925	1925- 1926	1926- 1927	1927- 1928	1928- 1929	1929- 1930	1930- 1931	1931- 1932	1932- 1933	1933- 1934	1934- 1935	1935- 1936	1936- 1937	1937- 1938	
<i>By Causes</i>																		
Medical causes.....	2,296	2,213	649	420	410	470	519	650	600	789	697	476	301	144	81	47	42	10,804
Public charges.....	2,853	4,517	775	543	506	354	430	444	2,106	2,245	4,507	4,916	2,991	464	125	110	46	27,932
Criminality.....	1,083	3,989	511	520	453	447	426	441	591	868	1,006	836	498	267	207	117	101	12,356
Other civil causes.....	530	793	93	58	189	149	257	194	107	200	270	277	250	172	163	240	203	4,145
Accompanying deported persons.....	145	262	78	145	158	165	254	235	559	274	545	626	439	81	34	57	21	4,078
Totals.....	6,907	11,774	2,106	1,686	1,716	1,585	1,886	1,964	3,963	4,376	7,025	7,131	4,474	1,128	610	571	413	59,315
<i>By Nationalities</i>																		
British.....	4,358	5,226	1,377	985	899	808	1,047	1,083	2,983	3,099	4,248	4,251	2,718	385	157	202	134	33,960
American.....	1,066	4,566	417	321	330	351	297	294	228	279	260	331	319	199	146	167	138	9,709
Other countries.....	1,483	1,983	312	380	487	426	542	587	752	998	2,517	2,549	1,437	544	307	202	141	15,646
Totals.....	6,907	11,774	2,106	1,686	1,716	1,585	1,886	1,964	3,963	4,376	7,025	7,131	4,474	1,128	610	571	413	59,315
<i>By Provinces</i>																		
Maritime Provinces.....	147	409	38	32	43	48	48	70	93	148	252	244	260	62	42	61	27	2,024
Quebec.....	1,589	2,197	301	206	233	233	240	255	490	509	984	1,343	596	163	106	129	102	9,666
Ontario.....	2,896	4,243	547	675	620	581	646	600	1,115	1,788	2,828	2,626	1,827	347	167	127	123	21,756
Manitoba.....		1,310	802	242	195	177	279	403	1,296	625	1,014	868	408	71	43	32	21	7,776
Saskatchewan.....	1,783	691	110	115	113	118	197	173	277	414	767	490	261	91	36	26	14	5,676
Alberta.....		1,041	102	134	178	169	260	187	396	511	631	738	467	184	79	77	40	5,194
British Columbia.....	491	1,876	206	282	334	259	216	276	306	381	549	832	655	210	137	119	86	7,215
Yukon Territory.....	1	7																8
Totals.....	6,907	11,774	2,106	1,686	1,716	1,585	1,886	1,964	3,963	4,376	7,025	7,131	4,474	1,128	610	571	413	59,315

TABLE 49—Conc.

Deportations (Excluding Persons Accompanying), by Causes, for the Fiscal Year 1937-8—Conc.

Countries to Which Deported	CAUSES																																				
	Public Charges			Convicted of Criminal Offences			Opium and Narcotic Drug Act			Mental Causes												Medical Causes Including Physically Defective			Misrepresentation and Stealth			Previously Deported			Other Causes			Total Deports			
										Insanity			Epilepsy			Feeble-minded			Otherwise Mentally Defective																		
	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	Totals			
Lithuania.....																																					
Poland.....	3	1		5				1	1										2			2	2		1						1			1	1		2
Roumania.....	1	1		3																														4	1		5
Russia.....																						1									1			1			1
Scandinavian—																																					
Denmark.....																						5									5			5			5
Norway.....				3																		2									5			5			5
Sweden.....				1																		3		1							4		1	5			5
Switzerland.....				1				1				1																			2	1		3			3
Ocean port totals.....	15	11	8	51	2		15			14	7			1			2	2			2	105	7	2	5				5	3	212	32	13	257			257
United States.....	1	2	9	30	2	1				5	3	1					2		1	1		29	10	4	26	6		1			92	25	18	135			135
Grand totals.....	16	13	17	81	4	1	15			19	10	1		1			2	4	1	1	2	134	17	6	31	6		6	3		304	57	31	392			392
Totals by causes.....	46			86			15			30			1			6			2			3			157			37			9			392			
Percentages.....	1%			22			4			8			..			2			..			1			40			9			2			100%			

TABLE 50

Deportations (Excluding Persons Accompanying), by Provinces, for the Fiscal Year 1937-8

Countries to Which Deported	Nova Scotia			Prince Edward Island			New Brunswick			Quebec			Ontario			Manitoba			Saskatchewan			Alberta			British Columbia			Total Deports						
	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	Totals
Austria.....																												1	1		2	1		3
Belgium.....										2																					2			2
British—																																		
England.....				1						3			19	2		7	5		4			1	1		2	1	1	16	1	1	53	10	2	65
Ireland, Northern.....																3									1	1	3				4	1	3	8

REPORT OF THE CHIEF CONTROLLER OF CHINESE IMMIGRATION

Legislation governing the entry to Canada of persons of Chinese origin was first enacted in 1885, at which time the practice of imposing a head tax was adopted. The original tax was \$50, which was increased in January 1901 to \$100, and in January 1904 to \$500. The law provided that merchants, their families, university students, and persons of the non-immigrant classes should be exempt from the payment of head tax. In June 1923 the present Chinese Immigration Act was passed. This Act abolished the head tax and provided for the entry to Canada of the following classes:

- (a) Members of the diplomatic corps, consuls, consular agents, and other government representatives, their suites and servants;
- (b) Children born in Canada of parents of Chinese origin or descent, who left Canada for educational or other purposes, on establishing their identity to the satisfaction of the controller at the port where they seek re-entry;
- (c) Merchants, as defined by regulations made by the Minister, students entering Canada for the purpose of attendance, and while in actual attendance, at any Canadian university or college authorized by statute or charter to confer degrees;
- (d) Persons in transit through Canada.

During the fiscal year 1937-8 no Chinese immigrants were admitted. Four students were admitted during this period as non-immigrants to attend universities.

The Minister has authority to grant temporary entry, under permit, for a specified period only, to persons of Chinese origin without such persons being subject to the provisions of the Act. Bonds are required in the case of actors, amahs, servants, teachers, etc., temporarily admitted, guaranteeing they will follow no occupation other than that for which temporary admission is allowed and will leave Canada within the period of validity of their permits. Forty-nine temporary permits were issued during 1937-8 under section 9, as follows:

Actors and actresses	19	Meat specialist	1
Amahs	3	Merchants	3
Consul, servant of	1	Missionaries	3
Consular clerk	1	Missionaries' families	6
Government official	1	Students	6
Housewives	2	Teacher	1
Infants	2		

The number of Chinese passing through Canada in transit shows a considerable increase over the previous year.

Provision is made in the Chinese Immigration Act for registration, prior to departure, and the right to return within a period of 2 years, of Chinese legally admitted to and lawfully resident in Canada. The number of Chinese who registered prior to leaving Canada during this fiscal year and thus protected their right to re-entry totalled 651. One hundred and forty-one Chinese employed on vessels trading in international waters also registered. During the same period, 115 Chinese sailed for China without registering, and 464 who had registered failed to return within the period allowed by virtue of their registration, all of whom have thus forfeited the right of re-entry to Canada.

The Chinese Immigration Act, in common with the general Immigration Act, sets out specifically the classes whose entry to Canada is prohibited, provides machinery for the deportation of undesirables, and authorizes penalties

for violations of the Act. A total of 18 Chinese were deported during the period under review, 3 under the Chinese Immigration Act and 15 following conviction under the Opium and Narcotic Drug Act, 1929. One Chinese admitted as exempt from payment of the tax under previous Acts, and who had ceased to belong to such exempt classes, paid the \$500 penalty provided in Section 27 of the Act.

The Department maintains a special staff on the Pacific Coast and in Hong Kong dealing with the administration of the Chinese Immigration Act, and there are also controllers at the principal Atlantic ports and at other points in Canada. The departmental machinery developed over a period of years for regulating the entry to Canada of persons coming within the scope of the Act enables immigration officials to deal promptly and efficiently with all applicants. Special regulations are in effect for the purpose of facilitating the entry of Chinese of the non-immigrant classes.

For the purpose of comparison, the following table relating to Chinese immigration is furnished:

	Exemptions	Paying Tax	Percentage of Total Arrivals Admitted Exempt	Registered for Leave	Total Revenue
					\$
1912-13.....	367	7,078	4.93	3,742	3,549,242
1913-14.....	238	5,274	4.32	4,143	2,644,593
1914-15.....	103	1,155	8.19	4,373	588,124
1915-16.....	68	20	77.27	4,064	19,389
1916-17.....	121	272	30.79	3,312	140,457
1917-18.....	119	650	15.47	2,907	336,757
1918-19.....	267	4,066	6.16	3,244	2,609,669
1919-20.....	181	363	33.27	5,529	538,479
1920-21.....	1,550	885	63.56	6,807	474,332
1921-22.....	237	1,459	16.44	7,532	743,032
1922-23.....	59	652	8.30	6,682	434,557
1923-24.....	49	625	7.27	5,661	334,039
1924-25.....				5,992	308,659
1925-26.....				3,947	25,969
1926-27.....				5,987	14,844
1927-28.....				5,087	25,679
1928-29.....	1	2	33.33	5,480	30,795
1929-30.....	1		100.00	5,682	30,799
1930-31.....				5,783	28,846
1931-32.....				4,387	11,584
1932-33.....	1		100.00	3,626	9,152
1933-34.....	2		100.00	2,156	7,237
1934-35.....				2,103	6,506
1935-36.....				2,138	6,501
1936-37.....	1		100.00	2,059	9,893
1937-38.....				792	2,359
Totals.....	3,415	22,501	13.17	113,215	12,931,523

REPORT OF THE COMMISSIONER OF IMMIGRATION

A reference to the statistical tables found in the earlier pages of this report will show that immigration, which reached its lowest level since Confederation in the fiscal year 1935-6, is now increasing, although the increase is relatively small.

The arrivals over a period of 6 years are as follows:

Year ended March 31, 1933.....	19,782
“ “ “ “ 1934.....	13,903
“ “ “ “ 1935.....	12,136
“ “ “ “ 1936.....	11,103
“ “ “ “ 1937.....	12,023
“ “ “ “ 1938.....	15,645

The small number of immigrants in recent years is undoubtedly due to several factors, the principal being:

- (a) Restrictive regulations that became effective in the autumn of 1930 and were applicable to all countries except the British Isles, self-governing British Dominions, and the United States.
- (b) The discontinuance of passage assistance, which had facilitated British immigration between 1922 and 1930.
- (c) The termination of all governmental propaganda and the closing down of a number of agencies in the United States and in the British Isles.
- (d) Unemployment conditions, which affected Canada in common with most other countries.

Apart altogether from the question of numbers, there is an important difference between present-day immigration and that of 10 or 20 years ago in that in the earlier immigration adult males predominated, whereas in present-day immigration there is a predominance of women and children. During last fiscal year immigration from overseas, which totalled 10,002, was made up of 1,973 adult males and 8,029 women and children, and immigration from the United States, which totalled 5,643, was made up of 1,697 adult males and 3,946 women and children. Farmers and their families numbered 3,493, being the largest group in the immigration of last year. All provinces and territories of the Dominion received some of the newcomers, but the largest group, 6,859, went to Ontario. Quebec received the second largest number, 2,699. Although many people are under the impression that Western Canada has received more immigrants than other provinces, both the Immigration and Census records show that Ontario has not only received more immigrants year by year for a long period, but has in her population a much larger number of non-Canadian born than any other province.

Next to International Boundary and ocean port inspectional work comes investigational activities. Applications for the admission of dependent relatives and others and complaints of various sorts call for investigational work in each of the four districts. In the Atlantic District there were 5,145 investigations completed during the year, of which 4,076 concerned the city and district of Montreal. The Eastern District reports approximately 9,500 investigations; the Western District, 6,679; and the Pacific District, 1,556. These figures do not include Boards of Inquiry held in connection with deportation cases.

An effort has been made since 1924 to record the number of Canadian citizens returning to Canada for permanent residence who had left this country to reside abroad. A reference to the table on page 236 will show the results. These are not included in the immigration returns, as they are re-admitted to Canada as non-immigrants. The number in 1937-8 totalled 5,209, as compared with 5,064 in the previous year.

The field and inspectional work of this Branch in Canada is divided into four districts, each in charge of a District Superintendent. The Atlantic District includes all territory east of the Ontario-Quebec boundary; District Superintendent, G. G. Congdon. The Eastern District includes that part of Ontario west of the Ontario-Quebec boundary to Schreiber; District Superintendent, J. Saxon Fraser. The Western District extends from Schreiber, Ontario, to Kingsgate, B.C.; District Superintendent, C. E. S. Smith, Winnipeg. The Pacific District includes all Canadian territory west of Kingsgate, B.C.; District Superintendent, F. W. Taylor, Vancouver.

The Superintendent for the Atlantic District reports the admission and rejection of immigrants and the admission of non-immigrants as follows:

	1936-7	1937-8
Admission, immigrants.....	8,045	11,077
Rejections.....	3,096	2,724
Admission, non-immigrants.....	9,030,829	9,824,101

Cruises out of New York to points in Eastern Canada were very popular during the summer season. The Canadian Pacific Steamships, Cunard White-Star, Holland America, the French Line, and the Eastern Steamship Lines each arranged several round trip cruises to ports in Nova Scotia and Quebec. There was also a considerable increase during the year in the number of persons seeking entry to Canada through Atlantic District ports to get U. S. Consular visés, and this movement added materially to the work of inspectional officers. Visé seekers are admitted only when they are able to present evidence that a visé awaits them in Canada and that they will be allowed to return to the United States after making application here.

The Superintendent for the Atlantic District reports an unusual number of staff changes in his district. Retirements from the service due to reaching retiring age numbered thirteen, two members died during the year, four resigned, and there were four dismissals. There are approximately eighty ports of entry, ocean and boundary, in the Atlantic District.

The Superintendent of the Eastern District reports an increase in border traffic of approximately 1,000,000 persons during the year, with a continued improvement in the general type or class that has been in evidence during the past few years.

The number of immigrants (2,888) admitted through ports in this district is completely overshadowed by the number of persons (7,336) rejected. Non-immigrants admitted through ports in this district totalled 18,010,806, which is a considerable increase over the preceding year. Two hundred and forty-five Boards of Inquiry were held in the Eastern District in connection with deportation cases and 557 appeals were entered by persons rejected on the International Boundary. Many applications were received and dealt with, often by wire, for the temporary entry of skilled help.

There are forty-four ports of entry in the Eastern District; three of these—Windsor, Niagara Falls, and Fort Erie—are the largest ports in Canada.

The work in the Western District continues very much as in previous years. It is in this district that Immigration Halls have been maintained for many years for the temporary accommodation of settlers, but during the past year the halls formerly in operation at Peace River, Grande Prairie, Spirit River, Falher, and Athabaska, were closed as no longer necessary. An Immigration Hall continues to be maintained at Winnipeg, where during the year 776 settlers were given temporary accommodation. There has been a decrease of seven in the permanent staff of this district, which at the end of the year totalled 79.

Admission of immigrants on the International Boundary totalled 658; rejections 502; and 1,695,113 non-immigrants were granted temporary entry. Settlers entering through the Western District from the United States brought with them in cash and effects a total of \$529,000, which is a slight increase over the returns for the previous year. The popularity of air travel is seen in the fact

As staff changes have to be made from year to year owing to superannuation, death, and other retirements, an effort is being made to raise the standard of qualifications for those entering the service, the aim being to maintain an efficient staff both at ocean ports and on the International Boundary, where courtesy, common sense, and patience are absolutely essential. It is recognized that inconsiderate treatment of the travelling public or an unfriendly attitude on the part of an inspector may do incalculable harm in discouraging both immigrants and tourists.

REPORT OF SUPERVISOR OF WOMEN'S DIVISION

The work of the Women's Division arises mainly out of the Empire Settlement Passage Scheme under which 23,804 British houseworkers came to Canada between 1923 and 1931.

The accompanying statistical review of houseworkers arriving between the years 1920-1 and 1937-8 indicates a slight increase over the low figures of the past 5 years in British immigration. Although a few houseworkers have been admitted there has been no organized movement.

The aftercare of houseworkers who came out under the Empire Settlement Scheme between the years 1923 and 1931 is a continuing obligation, although now on a small scale. Women officers who were formerly engaged solely in this work have been attached now to the local immigration offices but still devote such time as is necessary to these cases.

A woman officer on duty at Quebec in summer and Halifax in winter has met 169 ships at the two ports and given any necessary assistance and advice to unaccompanied women and children. She was also a member of Boards of Inquiry on women detained, and visited from day to day any who were held in the detention quarters.

The various churches and associations, such as the Y.W.C.A., have representatives who meet the ships at Montreal and assist the unaccompanied women there.

During the past year the Canadian Red Cross Nursery at Halifax has been open for the arrival of 63 ships, and they have welcomed 1,940 women, 1,261 children, and 78 infants. Milk and biscuits were provided for the children and tea for the mothers, without charge.

In order that the newcomer might be put in touch with health facilities in Canada the names of women with children were sent to the Provincial Health Authorities or the Victorian Order of Nurses, according to location. Names of young women coming to be married were referred to the Canadian Welfare Council, and names of settlers in rural districts to the Women's Institutes.

The Society for the Oversea Settlement of British Women acts as the Women's Branch of the Oversea Settlement Department. Over a period of years they have taken an active interest in reuniting British families. Twelve women came to Canada this year under their auspices. The Society has also made preliminary arrangements with the Immigration Branch for a small group of houseworkers to be sent forward during the coming year.

The Supervisor of the Women's Division is the Canadian representative of the Service Women's Benevolent Fund. Women who served during the war with certain stated units are eligible to apply. During the year a total of \$389.40 was expended in assistance to such cases.

Number of Houseworkers Arrived in Canada, for the Eighteen Years Ended March 31, 1938

	By Racial Origin																	Total	
	1920-21	1921-22	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28	1928-29	1929-30	1930-31	1931-32	1932-33	1933-34	1934-35	1935-36	1936-37		1937-38
British—																			
English.....	4,607	2,537	2,129	3,187	3,280	2,851	2,758	2,859	2,877	3,107	1,861	582	250	206	226	226	261	353	33,407
Irish.....	861	595	542	1,227	1,406	1,165	1,556	1,443	1,653	1,800	996	146	49	53	46	41	53	58	13,767
Scotch.....	2,427	1,818	1,967	3,789	2,971	2,144	2,800	2,664	2,753	3,320	1,553	323	107	95	80	69	71	122	29,073
Welsh.....	79	54	62	85	105	94	116	153	167	206	77	21	6	2	1	2	5	7	1,242
Newfoundland.....	221	71	163	434	203														1,092
Total.....	8,195	5,075	4,863	8,722	7,914	5,752	7,230	7,119	7,280	8,493	4,477	1,072	412	356	353	338	390	540	78,581
Other races—																			
African, South.....	8		1	2	3														14
Albanian.....						2	1	5	3										9
Arabian.....										2								1	7
Armenian.....	8	2	9	120	115	29	19	4	3										321
Austrian.....	2	1	2	4	6	8				2	8								23
Australian.....	2	3	4	4	11									1		1			24
Belgian.....	73	29	28	77	70	34	40	58	42	22	19			1			2	2	497
Bermudian.....	4	2																	6
Bohemian.....																			5
Bulgarian.....			2	11	5	3	9	2	9	18									83
Chilean.....					2					14	12								27
Croatian.....						8	13	17	31	37	42		1	2	2	6	2	4	167
Czecho-Slovak.....	28	16	9	62	52	23	37	54	53	46	19	2	1	2	1	1	2	6	391
Dalmatian.....						1													1
Dutch.....	15	6	11	33	61	39	46	85	99	121	27	1		1		2	2	2	549
East Indian.....						1	1				1								3
Estonian.....				7	7	7	21	26	35	22	23								147
Finnish.....	77	81	94	551	703	271	573	1,279	1,288	1,688	685		2	1			2	8	7,613
French.....	38	22	22	32	30	34	85	47	46	47	81		2	7	3	6	13	14	439
German.....	8	22	48	268	266	743	1,014	1,392	1,394	1,661	1,632	2	14	14	5	6	12	21	7,747
Greek.....	10	25	37	78	64	50	46	85	56	67	85		5	4	2			3	563
Hebrew, N.E.S.....	74	172	63	95	105	602	621	691	559	647	512	14	14	44	21	41	41	17	4,369
Hebrew, Polish.....	86	519	199	233	168														1,205
Hebrew, Russian.....	7	77	76	392	373														925
Hungarian.....	2	4	5	26	58														95
Italian.....	131	127	61	224	217	184	209	210	21	59	43	10	5	4	4	8	4	10	1,541
Jamaican.....	5	7	9	7															28
Japanese.....	4	5	4	3	11	6	8	6	6		6	2	1	1	3	4	3	3	77
Jugo-Slav.....	10	22	22	44	60	16	44	42	82	95	35		1		3		2		478
Latvian.....				3	7														10
Lettish.....				1			20	18	14	16	6			1					82
Lithuanian.....			6	25	43	46	109	201	162	203	114	2	2	1	1	1	1	1	990
Luxembourg.....				7	1														8
Magyar.....						87	203	212	253	216	261	7	6	5	6	1	2	19	1,378
Maltese.....	6	2		6	4	2	1	3		3	2								29
Mexican.....				1															1
Moravian.....						1	2	3	1	3									10
Negro.....	46	25	28	20	24	34	28	67	80	132	89	2	2	3			1		610

New Zealand.....	1	1	1	3	8														14
Persian.....					1			2											4
Polish, N.E.S.....	261	359	421	1,010	776	253	557	745	830	1,014	732	9	9	6	9	7	10	21	7,038
Polish, Russian.....	1																		1
Portuguese.....					1	1	2	2	3	4									14
Roumanian.....	65	64	57	138	163	28	20	90	26	31	24	2	1	8	1	3	3		649
Russian.....	32	33	15	423	160	59	78	95	47	71	83	1	1	1	1	1	1	4	1,105
Ruthenian.....						445	1,034	1,404	1,785	1,825	1,282	15	4	6	3	10	16	32	7,861
Scandinavian—																			
Danish.....	27	30	22	45	114	87	113	266	391	368	126	7	5	4			1	4	1,610
Icelandic.....	11	1	1	6	4	6	4	5	7		5								50
Norwegian.....	32	35	38	88	164	95	192	327	359	356	146	1	4	2	4	1	1		1,845
Swedish.....	57	45	73	181	160	180	244	289	352	378	118	6	1	3		3		1	2,041
Serbian.....						11	9	14	11	21	10		2	2		1		3	82
Slovak.....						17	60	144	198	253	146	4	1	5	4	5	8	28	883
Spanish.....	1		2	2	1	2	1	1		1		1	1						13
Spanish American.....												1							1
Swiss.....	18	20	15	69	69	32	46	56	49	66	20	1	1	2			1	6	471
Syrian.....	34	14	7	37	34	22	25	11	12	8	20			1				1	226
Turkish.....			2	6	12	4	3	1	1	1	3								33
Ukranian.....	5	12	5	135	3														160
U.S.A. citizens.....	7	5		7	3														22
Venezuelan.....				3															3
West Indian.....	41	7	11	24	17														100
Total.....	1,237	1,805	1,410	4,562	4,156	3,428	5,789	7,679	8,335	9,621	5,723	113	85	122	78	109	129	222	54,603
Grand total.....	9,432	6,880	6,273	13,284	12,070	9,180	13,019	14,798	15,615	18,114	10,200	1,185	497	478	431	447	519	762	133,184
From U.S.A.....	1,010	755	701	581	363	506	538	516	626	634	636	298	207	134	95	81	61	80	7,822
Grand total.....	10,442	7,635	6,974	13,865	12,433	9,686	13,557	15,314	16,241	18,748	10,836	1,483	704	612	526	528	580	842	141,006

REPORT OF THE SUPERVISOR OF JUVENILE IMMIGRATION

The work of the Juvenile Division has been increased this year by the arrival during the spring and summer months of 44 British lads for farm placement in Ontario and Quebec. They were a fine, upstanding lot, who give promise of being a real asset to Canada. Excellent homes were found for them, and there was no lack of homes to choose from as applications were far in excess of the number of boys available. Placement of the newcomers was done by the societies, and subsequent visits to the boys by an officer of the Department showed that care had been taken in trying to fit the right boy into the right home. Naturally some adjustments will be found necessary as time goes on, but the number will probably be small.

There has been carried on during the year the same effort as in former years to help the older boys who have been in Canada for some time, and who turn to the Department for help and advice in finding work, in collecting wages, sometimes in finding relatives, and quite often in their effort to begin farming on their own account. Seventy-five of the older boys were placed successfully and a number of others were directed to employment. Applications reaching this office for farm help, mainly from the district about Ottawa, exceeded the supply of experienced young men available.

The number of visits paid during the year to Canadian homes in which boys were placed totalled 120. These visits were welcomed by both boys and employers, and a contact has been established that usually leads to a correspondence in which counsel is sought on a variety of subjects related to settlement in Canada.

The importance of keeping careful records of juvenile immigrants is seen more and more as time goes on. Many inquiries are now being received for date of birth or age as shown at the time these young people came to Canada, the information now being desired by those who find it necessary to establish their age. The records of the British Immigration and Colonization Association, taken over by the Department at the beginning of 1931, have been carefully preserved and incorporated into the general records of juvenile immigrants.

In last year's report, reference was made to the Lawrence Atwell Fund of London, England, out of which nine British boys secured a settlement grant of \$1,000 each. Five additional boys have obtained grants during this year and three other applications are under consideration.

Another movement of British juveniles now being carried on is that of the Fairbridge Farm Schools located near Duncan, on Vancouver Island. Fairbridge gets its name from its founder, Kingsley Fairbridge, a Rhodes scholar who spent his early years in South Africa, and later became interested in migration within the Empire. The movement is much better known in Australia than in Canada, as the first school was established there in 1912. The work has grown rapidly and has been highly commended by the Australian authorities.

The Fairbridge movement in so far as Canada is concerned is less than 4 years old. An unused farm of about 1,000 acres was purchased in 1934 and the first buildings were erected for the accommodation and training of boys and girls. The first party of 41 arrived in September 1935, and additional parties have come since, so that now there are 140 children, ranging in age from about 7 to 14, under training for settlement in Canada. The maximum accommodation of the school will be 300, and that is expected to be reached next year. Unlike other movements of juveniles where children are brought out from 14 to 18 years of age and placed immediately on arrival, Fairbridge children are kept in the training centre until they reach the age of 16 years,

when the boys will be placed in selected farm homes and the girls as house-workers. Every effort is made and every facility provided to train them for their future occupations. During their stay in the school both boys and girls live in cottages under family conditions, as nearly as that is possible. The schools are excellent and the opportunities for a practical training in all branches of farming and of household science should, and doubtless will, make these children much sought after by discriminating employers in British Columbia.

Table Showing Number of Juvenile Immigrants Who Have Arrived in Canada During the Past 70 Years and the Agencies through which this Immigration was Effected

	Year	Number Who Migrated
Miss Macpherson and Mrs. Birt, London and Liverpool (Canadian Headquarters, Marchmont Home, Belleville).....	1868 to 1926	14,578
Miss Rye and Church of England, Niagara-on-the-Lake and Toronto, Ont., and Sherbrooke, P.Q.....	1868 to 1938	4,455
Mr. (later) Sir J. T. Middlemore, Fairview, Halifax, N.S.....	1873 to 1933	5,155
The National Children's Home and Orphanage (formerly Dr. T. Bowman Stephenson), Hamilton, Ont.....	1873 to 1932	3,377
Mrs. Bilbrough-Wallace (Marchmont Home), Belleville, Ont.....	1878 to 1915	5,529
Cardinal Manning (Ottawa and Montreal).....	1880 to 1888	1,403
Dr. Barnardo, Toronto, Ont., and Winnipeg, Man.....	1882 to 1938	27,189
Mr. J. W. C. Fegan, Toronto, Ont.....	1884 to 1938	3,234
Mr. Wm. Quarrier, Brockville, Ont.....	1890 to 1933	4,484
The Catholic Emigration Association and Amalgamated Societies (St. George's Home), Ottawa, Ont.....	1897 to 1933	8,228
The Salvation Army.....	1905 to 1933	4,040
Dr. Cossar, Lower Gagetown, N.B.....	1910 to 1933	1,049
Captain Oliver Hind, The Dakeyne Farm, Falmouth (near Windsor), N.S....	1913 to 1931	128
British Immigration and Colonization Association, Montreal, P.Q. (now Ottawa, Ont.).....	1923 to 1931	5,358
Church Army, Winnipeg, Man.....	1925 to 1931	929
Church of England Council of Empire Settlement, Edmonton, Alta., Indian Head and North Battleford, Sask.....	1926 to 1932	766
United Church of Canada, Norval, Ont., and Georgetown, Ont.....	1928 to 1933	1,234
National Association of Boys' Clubs, Falmouth, N.S.....	1930 to 1934	57
Minor Agencies (including unaccompanied).....	1897 to 1938	6,683
Fairbridge Farm Schools.....	1934 to 1938	140
Total.....		98,066

REPORT OF THE COMMISSIONER OF EUROPEAN EMIGRATION FOR CANADA

The main work of the London Office is correspondence and interviews. A large percentage of the correspondence comprised requests for information by people who contemplated settlement in Canada. Some had independent means, some had moderate capital and intended to engage in business or take up farming, and others were seeking information as to the prospects of employment. Numerous letters were also received from people who desired to visit Canada. There was considerable correspondence with transportation companies, particularly regarding the selection and movement of agricultural families and questions arising as a result of civil and medical inspection. There was a comparatively small movement of juvenile immigrants under the auspices of the voluntary societies. Apart from whatever opportunities exist for placement in Canada, the juvenile movement is largely determined by the demand in the United Kingdom for youths between 16 and 18 and also by the fact that there

is now no assisted passage under the Empire Settlement Act. A similar condition prevails in the case of houseworkers. The demand for domestics in the United Kingdom would appear to exceed the supply, inasmuch as a large number of houseworkers have been admitted to the United Kingdom from continental countries.

There has been considerable correspondence by or on behalf of residents in central European countries, who ask for information regarding the immigration regulations with a view to entering Canada. Many residents of these countries called at the office during the last 2 months of the fiscal year. Some of these people had considerable capital, which in most cases could not be transferred. Quite a number of others were anxious to migrate on account of unstable conditions and the possibility of war in Europe.

BRITISH EMIGRATION

A comparatively small percentage of the inquiries were from farmers or experienced farm workers. As a matter of fact, there is quite a brisk demand for farm workers in the United Kingdom. In Scotland particularly, married and single farm workers are scarce and wages have been increased. The provincial press, and especially county newspapers, carry columns of advertisements for farm workers and houseworkers.

Notwithstanding the apparent scarcity of houseworkers in the United Kingdom, 386 inquiries reached the London office: of this number 168 were regarded as good prospects. There were also 126 applications by houseworkers in the Glasgow District agency.

Quite a number of applications were received from unskilled workers, who were former residents of Canada and who had returned temporarily to the British Isles. These people stated that they had difficulty in securing employment and desired to return. A cross-section of the occupations of those who called during the last week of the fiscal year shows the following occupations:

Farm and gardening	Shop assistants
Office workers	Salesmen
Domestics	Seamen
Engineering	Machinists
Garage workers	Film workers
Bakers and cooks (male)	Unskilled workers
Hairdressers	

The total number of people who called at the London and District offices asking for information was 15,421.

The monthly reports show that prospective settlers resident in the United Kingdom were in possession of \$3,392,000, and that a certain number had also an aggregate annual income of \$152,370. Many of these people have already gone forward.

The above figures do not include those who had less than \$500, or those who proceeded to Canada without reference to this office.

The juveniles who proceeded under the auspices of the voluntary societies were:

Dr. Fegan's Homes	18
Barnardo's Homes	11
Church of England Waifs and Strays	11
Fairbridge Farm Schools	42

Of the 42 who went to the Fairbridge Farm on Vancouver Island, 28 were boys and 14 girls.

Numerous former residents of Canada continue to make declarations for the purpose of protecting Canadian domicile.

The following statement shows the numbers of British migrants who did not pass medical inspection and were certified by the Medical Examiners under the following clauses of Section 3 of the Immigration Act.

s.s. (a) Mental..	18
(b) Infectious or contagious disease..	7
(c) Physically defective..	234
(k) Constitutional psychopathic inferiority..	3
	312

Of the above number, 152 were subsequently approved and 160 rejected.

The following is a record of the correspondence in the London and District offices:

Agency	Letters	
	Received	Dispatched
London.....	44,924	35,997
Belfast.....	2,390	2,243
Glasgow.....	4,702	6,278
Liverpool.....	2,887	3,195

There has been a good demand for the "Atlas," which has been distributed to schools and other educational institutions. "Eastern Canada" and "Canada West" were distributed to those who asked for information. Altogether 6,333 copies of the Atlas were distributed, 5,147 copies of Eastern Canada, 4,184 copies of Canada West, and 88 wall maps. The success that attended the visit to Canada of a party of some 200 Scottish secondary schoolboys during 1937 has spurred the organizers to greater effort, and at least three large parties are now in the process of formation. Each boy was given an Atlas before sailing. Tourist literature on all the provinces has been distributed through the London and District offices.

The following National Parks pamphlets were distributed:

Canada's Mountain Playgrounds..	12,075
Playgrounds of the Prairies..	529
National Parks of Canada..	920
Lake St. John National Park..	80
Riding Mountain National Park..	210
Waterton Lakes National Park..	185
Prince Albert National Park..	183
National Parks Annual Report..	43
Elk Island National Park..	187
Provincial Tourist Literature..	2,010

Arrangements have been made to have National Parks films distributed in England by the Imperial Institute, and in Scotland by the district emigration agent in Glasgow. Two hundred and nineteen National Parks films were shown, on 2,588 occasions. These are 33 sets of National Parks slides and 18 sets of Immigration Branch slides, which were shown on 385 occasions. There are also 2,350 extra slides, which are used for making special sets as required.

There were 224 photographs loaned to teachers and others for educational purposes, 48 to tourist agencies for use in travel brochures, and 707 to district agents and the publicity agent for use in newspapers and other periodicals.

The number of distressed Canadians who were returned to Canada was 106, of which 21 were repatriated and charged against the Distressed Canadian Vote. A total sum of £25 13s. was advanced out of petty cash for the temporary assistance of 22 distressed Canadians in London. The sum of £16 8s. 5d. was reimbursed to the Canadian Legation in Paris for advances made to distressed Canadians, and the sum of £46 11s. 7d. was refunded through the Foreign Office to British Consuls who had made advances to distressed Canadians in foreign countries.

We receive very fine co-operation in this work from the Salvation Army, who not only occasionally find employment through their labour bureau, but also assist in many other ways.

CONTINENTAL EMIGRATION

Under existing regulations the only immigrants eligible for admission to Canada from Europe are:

- (a) Farmers who have sufficient means to farm.
- (b) The wife or unmarried child, under 18 years of age, of any person legally admitted to and resident in Canada, who is in a position to receive and care for his dependants.
- (c) The fiancée of any adult male, legally admitted to and resident in Canada, who is in a position to make a home for his intended wife.

The office has been in touch with continental inquirers who had an aggregate capital of over \$3,000,000, of which amount the sum of \$1,352,435 was transferred by agricultural families for settlement.

The following is a statement of civil and medical inspection at continental ports, also of correspondence and interviews:

Statement Showing Result of Civil Inspection at Continental Ports, Correspondence, and Interviews

Office	Admissions	Rejections	Appeals			Causes of Rejection										Letters In	Letters Out	Interviews
			Sustained	Dismissed	Pending	P.C. 23	P.C. 185	P.C. 695	P.C. 1413	Section 3 s.s.								
										(a)	(b)	(c)	(j)	(t)	(u)			
Antwerp.....	1,093	175	29	10	.....	11	14	64	.....	.....	4	32	.....	4	79	6,758	7,382	1,265
Paris.....	2,277	92	29	9	.....	5	6	17	.....	1	9	25	6	5	27	4,345	4,885	4,277
Rotterdam.....	105	39	4	4	1	.....	.....	31	.....	.....	1	3	.....	.....	4	.....	.....	117
Hamburg.....	736	184	42	13	1	.....	3	19	1	.....	1	57	.....	.....	101	2,224	3,005	246
Gdynia.....	2,065	334	50	15	3	.....	1	8	.....	.....	4	76	.....	3	173	.....	3,973	.....
Totals.....	6,266	824	154	51	5	16	24	139	1	1	19	193	6	12	384	13,327	19,245	5,905

IMMIGRATION BRANCH

STAFF CHANGES

British Isles:

London:

- 1 clerk grade 4..Retired
- 1 clerk grade 1..Transferred to High Commissioner's Office
- 1 stenographer grade 1.. . . .Resigned

Under date of June 14, 1937, the Immigration Staff moved from Canada House to 1A Cockspur Street.

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- (1) Farmers who have sufficient means to farm.
- (2) The wife or unmarried daughter under 25 years of age, any person legally admitted to and resident in Canada, who is in a position to receive and care for his dependents.
- (3) The fiancée of any adult male legally admitted to and resident in Canada, who is in a position to make a home for his intended wife.

Persons who have been in touch with continental inquirers who had a surplus of over \$100,000. of which contain the sum of \$35,000. were invited to apply for settlement of agricultural families for settlement of agricultural families.

1900-1901

1901-1902

1902-1903

1903-1904

1904-1905

1905-1906

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1920-1921

1921-1922

1922-1923

1923-1924

1924-1925

1925-1926

1926-1927

1927-1928

Year	1900-1901	1901-1902	1902-1903	1903-1904	1904-1905	1905-1906	1906-1907	1907-1908	1908-1909	1909-1910	1910-1911	1911-1912	1912-1913	1913-1914	1914-1915	1915-1916	1916-1917	1917-1918	1918-1919	1919-1920	1920-1921	1921-1922	1922-1923	1923-1924	1924-1925	1925-1926	1926-1927	1927-1928
Number	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Percentage	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

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 1925-1926
 1926-1927
 1927-1928

SOLDIER SETTLEMENT OF CANADA

Soldier Settlement has under administration farm properties representing a net investment of \$47,807,432.85, as at March 31, 1938.

The main report is therefore submitted in the form of a condensed balance sheet covering loan operations since inception, and a series of schedules giving by provinces an analysis of the present position of loans, collections, and real estate on hand. Included also is a summary of proposed legislation and statement of administration costs. These statements and schedules are found on pages 229 to 239.

Honourable T. A. CRERAB,
Minister of Mines and Resources,
Ottawa.

SIR,—I have the honour to submit a report of Soldier Settlement activities for the fiscal year ended March 31, 1938.

Included in this report are sections relating to the Three Thousand British Family Scheme, and the New Brunswick Five Hundred British Family Scheme, also field services performed by Soldier Settlement for other Departments of the Dominion Government.

Your obedient servant,

G. MURCHISON,
Director of Soldier Settlement.

OTTAWA, September 15, 1938.

Honourable T. A. CARR,
Minister of Mines and Resources,
Ottawa.

Sir—I have the honour to submit a report of Soldier Settlement activities for the fiscal year ended March 31, 1938. Included in this report are sections relating to the Three Thousand British Family Scheme, and the New Brunswick Five Hundred British Family Scheme, also field services performed by Soldier Settlement for other Departments of the Dominion Government.

Your obedient servant,

G. MURCHISON,
Director of Soldier Settlements.

Ottawa, September 15, 1938.

SOLDIER SETTLEMENT OF CANADA

Soldier Settlement has under administration farm properties representing a net investment of \$47,867,432.85, as at March 31, 1938.

The main report is therefore submitted in the form of a condensed balance sheet covering loan operations since inception, and a series of schedules giving by provinces an analysis of the present position of loans, collections, and real estate on hand. Included also is a summary of remedial legislation and statement of administration costs. These statements and schedules are found on pages 320 to 330.

In addition to the primary work of loan administration, the Director, through Soldier Settlement field staff, performs field services for other Departments of Government. The nature and extent of this work is summarized on pages 329 and 330.

The close of the fiscal year was marked by two developments of major importance affecting policy and administration. The first, concerning general policy, was an amendment to the Soldier Settlement Act regarding dollar for dollar bonus, the effect of which was the continuance of the bonus on arrears as at March 31, 1938, until March 31, 1941, and the discontinuance of bonus on annual instalments. Debts due to Soldier Settlement by settlers and other purchasers are subject to the provisions of the Farmers' Creditors Arrangement Act, and a survey of accounts indicated that adjustment under the provisions of this Act might be expected in connection with 6,000 settlers of all classes, including 3,000 soldier settlers.

The second matter affecting administration was the decision to provide for more effective field service. The general condition of Soldier Settlement accounts, and the increasing volume of services required by other Departments of Government indicated the advisability of designating field staff whose full time duties would be in connection with Soldier Settlement, and designating other field staff suitably located for concentration on the services required by other Departments. This change in administrative policy has the twofold object of improved service, more especially in connection with soldier settlers in the problem class, and more effective control of administrative costs.

Previous reports have covered in detail the history and progress of Soldier Settlement and of the British Family Settlement Schemes. Each succeeding year emphasizes the change in character of the original settlement. It is noted that of the 20,042 farms under administration, 9,802, or less than 50 per cent of the total, are occupied by soldier settlers. Under the Soldier Settlement Act, 24,998 soldier settlers were established on land with loans. At this date there are 9,802 soldier settlers; 5,810 civilian settlers; 1,749 British Family settlers; and 2,681 farms on hand for resale, of which 1,882 are operated under lease; 3,621 settlers have repaid their loans in full in cash, and 1,977 properties have been transferred to municipalities and provinces under Section 21A of the Act.

Condensed Balance Sheet as at March 31, 1938

ASSETS		LIABILITIES	
<i>Current Loans Including Overdue Interest—</i>		<i>Gross Advances for Loans—</i>	
<i>Soldier Settlement—</i>		<i>Soldier Land Settlement..</i>	\$ 111,156,780 68
Soldier settlers.....	\$ 22,002,129 04	<i>Three Thousand British Family Scheme.....</i>	13,205,054 49
Civilian settlers.....	9,921,368 72	<i>New Brunswick 500 British Family Scheme</i>	959,474 56
Indian soldier settlers.....	185,200 27		\$ 125,321,309 73
	32,108,698 03	<i>Interest charges</i>	35,048,201 04
Less deferred bonus.....	678,936 77		\$ 160,369,510 77
	31,429,761 26	<i>Deduct—</i>	
		<i>Repayments—</i>	
<i>Three Thousand British Family Scheme.....</i>	7,571,368 76	<i>Soldier Land Settlement.....</i>	56,594,132 12
Less deferred bonus.....	75,375 18	<i>Three Thousand British Family Scheme</i>	2,701,177 77
	7,495,993 58	<i>New Brunswick 500 British Family Scheme</i>	82,530 48
			\$ 59,377,840 37
<i>New Brunswick 500 British Family Scheme.....</i>	539,037 11	<i>Deduct—</i>	100,991,670 40
Less deferred bonus.....	3,650 16	<i>Legislative Reductions—</i>	
	535,386 95	<i>Soldier Land Settlement</i>	39,372,531 94
	39,461,141 79	<i>Three Thousand British Family Scheme.....</i>	4,663,171 82
		<i>New Brunswick 500 British Family Scheme</i>	448,192 84
<i>Security Held for Resale—at Book Debt—</i>			\$ 44,483,896 60
<i>Soldier Settlement—</i>		<i>Less—</i>	
Soldier settlers.....	5,257,518 44	<i>Interest Exemption Act, 1922</i>	10,269,108 87
Civilian settlers.....	1,608,534 37	<i>Farmers' Creditors Arrangement Act—completed cases (amounts transferred to previous settlers or not yet written off settlers' accounts)—</i>	
British families (Canadian land).....	1,172,488 28	<i>Soldier Land Settlement..</i>	275,842 72
	8,038,541 09	<i>Three Thousand British Family Scheme.....</i>	31,530 27
<i>Three Thousand British Family Scheme—</i>		<i>New Brunswick 500 British Family Scheme.....</i>	10,576,481 86
United Kingdom Government loans.....	289,865 82		\$ 33,907,414 74
		<i>Deduct Losses on Security already Sold—</i>	67,084,255 66
<i>New Brunswick 500 British Family Scheme—</i>		<i>Soldier Land Settlement.....</i>	18,034,130 36
Canadian Government loans	53,385 86	<i>Three Thousand British Family Scheme..</i>	1,068,081 49
United Kingdom Government loans.....	24,498 29	<i>New Brunswick 500 British Family Scheme</i>	114,610 96
	77,884 15		\$ 19,216,822 81
	8,406,291 06		47,867,432 85
Total.....	47,867,432 85		

SOLDIER SETTLEMENT OF CANADA

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Number of Settlers as at March 31, 1938

District	Current Loans				Security on Hand			Total	
	Soldier Land Settlement			British Family Settlement	Total	Soldier Land Settlement	British Family Settlement		Total
	Soldier	Civilian	Total						
Vancouver.....	1,300	939	2,239	117	2,356	173	19	192	2,548
Edmonton.....	1,746	1,132	2,878	325	3,203	286	62	348	3,551
Calgary.....	1,366	493	1,859	276	2,135	264	26	290	2,425
Saskatoon.....	2,872	1,346	4,218	383	4,601	861	138	999	5,600
Winnipeg.....	868	908	1,776	166	1,942	572	70	642	2,584
Toronto.....	765	426	1,191	111	1,302	85	19	104	1,406
Sherbrooke.....	108	182	290	27	317	12	3	15	332
Saint John.....	553	384	937	344	1,281	37	54	91	1,372
Indian Soldier Settlement.....	224	.....	224	.....	224	.....	.....	.....	224
Total.....	9,802	5,810	15,612	1,749	17,361	2,290	391	2,681	20,042

Financial Statement as at March 31, 1938

District	Active Loans		Security on Hand (Book Debt)		Total	
	Number	Amount	Number	Amount	Number	Amount
Vancouver.....	2,356	4,637,413 13	192	565,549 75	2,548	5,202,962 88
Edmonton.....	3,203	7,416,649 74	348	962,337 71	3,551	8,378,987 45
Calgary.....	2,135	6,249,465 32	290	923,459 51	2,425	7,172,924 83
Saskatoon.....	4,601	12,077,023 62	999	3,449,314 45	5,600	15,526,338 07
Winnipeg.....	1,942	4,142,955 02	642	2,018,507 31	2,584	6,161,462 33
Toronto.....	1,302	2,239,662 52	104	261,553 55	1,406	2,501,216 07
Sherbrooke.....	317	546,272 22	15	30,625 81	332	576,898 03
Saint John.....	1,281	1,966,499 95	91	194,942 97	1,372	2,161,442 92
Indian Soldier Settlement.....	224	185,200 27	.....	.....	224	185,200 27
Total.....	17,361	39,461,141 79	2,681	8,406,291 06	20,042	47,867,432 85

Gross Loans as at March 31, 1938

Soldier Land Settlement—

Land purchase	\$ 60,592,141 47
Removal of encumbrances.....	2,716,474 89
Permanent improvements.....	11,650,755 24
Stock and equipment.....	29,098,608 16
Special advances	10,028,983 25
Replacements	3,870,041 44
Refund of settlers' equity.....	302,047 15
Credit due to resales.....	580,743 15
Replacement credits	78,463 78
Indian soldier settlers.....	432,332 19

Interest charges.....	119,350,590 72
	30,594,876 22

Deduct lands transferred to British Family Scheme.....	149,945,466 94
	8,193,810 04

141,751,656 90

Three Thousand British Family Scheme—

Canadian Government land.....	9,322,831 82
United Kingdom Government land.....	113,495 39
United Kingdom Government stock and equipment.....	3,269,730 23
Assisted passage loans.....	165,182 53
Replacements	333,814 52
Interest charges—	
Canadian.....	3,153,077 81
United Kingdom.....	1,001,116 19

17,359,248 49

Gross Loans as at March 31, 1938—Concluded

New Brunswick 500 British Family Scheme—

New Brunswick Government loans.....	493,617 41	
Canadian Government special advances.....	9,535 17	
United Kingdom Government loans.....	440,433 92	
Assisted passage loans.....	4,664 71	
Replacements.....	11,223 35	
Interest charges.....	299,130 82	
		1,258,605 38
Total gross loans.....		\$160,369,510 77

*Summary—**Gross Advances for loans—*

Soldier Land Settlement.....	\$111,156,780 68	
Three Thousand British Family Scheme.....	13,205,054 49	
New Brunswick 500 British Family Scheme.....	959,474 56	
		\$125,321,309 73

Interest Charges—

Soldier Land Settlement.....	30,594,876 22	
Three Thousand British Family Scheme.....	4,154,194 00	
New Brunswick 500 British Family Scheme.....	299,130 82	
		35,048,201 04
Total.....		\$160,369,510 77

Repayments as at March 31, 1938

	Interest	Principal	Total
	\$ cts.	\$ cts.	\$ cts.
<i>Soldier Settlement—</i>			
Initial payments.....		6,250,015 17	6,250,015 17
Repayments.....	19,206,191 04	29,090,382 47	48,296,573 51
Replacements.....		2,047,543 44	2,047,543 44
Total Soldier Settlement.....	19,206,191 04	37,387,941 08	56,594,132 12
<i>British Family Settlement—</i>			
Canadian Government Land.....	702,506 74	690,874 00	1,393,380 74
Total received by—			
Canadian Government.....	19,908,697 78	38,073,815 08	57,982,512 86
United Kingdom Government Loans.....	171,974 87	644,419 74	816,394 61
United Kingdom—New Brunswick Scheme.....	7,348 28	60,283 30	67,631 58
Assisted Passage.....		161,263 45	161,263 45
Replacements.....		345,037 87	345,037 87
Total repayments.....	20,088,020 93	39,289,819 44	59,377,840 37

Loan Repayments

Fiscal Year	Interest	Principal	Total
	\$ cts.	\$ cts.	\$ cts.
From inception to March 31, 1935.....	17,835,605 14	36,594,367 99	54,429,973 13
1935-6.....	736,951 02	883,303 47	1,620,254 49
1936-7.....	689,700 79	843,144 05	1,532,844 84
1937-8.....	825,763 98	969,003 93	1,794,767 91
Total.....	20,088,020 93	39,289,819 44	59,377,840 37

Legislative Reductions as at March 31, 1938

Soldier Settlement—

Live stock reduction, June 27, 1925.....		\$ 2,927,809 99	
Land revaluation, April 14, 1927.....		7,479,343 75	
30 per cent reduction, May 30, 1930—			
Principal	\$8,653,711 52		
Interest	2,657,251 76		
			11,310,963 28
1932 interest remission, May 23, 1933.....			1,893,782 78
Dollar for dollar bonus, May 23, 1933—			
Principal	2,146,051 02		
Interest	1,475,939 40		
Deferred	678,936 77		
			4,300,927 19
Farmers' Creditors Arrangement Act, July 3, 1934—			
Amounts written off settlers' accounts.....	914,753 36		
Additional completed cases (amounts transferred to previous settlers or not yet written off settlers' accounts).....	275,842 72		
			1,190,596 08
Interest Exemption Act, June 28, 1922 (estimated).....			10,269,108 87
Total Soldier Settlement.....			39,372,531 94

Three Thousand British Family Scheme—

30 per cent reduction, May 23, 1933—			
Principal	1,871,176 89		
Interest	1,439,688 34		
			3,310,865 23
1932 interest remission, May 23, 1933.....			400,566 82
Dollar for dollar bonus, May 23, 1933			
Principal	132,648 34		
Interest	177,912 89		
Deferred	75,375 18		
			385,936 41
Farmers' Creditors Arrangement Act, July 3, 1934—			
Amounts written off settlers' accounts.....	289,808 09		
Amounts transferred back to Soldier Settlement.....	244,465 00		
Additional completed cases (amounts transferred to previous settlers or not yet written off settlers' accounts).....	31,530 27		
			565,803 36
Total Three Thousand British Family Scheme.....			4,663,171 82

New Brunswick 500 British Family Scheme—

30 per cent reduction, April 18, 1935—			
Principal	137,862 64		
Interest	161,592 96		
			299,455 60
1934 interest remission, April 18, 1935.....			49,805 31
Dollar for dollar bonus, April 18, 1935—			
Principal	5,061 79		
Interest	3,086 27		
Deferred	3,650 16		
			11,798 22
Farmers' Creditors Arrangement Act, July 3, 1934—			
Amounts written off settlers' accounts.....			87,133 71
Total New Brunswick 500 British Family Scheme.....			\$ 448,192 84
Total British Family Schemes.....			\$ 5,111,364 66
Total Legislative reductions.....			\$44,483,896 60

Bonus of Dollar for Dollar as at March 31, 1938

	Soldier Settlement	British Family Settlement	Total
	\$ cts.	\$ cts.	\$ cts.
Payments received subject to bonus.....	4,300,927 19	397,734 63	4,698,661 82
Bonus credited to date.....	3,621,990 42	318,709 29	3,940,699 71
Bonus still to be credited.....	678,936 77	79,025 34	757,962 11
	4,300,927 19	397,734 63	4,698,661 82

Statement re 1933 Legislation as at March 31, 1938

District	Number of Settlers who have Taken Advantage of Bonus				Amount of Bonus	Interest Remission
	Soldier Settlers	Civilians	British Families	Total		
					\$ cts.	\$ cts.
Vancouver.....	1,184	744	99	2,027	694,993 75	304,774 27
Edmonton.....	1,666	853	271	2,790	955,009 15	422,779 81
Calgary.....	1,178	372	208	1,758	661,677 83	359,482 01
Saskatoon.....	2,178	874	241	3,293	1,062,539 78	647,151 03
Winnipeg.....	886	733	147	1,766	509,507 13	251,816 93
Toronto.....	744	308	102	1,154	458,422 05	162,751 70
Sherbrooke.....	108	143	23	274	98,751 42	35,979 00
Saint John.....	588	284	215	1,067	242,770 47	152,095 84
Indian Soldier Settlement.....	8,512	4,311	1,306	14,129	4,678,671 58	2,336,830 59
					19,990 24	7,324 32
	8,512	4,311	1,306	14,129	4,698,661 82	2,344,154 91

Average bonus per settler (not including Indian Soldier Settlement)—\$331.14.

Farmers' Creditors Arrangement Act as at March 31, 1938

District	Soldier Settlers					
	Total Number Applications	Number Completed Cases	Number with Reductions	Total Reductions	Average Reduction per Settler	Percentage Reduction to Debt
				\$ cts.	\$ cts.	
Vancouver.....	127	107	84	133,435 01	1,588 51	40.1
Edmonton.....	61	22	2	1,860 62	930 31	20.5
Calgary.....	315	142	116	214,803 97	1,851 76	40.7
Saskatoon.....	165	110	56	84,391 56	1,506 99	35.1
Winnipeg.....	180	118	89	167,225 60	1,878 94	48.3
Toronto.....	124	92	54	65,719 61	1,217 03	34.6
Sherbrooke.....	3	2	2	1,382 49	691 25	23.6
Saint John.....	97	56	44	68,778 51	1,563 15	49.4
Total.....	1,072	649	447	737,597 37	1,650 11	41.2
				Civilian Settlers		
Vancouver.....	74	67	60	118,947 44	1,982 46	44.3
Edmonton.....	74	42	20	31,388 90	1,569 45	34.5
Calgary.....	102	55	39	71,103 57	1,823 17	41.1
Saskatoon.....	89	61	27	64,623 27	2,393 45	43.5
Winnipeg.....	137	109	73	95,991 29	1,314 95	48.4
Toronto.....	85	61	45	59,694 49	1,326 54	37.9
Sherbrooke.....	16	13	8	12,292 48	1,536 56	45.4
Saint John.....	30	20	17	18,253 89	1,073 76	45.3
Total.....	607	428	289	472,295 33	1,634 24	42.8
				British Families		
Vancouver.....	37	28	27	49,644 70	1,838 69	42.5
Edmonton.....	24	2				
Calgary.....	146	68	66	142,878 10	2,164 82	44.0
Saskatoon.....	58	36	30	67,249 39	2,241 64	43.8
Winnipeg.....	69	45	40	92,327 42	2,308 18	50.0
Toronto.....	79	70	57	78,055 65	1,369 40	31.9
Sherbrooke.....	2					
Saint John.....	107	71	65	116,351 58	1,790 02	49.7
New Brunswick 500 British Family Scheme.....	131	64	60	87,133 61	1,452 23	44.9
Total.....	653	384	345	633,640 45	1,836 64	43.6
Grand total.....	2,332	1,461	1,081	1,843,533 15	1,705 40	42.4

Collections—Soldier Settlement—1937-8

District	Amount Due		Total Cash Received						Bonus	Total
	Instalment Due in 1937	Total Due Including Arrears	Due Payments.	Per cent of Current Instalment	Per cent of Total Due.	Prepayments	Leases	Total Cash		
	\$ cts.	\$ cts.	\$ cts.			\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Vancouver.....	256,610 07	960,570 69	138,486 60	53.97	14.42	61,161 36	4,088 45	203,736 41	103,140 99	306,877 40
Edmonton.....	439,715 45	2,191,960 74	220,054 34	50.04	10.04	37,652 21	18,316 64	276,023 19	187,789 87	463,813 06
Calgary.....	395,330 33	2,115,326 64	147,973 80	29.84	5.58	28,314 03	5,132 22	151,420 05	104,761 93	256,181 98
Saskatoon.....	738,052 81	4,335,147 35	112,578 07	15.25	2.60	20,909 61	10,049 82	143,537 50	79,627 82	223,165 32
Winnipeg.....	238,125 25	1,221,465 57	173,983 73	73.06	14.24	38,327 78	31,373 11	243,684 62	134,926 54	378,611 16
Toronto.....	148,113 77	396,655 09	92,712 72	62.60	23.37	35,439 62	2,402 30	130,554 64	79,491 90	210,046 54
Sherbrooke.....	37,298 46	135,367 53	20,976 25	56.24	15.50	4,433 19	20 00	25,429 44	14,872 61	40,302 05
Saint John.....	79,214 73	221,112 23	46,952 76	59.27	21.23	21,327 84	262 00	68,542 60	38,351 38	106,893 98
Total.....	2,332,460 87	11,577,605 84	923,718 27	38.70	7.98	247,565 64	71,644 54	1,242,928 45	742,963 04	1,985,891 49

Collections—British Family Settlement—1937-8

District	Amount Due		Total Cash Received					Bonus	Total	
	Instalment Due in 1937	Total Due Including Arrears	Due Payments	Per cent of Current Instalment	Per cent of Total Due	Prepayments	Leases			Total Cash
	\$ cts.	\$ cts.	\$ cts.			\$ cts.	\$ cts.	\$ cts.	\$ cts.	
Vancouver.....	30,629 53	155,292 72	12,216 97	39.89	7.87	3,139 25	687 40	16,043 62	7,590 72	23,634 34
Edmonton.....	81,754 27	684,275 60	29,647 09	36.26	4.33	506 04	5,005 43	35,158 56	23,522 43	58,680 99
Calgary.....	72,359 32	508,840 80	14,068 24	19.44	2.76	1,126 33	418 66	15,608 23	12,473 81	28,082 04
Saskatoon.....	109,793 60	896,635 52	9,039 13	8.23	1.01	2,562 58	1,575 34	13,177 05	5,537 11	18,714 16
Winnipeg.....	41,116 30	288,300 57	23,350 94	56.79	8.10	1,917 04	5,488 51	30,756 49	18,973 13	49,729 62
Toronto.....	26,230 80	88,565 57	14,716 12	56.10	16.62	1,004 27	536 00	16,256 39	12,156 71	28,413 10
Sherbrooke.....	7,773 01	42,309 98	4,405 00	56.67	10.41	100 00	.....	4,505 00	2,635 97	7,140 97
Saint John.....	27,949 33	90,541 08	11,215 59	40.13	12.39	6,166 40	292 00	17,673 99	6,068 09	23,742 08
Sub-total.....	397,606 16	2,754,761 84	118,659 08	29.84	4.31	16,521 91	13,998 34	149,179 33	88,957 97	238,137 30
New Brunswick.....	21,885 20	96,649 70	10,416 12	47.59	10.77	5,962 59	415 93	16,794 64	5,360 85	22,155 49
Total	419,491 36	2,851,411 54	129,075 20	30.77	4.53	22,484 50	14,414 27	165,973 97	94,318 82	260,292 79

SOLDIER SETTLEMENT OF CANADA

Loans Repaid in Full as at March 31, 1938

District	Repaid by Cash	Repaid by Time Sale	Total
Vancouver.....	658	555	1,213
Edmonton.....	626	679	1,305
Calgary.....	267	254	521
Saskatoon.....	768	899	1,667
Winnipeg.....	334	159	493
Toronto.....	479	270	749
Sherbrooke.....	108	63	171
Saint John.....	381	121	502
Total.....	3,621	3,000	6,621

Cost of Administration

(By Activities)

NATURE OF ACTIVITY	1936-7		1937-8	
	\$	cts.	\$	cts.
<i>Soldier Land Settlement—</i>				
Loan administration cost.....	550,819	14	547,704	87
Loan administration (Indian Affairs).....	5,954	30	6,415	51
	556,773	44	554,120	38
<i>General Land Settlement—</i>				
Placement farm workers.....	7,641	00	4,578	00
Appraisals for prospective settlers.....	5,560	00	1,680	00
Relief Land Settlement (Special Investigations and Advisory Committee).....	2,700	00	2,700	00
Advisory Services and miscellaneous.....	4,000	00	4,000	00
Colonization cost—British Family Settlement.....	53,000	00	56,500	00
	72,901	00	69,458	00
<i>Investigations for other Departments—</i>				
War Veteran's Allowance Board.....	34,424	00	31,088	00
Farmers' Creditors Arrangement Act.....	34,320	00	33,864	00
Pensions and National Health.....	15,260	00	13,675	00
Canadian Pension Commission.....	1,650	00	1,285	00
Farm Loan Board.....	3,576	00	345	00
Mines and Resources—Lands, Parks, and Forests Branch.....	330	00	520	00
Mines and Resources—Immigration Branch.....	11,064	00	4,920	00
	100,624	00	85,700	00
Total.....	730,298	44	709,278	38

Field Investigations for Other Departments—Fiscal Year 1937-8

Department	Vancouver	Edmonton	Calgary	Saskatoon	Winnipeg	Toronto	Sherbrooke	Saint John	Total
<i>Department of Pensions and National Health—</i>									
Relief.....	442	78	107	163	322	1,206	112	305	2,735
War Veterans' Allowance Board.....	608	315	221	416	307	1,297	225	497	3,886
Canadian Pension Commission.....	22	20	10	69	6	.....	129	1	257
<i>Department of Mines and Resources—</i>									
Immigration Branch.....	11	162	35	355	37	13	2	.....	615
Lands, Parks, and Forests Branch.....	.....	14	.....	.....	7	13	9	9	52
Totals.....	1,083	589	373	1,003	679	2,529	477	812	7,545

Land Appraisals for Other Departments—Fiscal Year 1937-8

<i>Department of Finance—</i>									
Farmers' Creditors Arrangement Act.....	59	483	328	430	289	1,196	.....	37	2,822
Canadian Farm Loan Board.....	21	.....	.....	2	.....	6	.....	.....	29
Totals.....	80	483	328	432	289	1,202	.....	37	2,851

NOTE.—In addition to the above, miscellaneous work was performed as follows:

Saskatoon District—

216 seed grain adjustments including 86 land inspections for Lands, Parks, and Forests Branch, Department of Mines and Resources; collection visits to 106 settlers for Indian Affairs Branch, Department of Mines and Resources.

Edmonton District—

Collection visits to 155 settlers for Indian Affairs Branch, Department of Mines and Resources.

Toronto District—

59 miscellaneous colonization investigations.

Relief Land Settlement—Families Settled on Farms

(With Financial Assistance Under Dominion-Provincial Agreements)

From May 1932 to March 31, 1938

Province	Approvals		Abandonments and Cancellations		On the Land	
	Families	Individuals	Families	Individuals	Families	Individuals
British Columbia.....	52	285	19	102	33	183
Alberta.....	738	3,460	283	1,264	455	2,196
Saskatchewan.....	939	4,604	178	869	761	3,735
Manitoba.....	1,177	5,741	313	1,436	864	4,305
Ontario.....	606	2,990	175	842	431	2,148
Quebec.....	1,869	11,621	188	1,101	1,681	10,520
Nova Scotia.....	343	2,154	141	909	202	1,254
Totals.....	5,724	30,855	1,297	6,514	4,427	24,341

Farm Labour Placements—Fiscal Year 1937-8

Province	Provincial Totals
British Columbia.....	7
Alberta.....	179
Saskatchewan.....	19
Manitoba.....	16
Ontario.....	1,206
Quebec.....	5
Maritime Provinces.....	94
Dominion total.....	1,526

