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# SESSIONAL PAPERS.

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OF THE

DOMINION OF CANADA

---

SESSION 1883.

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## LIST OF SESSIONAL PAPERS.

VOL. XVI.—SESSION 1883.

ARRANGED ALPHABETICALLY.

A	No.	C	No.
Accidental and Life Insurance, abstract for 1882.....	12b	Cadets, Royal Military College.....	56
Accidents on G. T. R.....	76a	Callander and Gravenhurst, railway between, subsidy to.....	121
Accidents on I.C.R.....	40f	Campbellton, steamer connecting with I.C.R.....	40k
Administration of Justice, claims of the Provinces.....	119	Canada Central Ry acquisition by C.P.R.....	27n
Adulteration of Food.....	4	Canada Central Railway, Pembroke bonus.....	69
Agents, duty on, by Registrar of Supreme Court.....	63	Canada, ordinance for.....	116
Agricultural Implements, &c., imported into Manitoba and N.W.T.....	103 to 103b	Canada, railway map of.....	8a
Agriculture, Annual Report.....	14	Canada trade with West Indies and Brazil.....	98
Albert County Court.....	67a	Canadian Extradition Act.....	32
Albert (Port) Harbor.....	48e	Canadian Pacific Land Bonds.....	27c, 27f
Allan Line and I.C.R. Freight Tariff for season 1882-83.....	39 & 39a	Canadian Pacific Railway.....	27 to 27r, 69
Appropriation Accounts.....	6	Canadian Pacific Railway Commission.....	27g
Appointments, Civil Service.....	13a, 21	do do map of, &c.....	27o
Auditor-General's Report.....	6	Canadian Statutes.....	17 to 17b, 28
Award, Ontario Boundary.....	95	do Tobacco.....	35 & 35a
		Canadian Vessels in the Great Lakes, disasters, &c.....	58
B		Canal Statistics.....	4
Baie des Chaleurs Railway Co., subsidy to.....	121	Canals.....	4, 81, 83, 105 to 105c, 109
Bailiffs, Dominion, appointment of.....	62 & 62a	Canals and Railways, Annual Report.....	8
Baker, David, appointment of.....	110	Canals, Public Debt incurred for.....	109
Banks, shareholders of.....	19	Cape Breton Constitution, &c.....	70
Banque de St. Jean.....	34	Carsquet Railway Co., N.B., subsidy to.....	121
Baptisms, Marriages and Burials.....	44	Carillon and Grenville Canal.....	105 to 105b
Batteries, "A" and "B," No. instructed, &c.....	31e	Cartridge Factory, Quebec.....	93
Batteries "A" and "B," officers staff.....	56a	Census and Statistics.....	24
Bayfield Harbor.....	48f	Charybdis, H.M.S.....	120
Belgium, commercial arrangements with.....	89	Chinese Immigration into British Columbia.....	93a
Bernatchez, N., tobacco seizure.....	35a	Civil Service, appointments and promotions.....	13a
Berthier, camp at, in 1882.....	31f	do Examiners' Report.....	13
Blackbe's Report.....	16	do Montreal.....	13b
Blankets for Militia.....	31b	Claims against Intercolonial Railway.....	40b
Bonds and Securities.....	25	do for Fishing Bounty.....	37
Boundary Award, Ontario.....	95	Coal Lands, North-West, sale and lease of.....	36b
Bounty, claims for fishing.....	37, 37c	do Lands, regulations for.....	36a
Bounty to fishermen.....	37c	do quantity exported.....	36c
Brac, Prince Co., P.E.I.....	52c	do do from N.S.....	36
Brandy Pots and River du Loup Semaphores.....	74	Cockburn, James, Q.C., commission to.....	17 to 17b
Brazil, trade between Canada and.....	98	Collisions on I.C.R.....	40j
Breakwaters.....	52 to 52c	Colonization Grants.....	117
Breakwaters, New Harbor, N.S.....	52a	Colonization, land for.....	84
do Port Lorne, N.S.....	52	Commercial arrangements France, Spain, &c.....	89
Bridge at St. John, railway.....	47 & 47a	Commissioner of Fisheries, Report of.....	7
British Canadian Loan and Investment Co.....	73	Commissioner to France.....	60
British Columbia Coast, H.M. Ships of war on.....	106	Commission, Intercolonial Railway.....	40b
British Columbia, Constitution, &c.....	70	Commission to James Cockburn, Q.O.....	17 to 17b
British Columbia, immigration into.....	93, 93a	do revise Canadian Statutes.....	17 to 17b
British Columbia Penitentiary.....	29a	Consolidated Fund, expenditure and receipt charged to.....	30
British Columbia, Pilots and Pilotage.....	111	Constitutions, &c., of C.B., N.S., P.E.I., N.B., B.C. and Vancouver Island.....	70
Buoys and Beacons, Lake Huron.....	87	Construction, C.P.R., progress of.....	27d
Burials, Baptisms and Marriages.....	44	Contracts A. and B., C.P.R., change of construction.....	27p

C		No.	F		No.
Contracts, C.P.R.		27i	Fishery Inspectors, instructions as to salmon		37b
County Court Judges, increase of salary		67b	do seizures made by		37b
County Court, New Brunswick		67	Fishing Bounty Claims	37	37c
County Courts	67 to	67b	Fishing Leases or Licenses in N.B.		37a
County Courts, Kings and Albert		67a	Fishing, Lobster, close season		37c
Court, Maritime	68 &	68a	Fog-Whistles, Shelburne Harbor		69
Credit Valley Railway, C.P.R. interest in		27n	Food, Adulteration of	4 &	4a
Credit Valley Stock		27a	France, commercial arrangements with		89
Criminal Statistics for 1881		14	do Commissioner in		60
Customs Department, Montreal	13b,	49	Freight Sheds and Warehouse at St. John,		
Customs Duties paid by C.P.R.		27m	N.B., I.C.R.		40g
do refunded at Toronto		91	Freight Tariff between I.C.R. and Allan		
			Line for Season 1882-83	39 &	39a
			Freight Tariff, Western Division, C.P.R.		27j
			Frontenac Terrace, Quebec		113
<b>D</b>					
Dauphonné, Jas., claim of		115	Gaspé, Petition of the Fish Merchants of		98
De la Chevrotiere, Mr. O. C.		51	Gaspé, steamer connecting with I.C.R.		40k
Digby, N.S., wharfages at		79	Gatineau Valley Railway Co., subsidy to		12i
Dionne, —, Doctor's bill for attending		40e	General Election, 1882	77 &	77a
Disasters to Canadian Vessels in the Great			General Election, 1882, list of Returning		
Lakes		58	Officers		33
Distilled and Fermented Liquors imported			Genii, request of the Master of, to release		
and manufactured		59	sailors		72
Distribution, Canadian Statutes		28	Germany, commercial arrangements with		89
Dominion Bailiffs, appointment of	62 &	62a	Germany, steamship communication with		71
Dominion Police, expenditure of		18	Glendon, steamer to replace the		97
Dominion Statutes	17 to	17b, 28	Goodwin, Jas., amount paid		105
Drawbacks, manufactured goods exported		45a	Government Lien on G.T.R.	76b,	76c
do do iron do		45a	Government Survey, Lot No. 133, Manitoba		167
Drawbacks, shipbuilding materials		45	Governor General's Warrants	26,	43
Drill Shed, Iona		50	Grain and Products of Grain		100
Drugs, analysis of		4a	Grand Trunk Railway	76 to	76c
Duties on Salt		65	Gravenhurst to Callander, railway between,		
Duties paid by C.P.R. on imports		27m	subsidy to		121
<b>E</b>					
Eastern Extension Railway, N.S.		40j	Great American and European Short Line		
Ecuador, commercial arrangements with		89	Railway Co., subsidy to		121
Egypt, do do		89	Greece's Point, Grenville Canal	105a,	105b
Election, General, 1882-83	77 &	77a	Grenville and Carillon Canal	105	105b
Estimates, 1883-84		1	<b>H</b>		
Estimates, Supplementary, 1882-83		1	Halifax and Cape Breton R'y and Coal Co.		40f
Estimates, Supplementary, 1883-84		1	Halifax, Fire Insurance in, from 1880 to 1882		12c
Estimates, Further Supplementary, 1883-84		1	Halifax, troops in		88
Examination of Mates		7	Hamilton, Fire Insurance in, from 1880 to		
Excise, Montreal		13b	1882		12c
Expenditure, British Columbia Penitentiary		29a	Hamilton & North-Western Railway, purchase of shares by G.T.R.		76
Expenditure, Dominion Police		18	Havelock and Petitcodiac, N.B., railway between, subsidy to		121
do and receipt, charged to Consolidated Fund		30	Hébert, H., fraudulent practices		78
Expenses and Revenue, I.C.R.		40a	Henev, Stewart & Co., Contractors	105a &	105b
Expenses, unforeseen	22,	42	H.M. Ships of War British Columbia Coast		108
Exports and Imports last half 1882		92	Hudson Bay		104
Extradition Act, Canadian		32	Huron Lake, buoys and beacons		87
<b>F</b>					
Fabre, Hon. Hector, Commission to France		60	Hydrographical Survey		64
Factory Labor	16 &	16a	<b>I</b>		
Fermented and Distilled Liquors, imported and manufactured		59	Immigration	93 to	93c
Fermented and Distilled Liquors, materials used in		59	Immigration into British Columbia	93,	93a
Field Battery, Richmond		31c	Imports and Exports, last half 1882		92
Fifth General Election	77 &	77a	Indian Affairs, Annual Report		5
Fines and Seizures		38	Indian Agency, Manitoba		123
Fines exacted and how disposed of		38	Inland Revenue, Annual Report		4
Fire Insurance, 1880 to 1882 inclusive, in Montreal, Quebec, Toronto, Hamilton, Ottawa, Halifax, St. John, N.B.		12c	Inland Revenue, Montreal		13b
Fire and Marine Insurance, abstract for 1882		12a	Instruction Staff, Royal Military College		56a
Fisheries	37 to	37c	Insurance	12 to	12c
Fisheries and Marine, Annual Report		7	Insurance, Report of Superintendent		12
Fisheries, Commissioner's Report		7	Intercolonial Railway	40 to	40f, 121
Fishermen, bounty to		37c	do Commission		40b

I		M	
	No.		No.
Intercolonial Railway subsidy to.....	121	Molasses imported by vessels.....	58b
Interior, Department of, Annual Report.....	23	Montenegro, commercial arrangements with.....	89
International R'y Co., subsidy to.....	121	Montreal and Western R'y Co., subsidy to....	121
Intoxicating Liquors.....59 to 59b		Montreal Customs Department.....	29
Iona Drill Shed.....	50	Montreal, fire insurance in, from 1880 to 1882	12c
Iron manufactured, drawback on if exported	45a	Montreal, Ottawa and Occidental Railway, acquisition by C.P.R.....	27a
J		Mcraivan and Newfield S.S.....	101
Jamaica, commercial arrangements with....	89	Morocco, commercial arrangements with....	89
Jewish Refugees from Russia.....	93c	Morpeth Harbor on Lake Erie.....	49g
Judges, County Court, increase of salary....	67b	Murray Canal.....	83
Justice, administration of, claims of the Provinces.....	119	Mc	
K		McCallum, J. D., dismissal of.....	110
Kaministiquia River, C.P.R. terminus.....	27b	McCallum, W.D., correspondence concerning	40c
Ketchum, H. G. C., claim on I.C.R.....	40f	N	
Kings County Court.....	67a	Naval Reserves and Ordnance Lands.....82 & 82a	
L		Navigation and Trade, Annual Report.....	2
Labor in Factories.....	16 & 16a	Napanee, Tamworth and Quebec Railway, subsidy to.....	121
Lake Huron, buoys and beacons.....	87	New Brunswick Constitution, &c.....	70
Lake of the Woods, steamers for.....	114	do County Court.....	67
do St. John Railway.....	90	Newfield and Moravian S.S.....	101
Land Bonds, C.P.R.....	27c, 27f	New Harbor, N.S., breakwater.....	52a
do for colonization.....	84	North-Shore Railway, purchase of by G.T.R.	70
Land Improvement Fund.....	20	North-West Territories, agricultural imple- ments imported into.....	108 to 103b
Land taken in St. John for I.C.R.....	40h	Nova Scotia Constitution, &c.....	70
Lands, C.P.R.....	27k	O	
Lands given to Canada by Imperial Govern- ment.....	113	Ocean Mail Service.....	39 & 39a
Lands, Ordnance.....	82 & 82a	O'Connor, Hon. John.....	85
Lebel, Dr., account of.....	40e	Officers' Staff, "A" and "B" Batteries....	56a
Legislation in P.Q., proposed, affecting Liquors.....	59a	Okanagan and Shuswap Canal.....	81
Library of Parliament, Annual Report.....	15	Ontario and Quebec Railway.....	27a
Life and Accidental Insurance, abstract for 1882.....	12b	do Boundary Award.....	95
Life-Saving Stations.....	112	Ontario Lake, life-saving stations.....	112
Lighthouse at Quaco.....	57	Ontario Maritime Court.....	68a
Liquors, distilled and fermented.....	59	Ordnance Lands and Naval Reserves.....82 & 82a	
do sale of.....59a & 59b, 61		Ordnance for Canada.....	116
Liverpool Bay, breakwater at.....	52b	Ottawa, fire insurance in, from 1880 to 1882.	12c
Loan and Investment Co., British Canadian	73	P	
Lobster Fishing, close season.....	37c	Parliament Library, Annual Report.....	15
Location Eastern Section, C.P.R.....	27j	Pembroke bonus to Canada Central Railway	69
Luke's Report.....	16a	Penitentiaries, Annual Report.....	29
Lyon, Mr. J. A.....	122	Penitentiary, British Columbia.....	29a
M		Perley, Amos, claim of.....	37d
Mail Service, between Canada and G.B....39 & 39a		Peticodiac to Havelock, N.B., railway between, subsidy to.....	121
Manitoba, agricultural implements imported into.....	103 to 103b	Pictou and Truro Branch I.C.R.....	40j
Manitoba Indian Agency.....	123	Piers and Wharves.....	46 to 46g
Manitoba, subsidies for.....	108	do P.E.I., claims for refund of their expenditure on.....	46c & 46d
Manufactured Goods exported, drawback on	45a	Pilots and Pilotage, British Columbia.....	111
Marine and Fire Insurance, abstract for 1882	12a	Portage Island.....	96
Marine and Fisheries, Annual Report.....	7	Port Albert Harbor.....	46a
Maritime Court, Ontario, rules of, &c.....	68a	Port Lorne, N.S., breakwater.....	52
do proceedings of.....	68	Postmaster-General, Annual Report.....	3
Marriages, Baptisms and Burials.....	44	Post Office, Montreal.....	10b
Measures and Weights.....	4	Prime Meridian.....	48
Meridian, prime or standard.....	48	Prince Edward Island, Constitution, &c.....	70
Militia.....	31 to 31f	do Railway.....	86
Militia, Annual Report.....	9	Products of Grain, and Grain.....	100
Militiamen, 1812.....	31 & 31a	Promotions, Civil Service.....	21, 13a
Miller, J. A., Judge.....	53	Provencher, J.A.N., Manitoba Indian Super- intendent.....	123
Mineral Lands, regulations for the disposal of.....	102	Provincial subsidy to Quebec.....	94 & 94a
Mining Licenses in disputed territory (On- tario).....	118	Public Accounts, 1881-82.....	41, 1
Mining regulations for disposal of other than coal lands.....	102	Public debt incurred for Railways, Canals, &c	109
Miramichi Valley Railway Co., subsidy to....	121	Public Works, Annual Report.....	10 & 10a
		do Dep't. of telegraph expenses.....	124
		do General Report, 1867 to 1882.....	16a

Q		S	
	No.		No.
Quaco Lighthouse.....	57	Statistics, Criminal, for 1881 .....	1
Quebec and Lake St. John Railway Co., subsidy to.....	121	do railway.....	8a
do Cartridge Factory.....	99	Statutes, Canadian, classifying, &c. ....	17 to 17b
do City, fire insurance in, 1880 to 1882..	12c	teambot Inspection.....	7
do Frontenac Terrace.....	113	Steamers for Lake of the Woods and Rainy Lake.....	114
do Provincial subsidy.....	94 & 94a	Steamship communication with Germany....	71
<b>R</b>		Stewart, John, volunteer of 1837-38.....	31d
Railway Bridge, St. John.....	47 & 47a	St. Anne (Chicoutimi), wharf at.....	46b
Railway, Canadian Pacific.....	27 to 27r	Ste. Agathe, Man., claims on lot No. 133....	106
Railway Commission, Canadian Pacific.....	27g	St. Jean, banque de.....	34
do Intercolonial.....	40b	St. Jean Port Jolie, pier at.....	46 & 46a
Railway, Grand Trunk.....	76 to 76c	St. John, land taken in, for I.O.R.....	40h
Railway, Intercolonial.....	40 to 40l	St. John, N.B., fire insurance in, from 1880 to 1882.....	12c
Railway, Lake St. John.....	90	St. John Railway Bridge.....	47 & 47a
Railway map of Canada.....	8a	St. John River, N.B.....	122
Railway, P.E.I.....	86	St. Lawrence and Ottawa Railway, purchase of shares by G.T.R.....	76
Railway Statistics.....	8a	Subsidies for Manitoba.....	108
Railways and Canals, Annual Report.....	8	Subsidies to certain railways.....	121
Railways, public debt incurred for.....	109	Subsidy, Province of Quebec.....	94 & 94a
Railways, subsidies to.....	121	Sugar and Syrup imported by vessels.....	58b
Rainy Lake, steamers for.....	114	Summerside Harbor.....	54
Rapide Plat Canal.....	106c	Superannuation.....	21 to 21b
Receipts and Expenditure charged to Con- solidated Fund.....	30	Superannuation List.....	21a
Reciprocity between Canada and the U.S....	55	Supernumerary Clerks, Montreal Customs..	49
Registered ships in Province of Quebec, &c.	58a	Supreme Court, amended rule.....	63
Renouf, Dr., account of.....	40e	Survey, Hydrographical.....	64
Reserves, Naval.....	82 & 82a	Suspension of Extradition Act.....	32
Returning Officers, list of.....	33	<b>T</b>	
Revenue and expenses, I. C. R.....	40a	Tariff between Intercolonial and Allan Mail Line.....	59 & 39a
Revision Canadian Statutes.....	17 to 17b	Telegram expenses, Dept. Public Works....	124
Richmond Field Battery.....	31c	Thunder Bay, C. P. R. terminus.....	27r
River du Loup and Brandy Pots Semaphores	74	Timber Licenses in disputed territory (On- tario).....	118
River du Loup branch, sale of by G. T. R. 76b to 76c	75	Tobacco, Canadian.....	35
do & Rivière Ouelle, wharfs at.....	75	Toronto, Customs duties refunded at.....	91
Rocky and Selkirk Mountains, C. P. R. line in	27l	Toronto, fire insurance in, from 1880 to 1882.	12c
Rolling Stock, Intercolonial Railway.....	40, 40f, 40i	Trade and Navigation, Annual Report.....	2
Roumania, commercial arrangements with..	89	Trade between Canada, West Indies and Brazil.....	98
Royal Military College.....	56, 56a	Troops in Halifax.....	88
Russell v. The Queen.....	80	Truro and Pictou Branch I.C.R.....	40j
Russia, Jewish Refugees from.....	93c	<b>U</b>	
<b>S</b>		Unforseen expenses.....	22, 42
Sailors' application for release.....	72	Unsettled accounts with the Provinces....	20
Sale of Liquor.....	59a, 59b & 61	<b>V</b>	
Salmon Fishing.....	37b	Vancouver Island Constitution, &c.....	70
Salt duties.....	65	Vessels importing sugar, syrup and molasses.	58b
Secretary of State, Annual Report.....	11	Vessels, on the Great Lakes, disasters to Canadian.....	58
Sections 14 and 15, O. P. R.....	27g	Vessels, registered.....	58a
Securities and bonds.....	25	Veterans, 1812, deceased since 1875.....	31
Seizures and fines.....	38	do surviving.....	31 & 31a
do at ports of entry.....	38	do widows of.....	31
Seizures of tobacco.....	35a	<b>W</b>	
Selkirk and Rocky Mountains, C. P. R., line in	27l	Warrants, Governor General's.....	26, 43
Semaphores, River du Loup and Brandy Pots	74	Weights and Measures.....	4
Servia, commercial arrangements with.....	89	Wellington, Grey and Bruce Railway, pur- chase of shares by G. T. R.....	76
Shelburne Harbor, fog-whistle.....	66	West Indies, trade between Canada and....	98
Shipbuilding materials, drawback on.....	45	Wharves and Piers.....	46 to 46g, 75
Ships registered in the Province of Quebec, &c.....	58a	Whitehead, Jos., Contractor.....	27g
Short-term prisoners, claim for refund for maintenance by P. E. I. Government. 46c & 46d	46d		
Shuswap and Okanagan Canal.....	81		
Spain, commercial arrangements with.....	89		
Spellmacheen-Okanagan Canal.....	81		
S. S. <i>Newfield</i> and <i>Moravian</i> .....	101		
Standard Meridian.....	48		
Statistics and Census.....	24		

## LIST OF SESSIONAL PAPERS:

ARRANGED NUMERICALLY AND IN VOLUMES.

### CONTENTS OF VOLUME A.

CENSUS OF CANADA, 1880-81, Vol. III.

### CONTENTS OF VOLUME No. 1.

No. 1... PUBLIC ACCOUNTS :—For the fiscal year ended 30th June, 1882.

ESTIMATES :—Of sums required for the service of the Dominion, for the year ending 30th June, 1884.

Supplementary Estimates of sums required for the service of the Dominion, for the year ending 30th June, 1883.

Supplementary Estimates of sums required for the service of the Dominion, for the year ending 30th June, 1884.

Further Supplementary Estimates of sums required for the service of the Dominion, for the year ending 30th June, 1884.

### CONTENTS OF VOLUME No. 2.

No. 2... TRADE AND NAVIGATION :—Tables of, for the fiscal year ended 30th June, 1882.

### CONTENTS OF VOLUME No. 3.

No. 3... POSTMASTER-GENERAL :—Report of, for the year ended 30th June, 1882.

No. 4... INLAND REVENUE :—Report, Returns and Statistics of, for the fiscal year ended 30th June, 1882.

Supplement No. 1 :—Canal Statistics for the season of Navigation, 1882.

Supplement No. 2 :—Weights and Measures, 1882.

Supplement No. 3 :—Adulteration of Food, 1882.

No. 4a. Return to Address (Senate); Return showing—The various drugs and articles of food, an analysis of which has been made by the official Analyst, and the Reports thereon.

### CONTENTS OF VOLUME No. 4.

No. 5... INDIAN AFFAIRS :—Annual Report of the Department of, for the year ended 31st December, 1882.

No. 6... AUDITOR-GENERAL :—Report of, on Appropriation Accounts, for the year ended 30th June, 1882.

### CONTENTS OF VOLUME No. 5.

No. 7... MARINE AND FISHERIES :—Report of the Department of, for the fiscal year ended 30th June, 1882.

Supplement No. 1 :—Report of the Chairman of the Board of Steamboat Inspection, Examination of Mates, &c., for the calendar year ended 31st December, 1882.

Supplement No. 2 :—Report of the Commissioner of Fisheries, for the year ended 31st December, 1882.

## CONTENTS OF VOLUME No. 6.

- No. 8... RAILWAYS AND CANALS:—Annual Report of the Minister of, for the past fiscal year ended 30th June, 1882.
- No. 8a. RAILWAY STATISTICS OF CANADA:—Capital, traffic and working expenditure of the railways of the Dominion, for the year ended 30th June, 1882, with a map showing the Railways of Canada.
- No. 9... MILITIA:—Report on the state of, for the year 1882.
- No. 10... PUBLIC WORKS:—Annual Report of the Minister of, for the fiscal year 1881-82.

## CONTENTS OF VOLUMES Nos. 7 &amp; 8.

- No. 10a. PUBLIC WORKS:—General Report of the Minister of, from 30th June, 1867, to 1st July, 1882.

## CONTENTS OF VOLUME No. 9.

- No. 11... SECRETARY OF STATE OF CANADA:—Report of, for the year ended 31st December, 1882.
- No. 12... INSURANCE:—Report of the Superintendent of, for 1881.
- No. 12a. Fire and Marine Insurance Companies: Abstract Statements of, for the year ended 31st December, 1882.
- No. 12b. Life and Accidental Insurance in Canada: Abstract of, for the year 1882.
- No. 12c. Return to Order: Statement of the total amounts of insurance premiums against fire collected and losses paid, during each of the years 1880, 1881 and 1882, in each of the following cities: Montreal, Quebec, Toronto, Hamilton, Ottawa, Halifax and St. John, N.B. (*Not printed.*)
- No. 13... CIVIL SERVICE:—Report of the Examiners.
- No. 13a. Return of the names and salaries of all persons appointed or promoted in the Civil Service during the half-year ending 31st December, 1882, specifying the office to which each has been appointed or promoted, in compliance with the Canada Civil Service Act, 1882.
- No. 13b. Return to Order: Return showing the names, ages and origin of all persons employed in the Customs, Post and Inland Revenue offices at Montreal, since 1st May, 1882, to 20th February, 1883, and the salary of each of the said employes; also the names of the employes in the offices of Customs and Excise, on the Civil Service List, as entitled to a pension. (*Not printed.*)

## CONTENTS OF VOLUME No. 10.

- No. 14... AGRICULTURE:—Report of the Minister, for the calendar year, 1882.
- Criminal Statistics for 1881:—Appendix to the Report of the Minister of Agriculture for the year 1882.
- No. 15... LIBRARY OF PARLIAMENT:—Report of the Librarian.
- No. 16... LABOR IN FACTORIES:—Report (Senate) of A. H. Blackeby on the laws regulating labor in the State of Massachusetts.
- No. 16a. Report of W. Lukes on factories in England and Continent of Europe.
- No. 17... DOMINION STATUTES:—Report of the Commissioner to collect, &c., passed by Parliament since Confederation.
- No. 17a. Return to Address; Statement in detail of all expenditures made in connection with the Commission to the Hon. James Cockburn, Q.C., to consolidate the Dominion Statutes, and copies of the Commission, and of any reports made by him.
- No. 17b. Return to Address; Copies of correspondence, &c., touching the appointment of a Commissioner in connection with the Revision of the Canadian Statutes.

- No. 18... DOMINION POLICE:—Statement of expenditure during the year 1882. (*Not printed.*)
- No. 19... BANKS:—Lists of Shareholders of the Canadian Banks. (*Not printed.*)
- No. 20... LAND IMPROVEMENT FUND:—Return to Address; Copies of all letters, &c., between this Government and the Governments of Ontario and Quebec, from 1st June, 1882, relating to this Fund and unsettled accounts, also a statement showing the present balances, if any, due to the said Provinces. (*Not printed.*)
- No. 21... SUPERANNUATION:—Statement of name, &c., of each person superannuated, &c., in accordance with the Civil Service Act, 45 Vic., chap. 4, sec. 55, sub-sec. 3.
- No. 21a. Return of the names of the persons on the Superannuation List, as on 23rd February, 1883, together with the amount of the annual allowances paid each.
- No. 21b. Return (in part) to Order; Statement showing separately for each year since the establishment of the Superannuation Fund:—1. The number of persons on the list for the year as entitled to the benefit of the Act. 2. The number superannuated during the year under the Act. 3. The number retired during the year on a gratuity under the Act. 4. The total amount paid into the Fund from the beginning by those who were, during the year, superannuated or retired on a gratuity; distinguishing between those whose superannuation was caused by the abolition of office. 5. The number of persons on the list, for the year, who died in the service;—and 6. The total amount paid into the Fund from the beginning by those who, during the year, died in the service.
- No. 22... UNFORESEEN EXPENSES:—Statement of payments charged to, by Order in Council, from 1st July, 1882, to date, in accordance with the Act 42 V., chap. 2, schedule B.
- No. 23... INTERIOR:—Annual Report of the Department of, for the year 1882.
- No. 24... CENSUS AND STATISTICS:—Report, required by sec. 25, of the Census and Statistics Act, of 1879, of operations and expenses during the calendar year, 1882. (*Not printed.*)
- No. 25... BONDS AND SECURITIES:—Detailed statement of, registered in the Department of the Secretary of State of Canada, submitted to Parliament, in compliance with the Act 31 Vic., chap. 37, sec. 15. (*Not printed.*)
- No. 26... GOVERNOR GENERAL'S WARRANTS:—Statement of, issued since the last Session of Parliament, in accordance with the Act 41 Vic., chap. 7, sec. 32, sub-sec. 2, on account of the fiscal years, 1881-82, and 1882-83.

## CONTENTS OF VOLUME No. 11.

- No. 27... CANADIAN PACIFIC RAILWAY:—Return to Resolution; Report giving full information on all subjects affecting the Railway, up to the latest date: 1. The selection of the route; 2. The progress of the work; 3. The selection or reservation of land; 4. The payment of money; 5. The laying out of branches; 6. The progress thereon; 7. The rates of tolls for passengers and freight; 8. The particulars required by the Consolidated Railway Act and amendments thereto, up to the end of the previous fiscal year; 9. Like particulars up to the latest practicable date before the presentation of the Return; 10. Copies of all Orders in Council and of all Correspondence between the Government and the Railway Company, or any member or officer of either, relating to the affairs of the Company.
- No. 27a. Return to Resolution; Memorandum as to substitution by the Railway of Credit Valley Stock for \$1,000,000 cash deposit.
- No. 27b. Return to Resolution; Report of the Company, in account with the Government of Canada, viz.:—Rails Advance Account, Land Grant Bond Account, Current Account and Subsidy Account. (*Not printed.*)
- No. 27c. Return to Resolution; Schedule of Correspondence as to Canadian Pacific Land Grant Bonds.
- No. 27d. Return to Resolution; Memorandum of the progress of construction of the Railway, dated Montreal, 21st February, 1883. Also, a map of the country to be traversed by the Railway. (*Not printed.*)



- No. 27c. CANADIAN PACIFIC RAILWAY :—Return to Resolution ; Further Report giving full information, not contained in No. 27 ; and also, a plan showing lands for expropriations of the Railway, extending from the south-westerly side of the village of Prince Arthur's Landing easterly to Current River.
- No. 27f. Return to Resolution ; Copies of communications of the Railway on the subject of the allotment and conveyance of lands, as they are earned under the contract.
- No. 27g.. Return to Order ; Statement, in detail, of all sums expended in connection with the Canadian Pacific Railway Commission, with dates and names of the persons paid, and particulars of the service in respect of which payment is made—copy of all correspondence, contracts, accounts or arrangements, not already brought down, as to the printing of the evidence or Report.
- No. 27h. Return to Resolution ; Map showing the Railway, as located for construction between Callander and Algoma Mills, 191 miles. (*Not printed.*)
- No. 27i.. Copies of contracts for the Railway, in terms of section 19 of the Act 37 Victoria, chapter 14, as follows :—  
 Between Horton & Son and Her Majesty the Queen, etc.,—for the supply of 72 tons of iron bolts and nuts. (Contract No. 94.)  
 Between Bayliss, Jones and Bayliss and Her Majesty the Queen, etc., —to supply bolts, nuts and spikes. (Contract No. 95.)  
 Between Guest and Company and Her Majesty the Queen, etc.,—for the supply of steel rails and steel fish-plates. (Contract No. 96.)  
 Between John McDonald and Her Majesty the Queen, etc.,—to construct six combined passenger and freight buildings on 42nd contract. (Contract No. 97.)  
 Between Colin Nichol Black and the Minister of Railways and Canals, etc., for the supply of 30,000 tamarack ties, 8'—0 x 7' x 6' at 25 cts. each. (Contract No. 98.)
- No. 27j. Return to Resolution ; Location eastern section, Current Creek to Nipigon, and freight tariff, western division.
- No. 27k. Return to Order ; Statement of the total quantity of land agreed to be sold by the Company, the total price agreed to be paid therefor, during each month up to the 1st day of March, 1882, distinguishing between the sales of farming lands and those of town, village or station lots, woodland, mineral, quarry lands and other special sales, and including the quantities and prices realized for lands in which the Company became interested by agreements in connection with the location of stations. (*Not printed.*)
- No. 27l.. Return to Resolution ; Communication from W. C. Van Horne, General Manager, dated Montreal, 15th April, 1883, respecting additional information concerning the line proposed to be adopted through the Rocky and Selkirk Mountains.
- No. 27m. Return to Order ; Statement of duty paid by the Company on articles imported by them, from the date of their contract until 28th February, 1883, specifying the ports of entry of such goods, and the amount paid at each port. (*Not printed.*)
- No. 27n. Return to Address ; Copies of the official memorandum of the Company, dated 12th December, 1882, describing its position and prospects. The advertisement published thereafter by the Company asking for subscriptions for its increased capital stock ; and all memoranda in connection therewith.  
 Statement showing the amount of the subscribed stock of the Company prior to the increase of its capital stock from \$25,000,000 to \$100,000,000, and the amounts paid up on such subscribed stock, with the date of each payment in cash, and also the amounts (if any), satisfied by the acquisition of property or otherwise, specifying in such case the consideration therefor and the amount of stock given, and the date.  
 Statement of the facts as to the acquisition by the Company of the Canada Central Railway, the Montreal, Ottawa and Occidental Railway, and interest in the Credit Valley Railway and Ontario and Quebec Railway.  
 Statement of the various matters required to be returned under the Consolidated Railway Act, 1879, and amendments thereto.  
 Statement of the total sum expended up to the 1st of February, 1883, by the Company under their contract.

- No. 27o. **CANADIAN PACIFIC RAILWAY**:—Return to Order; Map or maps showing (1) the location of the railway so far as approved or constructed; (2) its location so far as proposed to Government, but not yet approved; (3) the location of any branches constructed and of any now contemplated by the Company, so far as the Government is advised; (4) the lands set apart for the Company but not yet granted; (5) the lands granted; (6) the lands applied for but not yet set apart. (*Not printed.*)
- No. 27p. Return to Order; Statement showing the reduction made by change of construction in Contracts A and B, and the amount involved by such change; also, the amount of each payment made to the respective contractors each month since the letting of the work; also, all claims made by the contractors on each of these contracts, and the date of each claim. (*Not printed.*)
- No. 27q. Papers in relation to Sections 14 and 15, Joseph Whitehead, Contractor. (*Not printed.*)
- No. 27r. Memorandum respecting Thunder Bay and River Kaministiquia.
- No. 28... **DOMINION STATUTES**:—Official Return of the distribution of, being 45 Victoria, 1882. (*Not printed.*)
- No. 29... **PENITENTIARIES IN CANADA**:—Report of the Minister of Justice on, for the year ended 30th June, 1882.
- No. 29a. Supplementary Return; Expenditure of the British Columbia Penitentiary, for the fiscal year ended the 30th June, 1882. (*Not printed.*)
- No. 30... **RECEIPT AND EXPENDITURE**:—Return to Order; Return of, in detail, chargeable to the Consolidated Fund, from 1st July, 1882, to 1st February, 1883. (*Not printed.*)
- No. 31... **MILITIA**:—Return to Order; Statement of the number of Veterans of 1812 now surviving; of the number who have died since 1875, and of the number of widows of deceased who have applied for assistance. (*Not printed.*)
- No. 31a. Return to Order; Statement containing the names and residences of all the militiamen of 1812 who received their pensions during the last fiscal year, as well as the sum given to each of them. (*Not printed.*)
- No. 31b. Return to Order; Copies of all tenders, accounts, &c., in connection with the purchase of blankets for the militia during the recess. (*Not printed.*)
- No. 31c. Return to Order; Return of all petitions and correspondence with respect to new guns for the Richmond Field Battery. (*Not printed.*)
- No. 31d. Return to Order; Copies of all correspondence relating to the application of John Stewart, of Woodbridge, one of the Volunteers of 1837-38, for assistance, for his services in defence of his country during those years. (*Not printed.*)
- No. 31e. Return to Order; Return showing the number of officers, non-commissioned officers and men who received instruction in "A" and "B" Batteries in each year since their establishment; the number awarded a certificate of qualification in each year, and the entire cost per annum of each battery for the same time.
- No. 31f. Return to Address (Senate); Copies of all tenders for work at the camp at Berthier, in 1882, stating the rates of the various tenders, and the names of persons to whom the contracts were awarded, etc. (*Not printed.*)
- No. 32... **CANADIAN EXTRADITION ACT**:—Return to Address; Correspondence, not already brought down, touching the Act, and the suspension of the Imperial Act within Canada.
- No. 33... **RETURNING OFFICERS**:—Return to Order; List appointed for the General Election, 1882, other than Registrars or Sheriffs, occupations and residences of such officers, and a list of the Sheriffs and Registrars for the Districts in which such officers were appointed.
- No. 34... **BANQUE DE ST. JEAN**:—Return to Order; Copies of the returns, annual and monthly, made by the Bank since 1875, to the Government; also, copies of the certificates granted by the Treasury Board to the said Bank on going into operation. (*Not printed.*)

- No. 35...** **U A** **NADIAN TOBACCO**:—Return to Order; Return shewing: 1st. The number of licensed tobacco manufactories on 1st February, 1883, in which Canadian leaf is exclusively used; 2nd. The quantity of Canadian leaf used in tobacco manufactories since the passing of the Inland Revenue Act of 1880, to 1st February, 1883; and 3rd. The quantity of cigars and Cavendish produced, respectively, since 1st May, 1880, to 1st February, 1883, in manufactories in which Canadian Leaf is exclusively used. (*Not printed.*)
- No. 35a.** Return to Order; Copies of all documents, &c., relating to a seizure of tobacco on the premises of Mr. N. Bernatchez, and other merchants, of Montmagny. (*Not printed.*)
- No. 36...** **COAL**:—Return to Order; Return showing the quantity in tons of coal exported from each port in Nova Scotia for the year ending June 30th, 1882; Also, for the six months ending December 31st, 1882, and the countries to which exported; Also, quantities sent by railway, and by water (separately), to any ports of Quebec and Ontario, naming places sent to.
- No. 36a.** Coal Lands; Regulations for the disposal of, approved by His Excellency the Administrator of the Government in Council, on the 2nd March, 1883, substituted for those of the 17th December, 1881.
- No. 36b.** Return to Order; Copies for all applications for sales or leases, and all correspondence or reports touching all leases of coal lands in the North-West, not already brought down; and a statement of the payments made under any such leases.
- No. 36c.** Return to Order; Return giving a full statement of all coal entered ex-warehouse free or for exportation, during the years ending 30th June, 1881 and 1882.
- No. 37...** **FISHERIES**:—Copies of Orders in Council, instructions and forms for Fishing Bounty, submitted in compliance with the Act 45 Vic., cap. 18.
- No. 37a.** Return to Order; Return of leases or licenses to fish on rivers in New Brunswick and the annual rent received on each; Also, the number of leases or licenses cancelled or surrendered.
- No. 37b.** Return to Order; Return of the instructions issued to the Inspectors of the Fisheries, as to the enforcement of the Order in Council of 11th June, 1879, whereby fishing for salmon in Canada, excepting under authority from the Department of Marine and Fisheries, was prohibited, the number of seizures and informations laid before Justices of the Peace against parties fishing without such lease or license; the number of convictions obtained, etc.
- No. 37c.** Certified copy of a Report of the Hon. the Privy Council, on 2nd May, 1883, respecting an appropriation of at least \$50,000 for bounty to fishermen.
- No. 37d.** Return to Order; Return of all correspondence, etc., had from 1st January, 1877, to 31st March, 1883, between the Department of Marine and Fisheries at Ottawa and the Inspector of Fisheries for New Brunswick in reference to the claim of ex-Overseer Amos Perley, of Chatham, for services in connection with the Smelt Fishery of Miramichi, in the years 1876 to 1878.
- No. 37e.** Return to Address; Copies of all Orders in Council in force regulating the close season for Lobster Fishing, &c.
- No. 38...** **SEIZURES AND FINES**:—Return to Order; Statement showing the number of seizures made at each port of entry in the Dominion during the last fiscal year, and also during the six months ended the 31st December 1882, the fines exacted, and how disposed of. (*Not printed.*)
- No. 39...** **OCEAN MAIL SERVICE**:—Return to Address (Senate); Correspondence, &c., in the possession of any department or officer of the Government, relating to the mail service between Canada and the United Kingdom, or to the rates of freight charged by the line of steamships by which such mail service is performed.
- No. 39a.** Supplementary Return (Senate) to the preceding.
- No. 40...** **INTERCOLONIAL RAILWAY**:—Return to Order; Return showing rolling stock purchased during the year ended December 31st, 1882, &c.; also, a statement showing what has been built during the year in the Government workshops.

- No. 40a. INTERCOLONIAL RAILWAY :—Return to Order; Statement of the revenue and working expenses for the six months of each year, ended December 31st, 1880, 1881 and 1882, under the several divisions.
- No. 40b. Return to Address; Copies of all Orders in Council, correspondence, &c., and the Commission in connection with claims made on the Government, arising out of the construction of the railway; and statement of the matters referred to them so far; and of the remuneration to be paid to them and the Secretary of the Commission, &c.
- No. 40c. Return to Order: All correspondence in reference to the removal and dismissal of W. D. McCallum, Chief Train Despatcher at Truro. (*Not printed.*)
- No. 40d. Return to Order; Return of casualties on the railway, where no loss of life or personal injuries occurred, from March 1st, 1882, to March 1st, 1883, with the respective causes, &c.; of damage to property, and amount of compensation paid, as well as claims unsettled. (*Not printed.*)
- No. 40e. Return to Order; Copies of the accounts rendered by Doctors Lebel and Renouf, of St. Gervais, for attendance on an employé of the railway named Dionne; and a statement of the sums to them paid. (*Not printed.*)
- No. 40f. Return to Order; Return showing the nature of the rolling stock purchased for the railway, as contained in the item of \$153,853.84 in the Public Accounts of 1882; where such rolling stock was manufactured, and the price paid.
- No. 40g. Return to Order; Return of all tenders submitted for the construction of the freight sheds and warehouses at the railway depot, St. John, N.B.; the names of the several contractors, and the amount of each contract, the number and names of the superintendents and overseers, and the amount paid for their services. (*Not printed.*)
- No. 40h. Return to Order; Return of the amounts paid for lands taken on Mill and Pond streets, in St. John, N.B., for the railway; the names of the arbitrators appointed to appraise the land, the compensation paid to them and the awards made by them.
- No. 40i. Return to Order; Return showing the rolling stock purchased for each year since the 1st of July, 1878, the nature of such rolling stock, and the place where manufactured, &c.
- No. 40j. Return to Address; Copies of all correspondence between the Government of Nova Scotia and the Departments of Railways and Public Works, respecting the transfer of the branch railway between Truro and Pictou, and with the Halifax and Cape Breton Railway and Coal Company, respecting Eastern Extension Railway matters in Nova Scotia.
- No. 40k. Return to Order; Copies of all correspondence relating to the steamer running in connection with the railway between Campbellton, Gaspé and intermediate ports. (*Not printed.*)
- No. 40l. Papers in relation to H. G. C. Ketchum's claim for overcharge, for the conveyance of rails 1866-67 and '68, Intercolonial Railway. (*Not printed.*)
- No. 41... PUBLIC ACCOUNTS :—Return to Address; Copies of all Orders in Council affecting certain items in the Public Accounts, for the fiscal year ended 30th June, 1882. (*Not printed.*)
- No. 42... UNFORESEEN EXPENSES :—Return to Address; Copies of all Orders in Council affecting certain items in the statement of payments charged to Unforeseen Expenses, referred by the House to the Select Standing Committee on Public Accounts, on the 23rd February, 1883. (*Not printed.*)
- No. 43... GOVERNOR GENERAL'S WARRANTS :—Return to Address; Copies of all Orders in Council affecting certain items in the statement of the Governor General's Warrants, issued during the fiscal years 1881-82 and 1882-83, referred to the Select Standing Committee on Public Accounts by the House, on the 23rd February, 1883. (*Not printed.*)
- No. 44... BAPTISMS, MARRIAGES AND BURIALS :—General statements and returns of, for certain districts of the Province of Quebec, for the year 1882. (*Not printed.*)
- No. 45... DRAWBACK ON SHIPBUILDING MATERIALS :—Return to Order; Return of all claims presented for drawback on materials used for shipbuilding, for the year ended 30th June, 1882; also, for the six months ended 31st December, 1882. (*Not printed.*)

- No. 45a. DRAWBACK ON MANUFACTURED GOODS:—Return to Order; Return of all claims presented for drawbacks on goods manufactured for export since 2nd March, 1882, &c.; also, copies of all regulations made by the Department with reference to such claims, together with a copy of one allowed claim and the sworn declaration thereto of each exporter of boilers, machinery, sewing machines or other manufactures of iron.
- No. 46... WHARVES AND PIERS:—Return to Order; Copies of all correspondence with reference to the construction of an addition to the pier of St. Jean Port Jolie, County of L'Islet, &c., since the appropriation made for that object during the last Session of Parliament. (*Not printed.*)
- No. 46a. Return to Order; Completing the preceding return by furnishing the date of the memorandum closing the said papers. (*Not printed.*)
- No. 46b. Return to Order; Reports, &c., in relation to the construction of a wharf or pier at St. Anne, on the Saguenay, County of Chicoutimi. (*Not printed.*)
- No. 46c. Return (in part) to Address; Correspondence, &c., relating to any claim made by the Provincial Government of Prince Edward Island, for a refund of their expenditure upon public wharves and piers, and also in connection with the maintenance of short-term prisoners in that Province since its admission to the Union. (*Printed for Distribution.*)
- No. 46d. Supplementary return to the preceding. (*Printed for Distribution.*)
- No. 46e. Return to Order; Copy of all reports, estimates, &c., made by the Government Engineers of Port Albert Harbor, and all correspondence with the Port Albert Pier Company respecting said harbor.
- No. 46f. Return to Order; Copies of all reports, &c., made by the Government Engineer of Bayfield Harbor.
- No. 46g. Return to Order; Copies of all correspondence, appropriations, &c., relative to proposed improvement of Morpeth Harbor, on Lake Erie.
- No. 47... ST. JOHN RAILWAY BRIDGE:—Return to Order; Copies of all correspondence with the Government during the year 1882, referring to the construction of a railway bridge over the St. John, at St. John.
- No. 47a. Telegram from Shadroeh Holly, Mayor of St. John, N.B., with a copy of a memorial to the Governor General, in relation to the resolution respecting the proposed loan to the St. John Bridge and Railway Company.
- No. 48... STANDARD MERIDIAN:—Return to Address (Senate); A copy of the memorial from the Royal Society of Canada, the Canadian Institute of Toronto, and of any documents connected with the memorials, relative to the representation of Canada in the International Conference, to determine a standard meridian now contemplated by the Congress of the United States. (*Printed for Distribution.*)
- No. 49... CUSTOMS DEPARTMENT, MONTREAL:—Return to Order; Return of the names of persons in the employ of the Customs Department in the City of Montreal, as supernumerary clerks constantly employed for not less than six months previous to 1st July, 1882. (*Not printed.*)
- No. 50... DRILL SHED, IONA:—Return to Order; Copy of contract, &c., for the building of the drill-shed at Iona, Ont., with report of inspection of the same. (*Not printed.*)
- No. 51... DE LA CHEVROTIÈRE, O.C., DISMISSAL OF:—Return to Address; Copies of the Order in Council, &c., dismissing Mr. Octave C. de la Chevrotière from his position as keeper of a lighthouse situated in the Parish of Lotbinière, in the County of Lotbinière. (*Not printed.*)
- No. 52... BREAKWATERS:—Return to Order; Return of the advertisement for construction of the Breakwater at Port Lorne, N.S., and the several tenders therefor; the party to whom the contract was awarded, and the amount of such contract. (*Not printed.*)
- No. 52a. Return to Order; Copies of all papers, reports of engineers, &c., relating to the building of a breakwater at New Harbor, Guysboro' County, N.S. (*Not printed.*)
- No. 52b. Return to Order; Copies of all correspondence, &c., relating to the building of a breakwater on the west side of Liverpool Bay, from 1870 to 1882. (*Not printed.*)

- No. 52c. **BREAKWATERS** :—Return to Order; Copies of Engineer's report of survey made at Brae, Prince County, Prince Edward Island, during last summer, with a view to making harbor improvements. (*Not printed.*)
- No. 53... **MILLER, J. A., JUDGE** :—Return to Order; Copies of all correspondence with Mr. J. A. Miller, late Justice of the Court of Queen's Bench, Manitoba, prior to his appointment, relating to his becoming Justice of that Court, and subsequently to his appointment on the subject of the resignation of his office. (*Not printed.*)
- No. 54... **SUMMERSIDE HARBOR** :—Return to Order; Copy of the Engineer's Report of Survey made at Summerside Harbor, Prince County, Prince Edward Island, during the last summer, with a view to improving the navigation of said Harbor. (*Not printed.*)
- No. 55... **RECIPROCITY BETWEEN CANADA AND U. S.** :—Return to Address; Copies of all correspondence between the Governments of Canada and the United States, or any Board of Trade in Canada or the United States, upon the question of Reciprocal Trade relations between the two countries, on the general basis of the Reciprocity Treaty of 1854, since 1878.
- No. 56... **ROYAL MILITARY COLLEGE** :—Return to Order; Return of the number of Cadets that have graduated at the Royal Military College since its establishment; the number who have obtained Commissions in the Imperial service; the number who have been appointed to the permanent Militia Corps; Also, names of any officers appointed to "A" and "B" Batteries of A tillery since February 6th, 1880, who have not graduated at the Royal Military College, and of those appointed who graduated at the College. (*Not printed.*)
- No. 56a. Return to Order; Return showing the name, salary and duty of each officer on the Instruction Staff of the Royal Military College, with the date of his appointment; also a Return showing the full staff of officers of "A" and "B" Batteries, respectively, with salary and date of appointment. (*Not printed.*)
- No. 57... **QUACO LIGHTHOUSE** :—Return to Order; Return of the tenders for the re-building of the Lighthouse at Quaco, New Brunswick, and to whom the Contract was awarded, and the amount of such Contract. (*Not printed.*)
- No. 58... **DISASTERS TO CANADIAN VESSELS IN THE GREAT LAKES** :—Return to Order; Return of all correspondence relating to the disasters which have occurred to Canadian vessels, navigating the Great Lakes and the Georgian Bay, within the past three years, &c. (*Not printed.*)
- No. 58a. **REGISTERED VESSELS** :—Return to Order; Statement showing the vessels registered in the Province of Quebec; also, the number of vessels sold and lost between 1st January, 1873, and 1st January, 1882. (*Not printed.*)
- No. 58b. **VESSELS IMPORTING SUGAR, SYRUP AND MOLASSES** :—Return to Order; Return showing the number of vessels with their tonnage, nationality and port of entry, in which sugar, syrup and molasses were imported into this country during the fiscal year ended 30th June, 1881; the quantity of sugar above 14 D.S., and of a lower grade by each vessel or steamship; also a like Return from 1st July, 1881, to 1st January, 1882. (*Not printed.*)
- No. 59... **INTOXICATING LIQUORS** :—Return to Order; Statement showing the quantities of distilled and fermented liquors, imported and manufactured for consumption in Canada, from 1888 to 1882, computed in Imperial gallons, each Province separately, the value of the same and duty paid thereon; the amount of materials used in brewing and distilling alcoholic liquors in the several Provinces of Canada during the same years.
- No. 59a. Return to Order; Copies of any petitions from the Province of Quebec, on the subject of proposed legislation, as to the sale of intoxicating liquors. (*Not printed.*)
- No. 59b. Return to Address; Copies of despatches, &c., on the subject of Canadian and Provincial Laws, as to the imposition of restrictions on the sale of intoxicating drinks. (*Not printed.*)
- No. 60... **FABRE, HON. HECTOR** :—Return to Address; Copies of all correspondence, &c., respecting the appointment of Hon. Hector Fabre to the position he now occupies in France; also, statement of his duties and the salary or commission paid or to be paid for such services, &c; also, all reports on the results of the mission. (*Not printed.*)

- No. 61... SALE OF LIQUOR:—Return to Order; Copies of all correspondence between any Member of the Government and any licensed victuallers, and of all petitions, &c., presented by any such person on the legislation affecting the sale of liquors. (*Not printed.*)
- No. 62... DOMINION BAILIFFS:—Return to Address; Copies of all correspondence with, and petitions from municipalities, referring to the appointment of, to convey prisoners from the county gaols to the Penitentiaries. (*Not printed.*)
- No. 62a. Supplementary Return to the preceding. (*Not printed.*)
- No. 63... SUPREME COURT, AMENDED RULE:—Statement of the Supreme Court of Canada, that Schedule D, annexed to the rules of that Court, be amended; and that an allowance shall be taxed by the Registrar to the duly entered Agent in any appeal, in the discretion of the Registrar, to \$20. (*Not printed.*)
- No. 64... HYDROGRAPHICAL SURVEY:—Return to Order; Copies of all correspondence between any person and the Government, in relation to the hydrographical survey of the great lakes, the River and Gulf of St. Lawrence, and the other maritime coasts of Canada.
- No. 65... SALT DUTIES:—Return to Order; Copies of all correspondence, &c., in the hands of Government, on the subject of duties on salt. (*Not printed.*)
- No. 66... FOG-WHISTLE, SHELBURNE:—Return to Order; Copies of all correspondence, &c., received by the Department of Marine and Fisheries since 1st January, 1881, in reference to the erection of a fog-whistle at Shelburne Harbor, Nova Scotia. (*Not printed.*)
- No. 67... COUNTY COURTS:—Return to Address; Copy of all correspondence between the Governments of New Brunswick and the Dominion, in relation to the creation of a new County Court in that Province, and the appointment of a Judge thereto. (*Not printed.*)
- No. 67a. Return to Address; Return of cases tried at each of the County Courts of the Counties of Kings and Albert, since 1st June, 1882, with the amount of verdicts and judgments entered thereon. (*Not printed.*)
- No. 67b. Return to Order; Copies of all correspondence between the Government and the County Court Judges of the Dominion, and others, respecting the resolution submitted to the House during last Session of Parliament, by the late Minister of Justice, on the subject of the proposed increase of the salary of such Judges. (*Not printed.*)
- No. 68... MARITIME COURT:—Return to Order; Return showing the cases disposed of, &c., by the Judge and several Surrogate Judges of the Maritime Court, since the creation of the said court, until the first day of February, 1882. (*Not printed.*)
- No. 68a. Return to Address; Return of all correspondence between the Judge or Judges of the Maritime Court of Ontario and the Government, respecting the rules, &c., of said court, and the simplification thereof; also, copies of any amended or proposed amended rules, since 1st January, 1882. (*Not printed.*)
- No. 69... CANADA CENTRAL RAILWAY—PEMBROKE BONUS:—Return to Address; Copies of all correspondence upon the subject of the assumption by the Government of the payment of the amount granted by the Town of Pembroke, in aid of the Canada Central Railway.

### CONTENTS OF VOLUME No. 12.

- No. 70... CONSTITUTIONS OF C.B., N.S., P.E.I., N.B., B.O., AND VANCOUVER ISLAND:—Return to Address; Copies of the charters or constitutions granted by the Crown or the Imperial Parliament, to the Provinces of Cape Breton, Nova Scotia, Prince Edward Island, New Brunswick, British Columbia and Vancouver Island; also, copies of all Acts, Charters, Royal Instructions, Commissions, Orders in Council or Despatches altering or amending the same, as originally granted, or conferring or withdrawing any political rights, or privileges, before or after the granting of such charters.
- No. 71... STEAMSHIP COMMUNICATION WITH GERMANY:—Return to Order; Copies of all correspondence between any Member of the House of Commons, or other persons, and the Government, in relation to the establishment of direct steamship communication between Montreal, Quebec, St. John, N.B., Halifax, and German seaports.

- No. 72... **SAILORS' APPLICATION FOR RELEASE**:—Return to Address; Copies of all correspondence between the Secretary of State and the Departments of Marine and Fisheries and of Justice, concerning the application of divers sailors in the port of Quebec, praying for a release from confinement, and to return to sea, &c., at the request of R. Temple, Master of the British vessel *Georg*. (*Not printed.*)
- No. 73... **BRITISH CANADIAN LOAN AND INVESTMENT CO.**:—Return (Senate)—A list of shareholders, and also a statement of its affairs on 31st December, 1882. (*Not printed.*)
- No. 74... **SEMAPHORES, RIVER DU LOUP, AND BRANDY POTS**:—Return to Address; Copies of all correspondence in relation to the erection of Semaphores on the wharf at River du Loup, in the County of Temiscouata, and on the Brandy Pots. (*Not printed.*)
- No. 75... **WHARVES AT RIVER DU LOUP AND RIVIÈRE OUELLE**:—Return to Order; Copies of all Reports made up to this date, respecting the movement of the ice at the wharves at River du Loup and Rivière Ouelle. (*Not printed.*)
- No. 76... **GRAND TRUNK RAILWAY**:—Return to Address; Copy of all correspondence between the Government of Canada and the Company, in relation to the purchasing of bonds and shares of the Wellington, Grey and Bruce Railway; also, certain stocks and shares of the Hamilton and North-Western Railway Company, and of the St. Lawrence and Ottawa Railway Company; also, all copies of correspondence in relation to the purchase or sale of the North Shore Railway Company, &c. (*Not printed.*)
- No. 76a... Return to Order; Return of all accidents and casualties which have occurred on the Railway, or any of its branches or railways under its control, involving either loss of life or injury to person or property, &c. (*Not printed.*)
- No. 76b... Return to Order; Copy of all correspondence between the Company and the Government, in reference to the purchase or sale of the Rivière du Loup Branch of the said railway, now owned by the Government; also, any correspondence showing the manner in which the said Company have expended or proposed to expend the money so received; and also, all correspondence concerning the Government lien for the debt of £3,111,500, and accrued interest.
- No. 76c... Supplementary Return to the preceding.
- No. 77... **FIFTH GENERAL ELECTION**:—Report on the Dominion elections of 1882, and also each election held subsequently thereto up to date.
- No. 77a... Return to Order; Return showing all sums paid to defray expenses of the late Dominion elections, in the different electoral districts.
- No. 78... **HÉBERT, H., FRAUDULENT PRACTICES**:—Return to Order; Copies of any complaint against Hubert Hébert, Chief Station Master at Montmagny, in relation to a charge of fraudulent practices affirmed against him by P. B. Casgrain, Esq., Member for L'Islet. (*Not printed.*)
- No. 79... **WHARFAGE AT DIGBY, N.S.**:—Return to Order; Statement of the amount collected for wharfrage at the public pier at Digby, for each year from 1879 to 1882, inclusive. (*Not printed.*)
- No. 80... **RUSSELL VS. THE QUEEN**:—Return to Address; Copies of the judgments in the case of Russell and the Queen, in the Supreme Court of Canada and the Privy Council, and of the judgments in any Provincial courts of superior jurisdiction, or in the Supreme Court of Canada, in all cases raising the right of a Provincial Legislature to pass laws affecting the number or character of persons licensed to sell intoxicating liquors, or the times of such sale.
- No. 81... **SHUSHWAP AND OKANAGAN CANAL**:—Return to Address; Copies of all correspondence, &c., in connection with the surveys made in 1882 for the construction of a canal between Lakes Shushwap and Okanagan, British Columbia.
- No. 82... **ORDNANCE LANDS AND NAVAL RESERVES**:—Return to Order; Statement showing the gross amount of receipts from the sale or leasing of Ordnance Lands or Naval Reserves, in Ontario, Quebec, New Brunswick and Nova Scotia, from 1st July, 1858, to 1st July, 1882, and the purpose to which the sums so received have been applied; also a Statement showing the several properties of which portions have been sold or leased, and the number of acres in each case. (*Not printed.*)
- No. 82a... Supplementary Return to the preceding.



- No. 83... MURRAY CANAL:—Return to Address (Senate); Copies of all tenders received for the construction of the Murray Canal, and all correspondence, &c., concerning the same.
- No. 84... LAND FOR COLONIZATION:—Return to Order; Returns showing the total number of applications for land for colonization under plans Nos. 1 and 2 of the Land Regulations of 23rd December, 1881, up to 1st January, 1883, with the names of the applicants, the date of application, and the quantity of land in each case applied for.
- No. 85... O'CONNOR, HON. JOHN:—Return to Address; Statement of any sums paid, and the arrangement on which such were paid, to the Hon. John O'Connor, since his retirement from office. (*Not printed.*)
- No. 86... PRINCE EDWARD ISLAND RAILWAY:—Return to Order; Return of all reports, estimated cost, &c., bearing upon the survey of a proposed branch line of railway, between Harmony Station on the railway, to Elmira, east point of P.E.I.
- No. 87... BUOYS AND BEACONS, LAKE HURON:—Return to Order; Return of all correspondence with the Government within the past four years, copies of contracts and expenditure, in reference to buoys and beacons in the north channel of Lake Huron. (*Not printed.*)
- No. 88... TROOPS IN HALIFAX:—Return to Address; Copies of all despatches, Orders in Council and reports on the subject of the withdrawal of the troops from Halifax. (*Not printed.*)
- No. 89... COMMERCIAL RELATIONS WITH FRANCE, SPAIN, &c.:—Return to Address; Copies of all despatches, &c., between the Governments of the United Kingdom and Canada; and between the Government of Canada and the High Commissioner, touching negotiations for commercial arrangements with France, Spain or other countries.
- No. 90... LAKE ST. JOHN RAILWAY:—Return to Order; Copies of all correspondence between the Government and the Lake St. John Railway Company, in relation to the subsidy granted to the said company, and a statement of all sums paid to the said company, on account of the said subsidy. (*Not printed.*)
- No. 91... CUSTOM DUTIES REFUNDED AT TORONTO:—Return to Order; Return of the names and respective amounts of Customs duties refunded at the port of Toronto for the last fiscal year, and the articles or commodities upon which the duties were collected and refunded. (*Not printed.*)
- No. 92... IMPORTS AND EXPORTS:—Return to Order; Return showing the imports and exports from July 1st, 1882, to January 1st, 1883, and the countries from which imported and to which exported. (*Not printed.*)
- No. 93... IMMIGRATION:—Return to Address; Copies of all correspondence, &c., of recent date between the Governments of the Dominion and British Columbia, on immigration into that Province.
- No. 93a... Return to Order; Copies of all correspondence between the British Columbia and Dominion Governments respecting immigration to British Columbia; also, on the question of Chinese immigration.
- No. 93b... Return to Order; Return giving the number of Immigrant Agents (other than those on the regular and published lists) sent from Canada to Europe, who received pay from the Government during the Calendar years of 1881 and 1882; the names of persons so employed; the instructions given to them, &c.
- No. 93c... Return to Order; Copies of all correspondence, &c., in reference to the immigration of Jewish refugees from Russia into Canada, and the subsequent maintenance and disposal of such immigrants. (*Not printed.*)
- No. 94... QUEBEC PROVINCIAL SUBSIDY:—Return to Address; Copy of any representation by the Legislature of Quebec, on the subject of an increase of the provincial subsidy.
- No. 94a... Return to Address (Senate); All letters, correspondence, &c., which the Federal Authorities may have received from the Quebec Government or Legislature, asking for "better terms" or an increase of the Dominion Subsidy.

- No. 95... ONTARIO BOUNDARY AWARD:—Return to Address; Copies of all correspondence between the Secretary of State and Lieutenant-Governor of the Province of Ontario, in relation to the award respecting the northern and north-western boundaries of that Province, not already communicated.
- No. 96... PORTAGE ISLAND:—Return to Address; Copies of all correspondence between the Canadian Government and the British Government, in reference to the transfer of Portage Island, at the entrance of the Miramichi River, to the Government of Canada, together with all reports, &c., in reference to that subject.
- No. 97... STEAMER TO REPLACE THE "GLENDON":—Return to Order; Return of the advertisement for the contract of the building of a steamer to replace the "Glendon"; the several tenders therefor, to whom the contract was awarded, and the amount of such contract. (*Not printed.*)
- No. 98... TRADE BETWEEN CANADA, WEST INDIES AND BRAZIL:—Return to Order; Copy of the petition relative to the trade between Canada and the West Indies, and Brazil, signed by the principal fish merchants of the coast of Gaspé and Bay des Chaleurs, and addressed to the Hon. Minister of Finance, with a copy of the letter accompanying the said petition.
- No. 99... CARTRIDGE FACTORY AT QUEBEC:—Return to Order; Return showing the cost of the cartridge factory at Quebec, since its establishment, and the names and salary of all the officers and employés, with the value and quantity of ammunition manufactured. (*Not printed.*)
- No. 100. GRAIN AND PRODUCTS OF GRAIN:—Return to Order; Statement showing:—1st. The amount of duties collected between 15th March, 1879, and 1st January, 1883, on the cereals comprised under the head of "grain and products of grain"; also the total quantities imported. 2nd. The quantity imported and entered for consumption in Canada; also quantity exported during the years 1874 to 1882, inclusive.
- No. 101. S.S. "NEWFIELD" AND "MORAVIAN":—Return to Order; Copies of all correspondence with the Minister of Marine and Fisheries concerning the employment of the Government steamer "Newfield" in aiding the wrecked steamship "Moravian." (*Not printed.*)
- No. 102. MINING REGULATIONS:—Copy of those governing the disposal of mineral lands other than coal lands. (*Not printed.*)
- No. 103. AGRICULTURAL IMPLEMENTS, &c., IMPORTED INTO MAN. AND N.-W.T.:—Return to Order; Statement of agricultural implements, waggons, sleighs and carriages, imported from 30th June to 31st December, 1882.
- No. 103a. Return to Order; Statement of all agricultural implements, carriages, waggons and sleighs shipped, in bond, to Manitoba from other Provinces of the Dominion, from 1st July to 31st December, 1882.
- No. 103b. Return to Order; Statement of all agricultural implements, carriages, waggons and sleighs shipped, in bond, to Manitoba from other Provinces of the Dominion, during the fiscal year ended 30th June, 1882.
- No. 104. HUDSON BAY:—Return to Address; Return of all information in reference to the duration of navigation, the soundings and the extent to which the Bay freezes over; also, all documents bearing on its probable resources; also, all reports on the mineral resources of the regions about the Bay and the islands therein.
- No. 105. GREENVILLE AND CARILLON CANAL:—Return to Order; Copy of the award of arbitrator on claim for damages put in by the contractor for the Greenville and Carillon Canal, under contract in force in 1871-72, with statement of sums paid thereunder.
- No. 105a. Papers in relation to the construction of two locks, and other works, at Greece's Point.
- No. 105b. Award of John Page, Esq., Chief Engineer, on the claim of Messrs. Heney, Stewart & Co. contractors for works at Greece's Point.
- No. 105c. Report of J. Page, Esq., Chief Engineer, on the Rapide Plat Canal.

- No. 106. **H. M. SHIPS ON BRITISH COLUMBIA COAST**:—Return to Address (Senate); Copies of all correspondence between the Dominion and Imperial Governments, and between the Dominion and British Columbia Governments, on the subject of having one or more of Her Majesty's ships of war stationed continuously on the coast of British Columbia. (*Not printed.*)
- No. 107. **GOVERNMENT SURVEY, LOT No. 133, MANITOBA**:—Return to Address (Senate); Copies of all correspondence between the Department of Crown Lands, at Winnipeg, or the Department of the Interior, and parties claiming lot No. 133 of the Government survey, or any right thereto, situated in the Parish of Ste. Agathe, County of Provencher, Manitoba; also, copies of all Orders in Council or of the Department of the Interior, relating to the said lot. (*Not printed.*)
- No. 108. **SUBSIDIES FOR MANITOBA**:—Return to Address; Copies of all correspondence, &c., since the commencement of last Session, in reference to subsidies or grants for Manitoba.
- No. 109. **PUBLIC DEBT INCURRED FOR RAILWAYS, CANALS, ETC.**:—Return to Order; Statement showing the amounts charged in the Public Debt Account of the Dominion of Canada, which were expended on railways, canals and navigation securities in British Columbia, Manitoba, Ontario, Quebec, New Brunswick, Prince Edward Island, Nova Scotia proper, and Cape Breton Island, up to 1st July, 1882, &c.
- No. 110. **McMILLAN, J. D., DISMISSAL OF**:—Return to Order; Copies of all correspondence, &c., relating to the dismissal of John D. McMillan from his office as Fishery Overseer, and the appointment in his place of David Baker. (*Not printed.*)
- No. 111. **PILOTS AND PILOTAGE, BRITISH COLUMBIA**:—Return to Order; Copies of all correspondence, &c., between the Government and the Pilotage authorities of British Columbia, or any other parties in that Province, on the subject of Pilots and Pilotage.
- No. 112. **LIFE-SAVING STATIONS**:—Return to Order; Copies of correspondence, &c., relative to the establishment and management of Life-saving stations on coast of Lake Ontario, or other waters, together with such other reports upon the construction and operation of Life-saving stations in other countries as may be in the possession of the Government. (*Not printed.*)
- No. 113. **FRONTENAC TERRACE, QUEBEC**:—Return to Address; Copies of all documents in relation to the granting by the Imperial Government to the Dominion Government, and by the latter to the Provincial Government, of various lands, and more particularly of the land on which is located Frontenac Terrace, in the City of Quebec. (*Not printed.*)
- No. 114. **LAKE OF THE WOODS AND RAINY LAKE**:—Papers in relation to the construction of steamers for Lake of the Woods and Rainy Lake. (*Not printed.*)
- No. 115. **DAUPHÉNÉE, JAMES, CLAIM OF**:—Return to Order; Copies of all petitions, &c., in reference to the claim of James Dauphénée, of Bridgewater, Lunenburg, for payment of claim for refund of expenses incurred by him in discharge of his duties as a Fishery Warden of that County. (*Not printed.*)
- No. 116. **ORDNANCE FOR CANADA**:—Return to Order; Copy of contract, correspondence, &c., in connection with the manufacture of great guns for the Government of Canada. (*Not printed.*)
- No. 117. **COLONIZATION GRANTS**:—Return to Order; Return giving every form of patent arrangement or agreement, &c., between Companies and the Government in regard to colonization grants.
- No. 118. **TIMBER AND MINING LICENSES IN DISPUTED TERRITORY, ONTARIO**:—Return to Address; Copies of all correspondence, Orders in Council and papers not already brought down, relating to the cutting of timber or to mining on lands within the territory now in dispute with Ontario; also, all correspondence, &c., and all permits and licenses granted to make timber ties, telegraph poles and saw logs, within the district of Rainy Lake and River, and Lake of the Woods and tributary streams.
- No. 119. **ADMINISTRATION OF JUSTICE, CLAIMS OF THE PROVINCES**:—Return to Address; Copies of correspondence, from 1st July, 1867, to date, between the Dominion and the Provincial Governments respecting the claims of each of the said Provincial Governments, for the repayment of sums expended by them on account of the Dominion for the administration of justice; also, a statement in detail of the claims settled.

- No. 120. H. M. S. "CHARYBDIS":—Return to Order; Copies of all correspondence, expenditure and reports relating to the "Charybdis", not already brought down. (*Not printed.*)
- No. 121. SUBSIDIES TO CERTAIN RAILWAYS:—Report to Council, 14th May, 1883, recommending the grant of a subsidy of \$3,200 per mile, for 12 miles, in all \$38,400, towards the construction of a line of railway between Petitcodiac and Havelock Corner, N.B.
- Proposed subsidy, \$3,200 per mile for 80 miles from Canso to Louisburg or Sydney, in all \$256,000, to the Great American and European Short Line Railway Company.
- Proposed subsidy, \$3,200 per mile for 49 miles, in all \$156,000, to the International Railway Company.
- Proposed subsidy, \$3,200 per mile for 36 miles, in all \$115,200, to the Caraquet Railway Company, N.B.
- Proposed subsidy, \$3,200 per mile, in all \$160,000, to the Gatineau Valley Railway Company.
- Proposed subsidy, \$3,200 per mile first 50-mile section out of St. Jerome, in all \$160,000, to the Montreal and Western Railway Company.
- Proposed subsidy, \$3,200 per mile for 28 miles, from Napanee to Tamworth, in all \$89,600, to the Napanee, Tamworth and Quebec Railway Company.
- Proposed subsidy, \$3,200 per mile for 25 miles, from St. Raymond to Lake St. John, in all \$80,000, to the Quebec and Lake St. John Railway Company.
- Proposed subsidy, \$3,200 per mile for 100 miles from Metapedia to Paspebiac, in all \$320,000, to the Baie des Chaleurs Railway Company.
- Proposed subsidy, \$3,200 per mile for 32 miles (from the Intercolonial Railway to Mr. Laggan's Mills), in all \$102,400, to the Miramichi Valley Railway Company.
- Proposed further subsidy at the rate of \$6,000 per mile, or a further sum, in all of \$660,000, from Gravenhurst to Callander, 110 miles, to such Company as shall be approved by the Governor in Council.
- No. 122. ST. JOHN RIVER, N.B.:—Return to Address (Senate); Copies of all reports, letters, &c., since 1878, between the Department of Public Works and Mr. J. A. Lyon, or any other person, in reference to the removal of obstructions in the St. John River, N.B. (*Not printed.*)
- No. 123. MANITOBA INDIAN AGENCY:—Return to Order; Report, with evidence, on the condition and management of the Manitoba Indian Agency under J. A. N. Provencher, the Indian Superintendent of the Manitoba District, made by the Government Commission of Enquiry; also vouchers dated 25th June, 1875, for \$180; 25th June, 1875, for \$1,290; and 26th December, 1875, for \$600, signed by one Tremblay, &c. (*Not printed.*)
- No. 124. TELEGRAM EXPENSES, DEPARTMENT OF PUBLIC WORKS:—Return to Order; Statement of the expenditure for each month elapsed for the current fiscal year, on telegrams charged to various works in the Department of Public Works, and a like statement from November, 1881, to 30th June, 1882, inclusive. (*Not printed.*)

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DOMINION OF CANADA.

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ANNUAL REPORT

OF THE

MINISTER

OF

RAILWAYS AND CANALS

FOR THE PAST

FISCAL YEAR FROM 1<sup>ST</sup> JULY, 1881, TO 30<sup>TH</sup> JUNE,

1882.

ON THE WORKS UNDER HIS CONTROL.

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SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF THE ACT THIRTY-FIRST VICTORIA, CHAPTER TWELVE, SECTION NINETEEN, AS AMENDED BY THE ACT FORTY-SECOND VICTORIA, CHAPTER SEVEN.

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*PRINTED BY ORDER OF THE HOUSE OF COMMONS.*

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OTTAWA:  
PRINTED BY MACLEAN, ROGER & CO., WELLINGTON STREET.  
1883.



## CONTENTS OF REPORT.

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### RAILWAYS:—

#### CANADIAN PACIFIC :

	PAGE.
Distances—Trunk line.....	x
Road—acquired by Company.....	x
Canada Central (now C. P. R.) Subsidy.....	x
Portion of road transferred by Government to Company .....	xi

#### CONSTRUCTION :

##### *Under Government :*

Lake Superior to Red River .....	xi
British Columbia.....	xi
Telegraph Line.....	xiii

##### *Under Canadian Pacific Railway Company :*

From Callander West to Prince Arthur's Landing.....	xii
Red River to Kamloops.....	xii
Branches .....	xiii

### GOVERNMENT RAILWAYS :

#### INTERCOLONIAL :

Length of Line .....	xiv
Additional accommodation provided.....	xv
Total Expenditure on Capital Account.....	xv
Expenditure chargeable to Capital Account during the fiscal year.....	xv
Gross Earnings.....	xvi
Traffic .....	xvi
Working Expenses.....	xvi
Gain on fiscal year.....	xvi
Comparison of Mileage.....	xvi
St. Charles Branch .....	xvii
Windsor Branch .....	xviii
Pictou Branch.....	xviii

GOVERNMENT RAILWAYS—*Concluded.*

PRINCE EDWARD ISLAND :	PAGE
Length of Line.....	xvii
General Repairs.....	xvi <sub>1</sub>
Gross Earnings.....	xvi
Traffic.....	xvii
Working Expenses.....	xvii

## SUBSIDIES :

Gravenhurst to Callander.....	xix
St. Raymond to Lake St. John.....	xix
Rivière du Loup or Rivière Ouelle to Edmunston.....	xix
Oxford to New Glasgow (the Great American and European Short Line Railway Company).....	xix
Chignecto Marine Transport Railway.....	xix

## CANALS :

*Routes of Inland Navigation :*

RIVER ST. LAWRENCE AND LAKES.....	xx
Lachine Canal.....	xxii
“ Works of Enlargement.....	xxii
Beauharnois Canal.....	xxiii
Cornwall Canal.....	xxiii
“ New Works.....	xxiv

## Williamsburgh Canals :

Farran's Point Canal.....	xxiv
Rapide Plat.....	xxiv
Galops Canal.....	xxv
“ Rapid, Improvement of Channel... ..	xxv

## WELLAND CANAL :

Main Line, Lake Ontario to Lake Erie.....	xxv
Welland River Branches.....	xxvi
Grand River Feeder.....	xxvi
Port Maitland Branch.....	xxvii
Repairs and Maintenance of old Canal.....	xxviii

BURLINGTON BAY CANAL.....	xxviii
---------------------------	--------

MONTREAL, OTTAWA AND KINGSTON ..	xxix
General Description.....	xxix
Table of Distances.....	xxix



---



---

**CANALS—*Inland Navigation*—MONTREAL, OTTAWA AND KINGSTON—*Concluded.***

	PAGE
St. Anne's Locks.....	xxix
"    New Works.....	xxx
Carillon Canal .....	xxx
"    New Works.....	xxxi
Chute à Blondeau Canal .....	xxxi
Grenville Canal.....	xxxi
"    New Works.....	xxxii
Rideau Canal.....	xxxiii
Tay Canal (proposed). .....	xxxiv
 UPPER OTTAWA RIVER :	
Culbute Locks and Dam.....	xxxii
"    New Works.....	xxxiii
 RICHELIEU AND LAKE CHAMPLAIN.....	
St. Ours' Lock and Dam .....	xxxv
Chambly Canal .....	xxxvi
 ST. PETER'S CANAL.....	
 TRENT RIVER NAVIGATION :	
Description .....	xxxvii
Extent of Navigable and Unnavigable Reaches.....	xxxvii
List of Works, with repairs executed.....	xxxviii
 MURRAY CANAL :	
Works of Construction .....	xxxix
 SURVEY—Canal in British Columbia.....	
	xl

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TABLE OF APPENDICES.

---

	PAGE
Appendix No. 1.—Statement of Expenditure during fiscal year.....	1
“ 2.—Total Expenditure on Canal Construction and Enlargement.	2
“ 3.—Report on Canadian Pacific Railway, by Collingwood Schreiber, Chief Engineer .....	6
On Works of construction under direction of Government....	7-9
On Progress of location, construction and operation under the Canadian Pacific Railway Company.....	9
“ 4.—General Report on Government Railways in operation, by Collingwood Schreiber, Engineer-in-Charge:—	
Intercolonial Railway.....	12
Prince Edward Island Railway .....	15
Windsor Branch Railway .....	16
St. Charles Branch.....	14
Reports of Superintendents, &c.—	
RAILWAYS:	
<i>Intercolonial Railway—</i>	
Report by D. Pottinger, Chief Superintendent.....	16
“ P. S. Archibald, Chief Engineer .....	22
“ H. A. Whitney, Mechanical Superintendent	25
“ T. Williams, Chief Accountant.....	31
Return of Accidents and Casualties.....	40
<i>Prince Edward Island Railway—</i>	
Report by L. B. Archibald, Superintendent.....	50
“ J. Unsworth, Mech. Supt. and Storekeeper.	54
“ W. T. Huggan, Accountant.....	62
<i>Canadian Pacific Railway—</i>	
Report by D. S. Curry, Accountant.....	78
<i>Windsor Branch Railway—</i>	
Report by D. Pottinger, Superintendent .....	71
“ P. S. Archibald, Engineer.....	75
“ R. B. Boggs, Accountant .....	72
CANALS:	
“ 5.—Report on Lachine Canal .....	76
“ Beauharnois Canal.. .....	81
“ Chambly “ .....	83
“ St. Ours “ .....	86
by E. H. Parent, Superintending Engineer.	

## Appendix No. 5.—Report on Ottawa River Canals :—

PAGE

“	St. Anne's .....	91-5
“	Carillon .....	91-3
“	Chute à Blondeau .....	92-4
“	Grenville.....	92-4
“	Culbute.....	93-5
	by D. Starke, Superintending Engineer.	
“	“ Cornwall Canal.....	95
	by D. A. McDonnell, Superintendent.	
“	“ Williamsburg Canals.....	96
	by A. G. Macdonnell, Superintendent.	
“	“ Welland Canal.....	100
	by William Ellis, Superintendent.	
“	“ Burlington Bay Canal.....	99
	by William Ellis, Superintendent.	
“	“ Rideau Canal.....	108
	by F. A. Wise, Superintending Engineer.	
“	“ Trent Canal Works.....	109
	by Thomas D. Belcher, Superintending Engineer.	
“	“ St. Peter's Canal.....	122
	by Henry F. Perley, Engineer-in-Charge.	
“	“ New Works.....	113
	Murray Canal.	
	Trent Valley Canal.	
	Trent Navigation.	
	Burleigh Canal.	
	Buckhorn Canal.	
	Fenelon Falls Canal.	
	Galops Rapid Improvements.	
	Rapide Plat Canal.	
	Cornwall Canal.	
	by F. S. Rubidge, Engineer-in-Charge.	

	PAGE
Appendix No. 6.—Report on Tay Canal .....	119
by F. A. Wise, Superintending Engineer.	
“ 7.—Statement of Contracts entered into during fiscal year 1881-2	123
“ 8.—Statement of Claims—referred to and arbitrated or reported on by Official Arbitrators.....	125
“ 9.—General Statement, showing :—	
1st. Water Power and other public property leased on Canals and Railways during the fiscal year ending 30th June, 1881.....	130
2nd. Property purchased and property sold by the Department.....	134
“ 10.—List of Contracts entered into in connection with the Cana- dian Pacific Railway.....	142
“ 11.—Table of distances of stations between Ottawa and Kingston	144
“ 12.—Table showing dates of the closing of the canals in 1881, and of their opening in 1882.....	145
“ 13.—St. Lawrence navigation, table of distances.....	146
“ 14.—Order in Council amending tolls on the Welland and St. Lawrence Canals .....	147

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# REPORT.

1881—82.

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*To His Excellency the Marquis of Lorne, K.T., K.C.M.G., Governor General of Canada,  
&c., &c., &c.*

**MAY IT PLEASE YOUR EXCELLENCY :**

I have the honor to submit the Annual Report of the Department of Railways and Canals for the fiscal year ended 30th June, 1882.

This Report is submitted in accordance with the provisions of the Act 31 Vict. Cap. 12 (1867), as amended by the Act 42 Vict. Cap. 7, Sections 4 and 5 (1879).

The Annual Reports of the Chief Engineers, together with general and special Reports from Superintendents both of Railways and Canals, and from other Officers of the Department, are given in Appendices.

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## RAILWAYS.

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The present report deals with the undermentioned Railways of the Dominion, either directly controlled by the Federal Government, or towards the construction of which subsidies have been granted or authorized.

*Controlled :*

The Intercolonial.  
The Prince Edward Island.

*Subsidized, or with subsidy authorized :*

The Canadian Pacific.  
The Canada Central (Pembroke to Callander.)  
Gravenhurst to Callander.  
St. Raymond to Lake St. John.  
Rivière Ouelle to Edmunston.  
The Great American and European Short Line.  
The Chignecto Marine Transport Railway.

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**CANADIAN PACIFIC RAILWAY.**

Under the terms of the contract entered into in 1881 with the Canadian Pacific Railway Company, the Government have undertaken to construct the line, between—Prince Arthur's Landing on Lake Superior, and Red River;—and between Savona's Ferry, at the foot of Lake Kamloops, and Port Moody, in British Columbia; and the Company, on their part, have undertaken to construct, within a specified time, the line between Callander Station, their eastern terminus at the east end of Lake Nipissing, and Prince Arthur's Landing; also, between Red River and Savona's Ferry: the whole line to be the property of the Company, and to be maintained and operated by the said Company.

*Trunk Line:—*

The following distances are calculated on a route running through the city of Winnipeg, and by the Kicking Horse Pass, if approved:—

	Miles.
1. From Callander (120 miles west from Pembroke) to Prince Arthur's Landing, an estimated distance of.....	650
2. From Prince Arthur's Landing to Winnipeg.....	433
3. From Winnipeg, <i>via</i> Kicking Horse Pass, to Savona's Ferry (at the foot of Kamloops Lake) an estimated distance of.....	1,259
4. From Savona's Ferry to Port Moody.....	215
<hr/>	
Approximate length of the trunk line between Callander and Port Moody on the Pacific.....	2,557 miles.

In addition to the line of the Canada Central Railway between Ottawa and Callander, a distance of 228 miles, which was acquired last year by the Canadian Pacific Railway Company, they have now purchased and operate the portion of the line of the Quebec, Montreal, Ottawa and Occidental Railway between Ottawa and Montreal, a distance of 119 miles; being an addition of 347 miles incorporated into their main line system, making the total approximate distance between Montreal and Port Moody, 2,904 miles.

The section of road, 120 miles, between Pembroke and Callander for the construction of which the Canada Central Railway was subsidized by the Government to the extent of \$12,000 a mile, is nearly completed, only a small amount of ballasting, filling, etc., remaining to be done. The road for a distance of 94 miles between Pembroke and Mattawa is under traffic, and the remainder is in use for the transport of materials and supplies for the construction of the line west from Callander.

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 PROGRESS OF WORKS UNDER GOVERNMENT.

The branch line from Emerson to Winnipeg, 65 miles, and the main line from Winnipeg, eastward to Telford, 94 miles, having been transferred to the Company under an Order in Council of the 9th of April, 1881, the portions of the railway, the completion of which, under the contract, remained to be carried out by the Government at the beginning of the fiscal year, 1881-82, were as follows:—

	Miles.
From Prince Arthur's Landing to Telford.....	339
From Savona's Ferry to Port Moody.....	215
	554

Under an Order in Council of the 12th of January, 1882, a sub-section of road 40 miles in length between Telford and a point near Rat Portage, was transferred to the Company.

On the remaining distance, between Prince Arthur's Landing and Rat Portage the following is the position of the road.

The subsection, 6 miles, between Prince Arthur's Landing and Fort William, though not ballasted, is in a fair condition for the passage of trains.

The adjoining subsection, 112 miles, between Fort William and English River, though completed, has suffered from subsidence in embankments, which with certain of the older structures, must be renewed and made good.

The track on the next subsection, between English River and Eagle River, 114 miles, was laid throughout by the 25th of August, 1881, and the works are drawing near completion. The line has been used for construction and supply trains during the present season.

From Eagle River to Keewatin (Rat Portage), 67 miles, the works have made good progress, the track having been laid throughout by the 19th of June, (1882). The filling up of ravines now crossed by trestle bridges, the erection of station buildings, ballasting, and some minor masonry, comprise all remaining to be done.

Of the works in British Columbia, between Savona's Ferry and Port Moody, 215 miles, the subsection between Port Moody and Emory's Bar, 85½ miles, has been placed under contract, and the works, commenced in the spring of 1882, are being vigorously prosecuted. The contractors for the remaining distance have so far advanced as to have over 22 miles of track laid from Emory's Bar, east, comprising some of the heaviest work yet done on the railway.

The iron bridge superstructure to span the Fraser River near Lytton is now being manufactured.

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 PROGRESS OF WORKS UNDER THE CANADIAN PACIFIC RAILWAY COMPANY.

The works to be executed by the Company under their contract are as follows :

	Miles.
From Callander to Prince Arthur's Landing, an estimated distance of.....	650
From Winnipeg to Savona's Ferry, an estimated distance of..	1,259
	1,909

*Main Line, Eastern Section, (From Callander to Prince Arthur's Landing.)*—From Callander, westward, for a distance of 82 miles, up to the River Wahnapiṭā, the line has been located, and upon the first 40 miles, up to Sturgeon River, the track has been laid, while the grading and bridging for a similar distance are in a forward state.

*Main Line, Central Section, (From Red River to Kamloops.)*—Upon this section the Company, up to the date of last year's report, had completed 163 miles of road west from Winnipeg.

Surveys were then in progress by the Company in the Mountain District, having in view the finding of a pass which would give a shorter route than that by the Yellow Head Pass, the route contemplated in their contract.

By an Act passed last session authority was given as follows :

“The Canadian Pacific Railway Company may, subject to the approval of the Governor in Council, lay out and locate their main line of railway from Selkirk to the junction with the western section by way of some pass other than the Yellow Head Pass, provided that the pass be not less than one hundred miles from the boundary between Canada and the United States of America.”

The location of the line up to the South Saskatchewan River, a distance of about 660 miles from Winnipeg, has received approval, and on this distance the Company have now, up to the end of January, 1883, completed 581 miles of road.

In October last the opening of the line for traffic up to Regina, a distance, according to the published time tables of the Company, of 356 miles, was authorized.

*Subsidy.*—Under the ninth section of their contract it was provided as follows :—  
 “Upon the construction of any portion of the railway hereby contracted for, not less than 20 miles in length, and the completion thereof so as to admit of the running of regular trains thereon, together with such equipment thereof as shall be required for the traffic thereon, the Government shall pay and grant to the Company the money and land subsidies applicable thereto.” Under a series of Orders in Council, based upon certificates of the Chief Engineer, portions of the said subsidies have, from time



to time since the commencement of the work, been paid to the Company upon such completion of an extent of road, amounting, for both the eastern and central sections, to 601 miles.

*Tariff.*—Under an Order in Council dated the 29th of April, 1881, a tariff of charges for freight and passengers on the Canadian Pacific Railway was approved, and has since been in force; a revision of this tariff is now under consideration.

#### BRANCH LINES.

In addition to the subsidy for their main line, the Company have, under their contract, the right to receive a grant, in so far as it is vested in the Government, of the land required for road-bed, stations, etc., in the construction of branch lines.

The Company have under construction the following branches:—The Sault Ste. Marie and the Pembina Mountain or South-Western.

*Pembina Mountain or South-Western.*—The Company have constructed a branch, about 100 miles in length, extending in a south-westerly direction from Winnipeg, west of Red River, to Pembina Mountain, and this branch is now in operation.

A sub-branch, 13 miles long, extends from this line to Gretna (formerly known as Smugglers' Point) on the International boundary.

*Sault Ste. Marie.*—This branch has been located by the Company from Algoma Mills (Lake Huron) up to the Wahnapiatæ River, a distance of about 100 miles, and they have carried on works of grading and bridging during the summer upon the first 60 miles from Algoma Mills.

*Bridge over the Red River at Emerson.*—At the last Session of Parliament a sum of \$30,000 was voted for the purpose of aiding the Corporation of the town of Emerson in the construction of an ordinary highway bridge over the Red River at that place. The grant of a further sum of \$20,000 is considered desirable in order that the corporation may be enabled to make this a railway as well as an ordinary highway bridge; it being in contemplation by the Canadian Pacific Railway Company to construct a line connecting the town of Emerson with the point where their South-Western branch diverges to the west.

A branch known as the Stonewall Branch, about 22 miles in length, between Winnipeg and Stonewall, originally formed part of the Government line west from Winnipeg, and was taken over by the Company at cost price.

#### TELEGRAPH LINE.

The Canadian Pacific Telegraph has been transferred to the Department of Public Works.

GOVERNMENT RAILWAYS IN OPERATION.

The several lines operated and maintained by the Government during the past fiscal year were:—

The Intercolonial.....	840
Prince Edward Island.....	199
Windsor Branch (maintained only).....	32
<b>Total mileage.....</b>	<b>1,071</b>

The General Revenue Accounts for 1881-2, shew the following as the financial position of these roads for the past fiscal year:—

	Expenditure.	Earnings.	Profit.	Loss.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Intercolonial.....	2,069,657 48	2,079,262 66	9,605 18	
Prince Edward Island.....	228,259 97	137,267 54		90,992 43
Windsor .....	13,999 55	21,053 19	7,953 64	
			17,558 82	90,992 43
				17,558 82
<b>Balance, loss on working.....</b>				<b>73,433 61</b>

INTERCOLONAL RAILWAY.

LENGTH OF LINE.

*Ocean Mail Line.*

	Miles.
Point Levis to Rivière du Loup.....	126
Rivière du Loup to Moncton.....	374
Moncton to Painsec.....	8
Painsec to Truro.....	118
Truro to Halifax.....	62
	<hr/> 688

*Extensions.*

Moncton to St. John.....	89
Painsec to Shediac.....	11
Truro to Pictou.....	52
	<hr/> 152
	<hr/> 840

*Local Branches.*

	Miles.
Rimouski to Wharf.....	2
Newcastle, N.B., to Deep Water Wharf.....	2
Dorchester to Shipping Wharf.....	1
Sackville to Shipping Wharf.....	0.5
Stewiacke to Wharf.....	1
	6.5

The wharf and warehouse accommodation at the Halifax ocean terminus provided last year has greatly aided the movement of freights, and such additions are now being made as will more than double these facilities. The depth of water will be such as to afford berthing for the largest of any of the ocean steamers. A special coaling wharf has been built, having an elevated track, so that coal can be delivered direct from the cars into the ship's bunkers, while the construction of a large grain elevator will give all needed facilities for the shipment of grain.

Under an appropriation granted last year for the purpose, increased accommodation for the reception of freight at the Deep Water terminus of the Intercolonial Railway at St. John, New Brunswick, has been furnished.

The efficiency of the rolling stock of the road has been maintained. The still increasing traffic, however, calls for further additions to the stock.

The repairs and renewals executed during the past fiscal year have embraced the maintenance of bridges, the erection of about 80 miles of fences, the erection of combined freight and passenger station buildings at Derby and Eel River, the erection of new buildings for the accommodation of station masters at Causapsal, Jacquet River, and Painsec, and of improvements to the buildings at Aulac and Sackville.

The road has been maintained in good order.

The total cost of the road and equipment chargeable to capital account at the close of the fiscal year 1880-81, was.....\$38,974,452 44

The expenditure charged to capital account for the year ended 30th June, 1882, is as follows:—

Halifax extension.....	\$173,109 84
Deep water terminus, St. John.....	19,712 16
Repairs and improvements, Rivière du Loup section.....	14,980 47
Rolling stock for Rivière du Loup Branch.....	153,853 84

Completion of the Intercolonial.....	18,246 98	
Additional rolling stock.....	205,005 20	
St. Charles Branch.....	660 30	
		585,568 79

Making a total cost to 30th June, 1882, of.....\$39,560,021 23

The revenue account shows a continued increase.

The gross earnings for the year were.....	\$2,079,262 66
The working expenses were.....	2,069,657 48
Net earnings .....	\$9,605 18

The gross earnings exceed those of the year previous by \$318,868.74.

The engine mileage compared with that of last year, was:—

1881-82.....	3,900,850
1880-81.....	3,453,078
Increase.....	447,772 miles.

The car mileage compared with that of last year, was:—

1881-82.....	37,489,376
1880-81.....	32,201,157
Increase.....	5,288,219 miles.

The train mileage compared with that of last year was:—

1881-82.....	3,195,566
1880-81.....	2,813,723
Increase.....	381,843 miles.

The working expenses per mile run by engines were:—

	Cents.
1881-82.....	53·05
1880-81.....	50·96

The working expenses per mile run by train were:—

1881-82.....	64·77
1880-81.....	62·54

The gross tonnage carried during the year 1881-82, was..... 838,956 tons.

“ “ “ “ 1880-81, “ ..... 725,577 “

Increase..... 113,379 tons.

ST. CHARLES BRANCH.

This branch, for the construction of which an appropriation was voted last Session, is intended to connect the Intercolonial Railway, at St. Charles, with Point Lévis, a distance of about thirteen miles. The work of grading and track-laying is well advanced, and it is expected that the track will be laid into Lévis during the present winter.

PRINCE EDWARD ISLAND RAILWAY.

LENGTH OF LINE.

	Miles.
Tignish to Royalty Junction .....	113½
Royalty Junction to Mount Stewart.....	20
Mount Stewart to Georgetown.....	21
	154½

EXTENSIONS.

Royalty Junction to Charlottetown.....	5
Mount Stewart to Souris.....	32
	44
	198½

The total expenditure on capital account to the 30th of June, 1881, was \$3,466,588.57. An increase of \$402.63 has been incurred during the year.

The revenue account for the year amounted to \$137,267.54.

The working expenses, including the cost of erecting new stations, freight houses, coal sheds, and other improvements, amounted to \$228,259.97.

The road has been well maintained throughout the year, and the business done shows an increase. Improvements effected in the way of additional station buildings, the laying of new sidings, snow fencing, and the exceptionally heavy cost of snow clearance, have increased the working expenses.

The working expenses and receipts for the year ended the 30th of June, 1882, were:—

Total expenses .....	\$228,259 97
“ earnings .....	137,267 54
Excess of expenditure.....	\$ 90,992 43

The gross earnings, compared with those of the previous year, were:—

1881-1882 .....	\$137,267 54
1880-1881 .....	131,131 43
Increase.....	\$6,136 11

The gross expenditure compared with that of the previous year, was:—

1881-1882 .....	\$228,259 97
1880-1881 .....	203,122 88
Increase .....	<u>\$25,137 09</u>

The car mileage compared with that of the previous year, was:—

1880-1881 .....	1,122,419 miles.
1881-1882 .....	1,117,989 "
Decrease.....	<u>4,430 "</u>

The engine mileage, compared with that of the previous year, was:—

1881-1882 .....	317,194 miles.
1880-1881 . . . . .	314,918 "
Increase.....	<u>2,276 "</u>

#### WINDSOR BRANCH.

This branch, 32 miles in length, is still operated by the Windsor and Annapolis Railway Company, under the arrangement that the Company pay all charges in connection with the working, two-thirds of the gross receipts being allowed them for such purpose; the Government taking the remaining one-third and assuming all cost of maintenance.

The earnings and expenditure for the year were as follows:—

Gross earnings accruing to the Government.....	\$21,053 19
Expenditure for maintenance of way and works.....	<u>13,099 55</u>
Balance.....	\$ 7,953 64

The road has been kept in good working order, and extensive repairs have been made to masonry and other works. It is in contemplation to renew the track in part with steel rails.

#### PICTOU BRANCH.

By the Statute of Canada, 42 Vict. ch. 12, amending the original Act, 40 Vict. ch. 46, it is enacted that the transfer of the Pictou Branch line of the Intercolonial shall be made to the Halifax and Cape Breton Railway and Coal Company so soon as the 82 miles of railway extending from New Glasgow to the Gut of Canso have been constructed and equipped to the satisfaction of the Nova Scotia Government, and a ferry has been established between the main shore and the Island of Cape Breton, at the terminus of the Railway.

The transfer has not yet been made.

## SUBSIDIES.

Under an Act, 45 Vic., cap. 14, passed last Session, the grant of certain subsidies was authorized, upon specified conditions as to payments, running powers, and traffic arrangements, towards the construction of the following lines of railway :—

For a railway from Gravenhurst to Callander, both in the Province of Ontario, a subsidy not exceeding \$6,000 per mile, nor exceeding in the whole.....	\$660,000
For a railway from St. Raymond to Lake St. John, both in the Province of Quebec, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	384,000
For a railway from a point on the Intercolonial Railway at Rivière du Loup or Rivière Ouelle in the Province of Quebec, or between them, to Edmundston in the Province of New Brunswick, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	240,000
For a railway from Oxford to New Glasgow, both in the Province of Nova Scotia, a subsidy not exceeding \$3,200 per mile, nor exceeding in the whole.....	224,000
Total.....	<u>\$1,508,000</u>

The Act further provided that the grants should be made "to such Companies as shall be approved by the Governor in Council, as having established to his satisfaction their ability to complete the said railways respectively, within a reasonable time to be fixed, by Order in Council, and according to descriptions and specifications to be approved by the Governor in Council, on the report of the Minister of Railways and Canals, and specified in an agreement to be made by the Company with the Government, and which the Government is empowered to make."

With respect to three of the above mentioned lines, namely, the line from Gravenhurst to Callander, that from Rivière du Loup or Rivière Ouelle to Edmundston, and the line from St. Raymond to Lake St. John, no final arrangements have been entered into with any Company for their construction.

*The Great American and European Short Line Railway Company.*—Under an Order in Council of the 24th of July, 1882, a contract has been entered into with the Great American and European Short Line Railway Company by which they are to build a line between Oxford and New Glasgow by the 1st of January, 1884. Considerable progress has been made by the Company, but no money has yet been paid by the Government.

*Chignecto Marine Transport Railway.*—An Act past last session, 45 Vic., ch. 55, 1882, authorizing a grant of a subsidy of \$150,000 a year, for a term of 25 years to the

Chignecto Marine Transport Railway Company, for the construction of a line of railway for the transport of ships across the Isthmus of Chignecto, between La Baie Verte, in the Gulf of St. Lawrence, and the Bay of Fundy.

No contract has yet been entered into with the Company.

## CANALS.

The canal systems of the Dominion, under Government control, are as follows:—

1. The River St. Lawrence and Lakes.
2. The River Ottawa.
3. The Rideau Navigation from Ottawa to Kingston.
4. The Trent Navigation.
5. The River Richelieu from the St. Lawrence to Lake Champlain.
6. St. Peter's Canal, Cape Breton, Nova Scotia.

### RIVER ST. LAWRENCE AND LAKES.

The River St. Lawrence, with the system of canals established on its course above Montreal, and the Lakes Ontario, Erie, St. Clair, Huron and Superior with connecting canals, afford a course of water communication extending from the Straits of Belle-Ile to Duluth, at the head of Lake Superior, a distance of 2,384 statute miles.

The difference in level between Lake Superior and the point on the St. Lawrence near to Three Rivers, where tidal influence ceases, is about 600 feet.

The Dominion canals, constructed between Montreal and Lake Erie, are the Lachine, Beauharnois, Cornwall, Farran's Point, Rapide Plat, Galops and Welland. Their aggregate length is  $70\frac{1}{2}$  miles; total lockage (or height directly overcome by locks) is,  $533\frac{1}{4}$  feet; number of locks, 53.

Communication between Lakes Huron and Superior is obtained by means of the Sault St. Marie Canal, situated on the United States side of the channel.

The canal is a little over a mile in length, and has one lock 515 feet long, 80 feet wide, with 16 feet of water on the sills, and a lift of about 18 feet.

A statement of distances, and of sections of navigable waters, from the Straits of Belle-Ile to Duluth, at the head of Lake Superior, is given in the appendices. (app. 13, p. 146.)

### ST. LAWRENCE CANALS.

In 1841, at the time when the system of canals between Montreal and Lake Ontario was designed, it was in contemplation to afford a depth, at all stages of the St. Lawrence waters, of nine feet, a depth seemingly, from the data then possessed, secured through the works proposed. The River St. Lawrence is, however, from



various reasons, subject to fluctuations, whose extent it was impossible, at the time when these canals were originally constructed, to arrive at with precision, and the continued observations and experience of subsequent years have shown that at certain periods of low water this depth cannot be maintained.

The following list shows the least depth of water on the sills of the Locks of the St. Lawrence Canals at a time of exceptionally low water, in the year 1872 (*vide* Report of Chief Engineer, 1880):

	Feet.	Inches.
Rapide Plat, guard lock.....	6	7
“ “ lower entrance.....	7	0
Galops, guard lock.....	8	1
Iroquois, lower entrance.....	9	3
Farran's Point.....	7	9
Cornwall, guard.....	8	3
“ lower entrance.....	9	0
Beauharnois .....	10	10
“ lower entrance.....	9	3

The above list shows that if through navigation is to be afforded upon a scale commensurate with the development of the lake commerce, the enlargement of these canals and locks from Lake St. Louis upwards is necessary, and, indeed, in some cases, is urgently called for.

On the Rapide Plat Canal, which gives the lowest level of the series, it is proposed to construct a new lock at the upper entrance. The scale of the general enlargement scheme for permanent works will be adopted, such, namely, as to give a depth of 14 feet of water at the lowest observed level of the St. Lawrence.

The revenue accrued from the operation of the several canals during the past fiscal year, 1881-82, as ascertained from the Department of Inland Revenue, is as follows:—

Canals.	Tolls, &c.		Hydraulic Rents.		Total Revenue.	
	\$	cts.	\$	cts.	\$	cts.
Welland Canal.....	110,441	07	5,909	81	116,350	88
St. Lawrence Canals.....	100,023	00	14,555	00	114,578	00
Chambly Canal.....	24,022	20	Nil.		24,022	20
Ottawa Canals.....	58,495	05	16	00	58,511	05
Rideau Canal.....	6,136	76	1,695	50	7,832	26
Burlington Bay Canal.....	3,657	90	150	00	3,807	90
Newcastle District Works.....	311	68	Nil.		311	68
St. Peter's Canal.....	926	74	Nil.		926	74
<b>Total.....</b>	<b>304,014</b>	<b>40</b>	<b>22,326</b>	<b>31</b>	<b>326,340</b>	<b>71</b>

TOLLS.

*St. Lawrence and Welland.*

Under an Order in Council dated the 21st of April, 1881, published in the *Canada Gazette* of the 27th of that month, and printed in the appendices to the present Report, certain important amendments and reductions in the tolls upon freight passing through the St. Lawrence and Welland Canals have been made. (See Appendix 14, page 147.)

LACHINE CANAL.

	Old Line.	New Line.
Length of canal.....	8½ statute miles.	8½ statute miles.
Number of locks.....	5	5
Dimensions of locks.....	200 feet by 45 feet.	270 feet by 45 feet.
Total rise or lockage.....	44¾ feet	45¾ feet.
Depth of water { at two locks 16 “	16 “	18 “
on sills..... { at three locks. 9 “	9 “	14 “
Breadth of canal at bottom... 80 “	80 “	mean width 150
Breadth of canal at water surface.....	120 “	feet.

This canal extends from the City of Montreal to the Village of Lachine, overcoming the St. Louis Rapids, the first series of rapids which bars the ascent of the River St. Lawrence. They are 986 miles distant from the Straits of Belle-Ile.

The canal now consists of one channel with two distinct systems of locks, the old and the enlarged.

The canal was closed on the 1st December, 1881, and opened on the 25th of April, 1882.

The works have been maintained in an efficient state, and navigation has been conducted without accident or interruption.

NEW WORKS.

The work of enlargement has now been completed with the exception of the entrance channel and harbour at Lachine, and both the old and the new systems of locks have been in use since June, 1882.

The works at the Lachine entrance comprise the construction of a pier 6,200 feet long, and the excavation of the channel. Over one-half of the channel nearest the guard lock has been excavated, and the work is progressing favourably. It will be continued through the winter, and will probably be completed early in the season of 1884.

The construction of two masonry-faced basins at St. Gabriel, Montreal, for which an appropriation was granted last session, will shortly be placed under contract.

Settlement has been obtained with the contractors for all the sections of completed work, except two.

The construction of the pier at the Lachine entrance has interfered with the winter ferry of the Grand Trunk Railway Co.'y, ice having formed, owing to the consequent alteration in the set of the current. The obstruction having been brought about through the Government works, it was decided to extend the existing wharf to a point where it is found that ice does not form, and the work is now in progress.

#### BEAUHARNOIS CANAL.

Length of canal.....	11 $\frac{1}{4}$ statute miles.
Number of locks.....	9
Dimensions of locks.....	200 feet by 45 feet.
Total, rise or lockage.....	82 $\frac{1}{2}$ feet
Depth of water on sills... ..	9 “
Breadth of canal on bottom.....	80 “
Breadth of canal at water surface.....	120 “

This canal commences on the south side of the St. Lawrence, 15 $\frac{1}{4}$  miles from the head of the Lachine Canal. It connects Lakes St. Louis and St. Francis, and passes the three rapids known respectively as the Cascades, the Cedars, and the Coteau.

The canal was closed by ice on the 28th of November 1881, and was reopened for traffic on the 25th of April, 1882.

The works have been maintained in good condition, all necessary repairs having been executed.

#### CORNWALL CANAL.

Length of canal.....	11 $\frac{1}{2}$ statute miles.
Number of locks.....	7
Dimensions of locks.....	220 feet by 55 feet.
Total rise, or lockage.....	48 feet.
Depth of water on sills.....	9 “
Breadth of canal at bottom.....	100 “
Breadth of canal at water surface.....	150 “

From the head of the Beauharnois to the foot of the Cornwall Canal there is a navigable stretch through Lake St. Francis of 32 $\frac{3}{4}$  miles.

The Cornwall Canal extends past the Long Sault Rapids.

This canal was closed on the 10th of December, 1881, and re-opened on the 25th of April, 1882.

Ordinary repairs to locks, lock gates, weirs, and works generally, were executed.

NEW WORKS.

The works of enlargement at the lower entrance, comprising the formation of an entrance channel, and the construction of two locks (taking the place of three on the old line) together with the excavation of a basin between the locks, have been completed, for use when required, since the 20th of October last, leaving four locks and the prism of the canal to be hereafter dealt with. The dimensions of the new locks are those of the general enlargement scheme, namely, length 270 feet, breadth 45 feet, depth of water 14 feet. The basin between these two locks is 825 feet long.

WILLIAMSBURGH CANALS.

The Farran's Point, Rapide Plat and Galops Canals are collectively known as the Williamsburgh Canals.

Navigation was carried on throughout the season without accident or delay.

FARRAN'S POINT CANAL.

Length of canal.....	$\frac{3}{4}$ mile
Number of locks.....	1 "
Dimensions of locks.....	200 feet by 45 feet.
Total rise, or lockage.....	4 "
Depth of water on sills.....	9 "
Breadth canal at bottom.....	50 "
Breadth of canal on water surface. ....	96 "

From the head of the Cornwall Canal to the foot of Farran's Point Canal, the distance on the River St. Lawrence is 5 miles. This latter canal enables vessels ascending the river to avoid the Farran's Point Rapid. Descending vessels run the rapids with ease and safety.

The canal was closed on the 10th December, 1881, and re opened on the 24th April, 1882.

In addition to the ordinary repairs to lock-gates and fittings, a portion of the pier or dock at the lower entrance has been re-built.

RAPIDE PLAT CANAL.

Length of canal.....	4 miles.
Number of locks.....	2
Dimensions of locks.....	200 feet by 45 feet.

Total rise, or lockage.....	11½ feet.
Depth of water on sills.....	9 “
Breadth of canal at bottom.....	50 “
Breadth of canal at surface of water.....	90 “

From the head of Farran's Point Canal to the foot of Rapide Plat Canal there is a navigable stretch of 10½ miles. This canal was formed to enable vessels ascending the river to pass the rapid at that place. Descending vessels run the rapid safely.

The canal was closed on the 10th December, 1881, and re-opened on the 24th April, 1882.

All necessary repairs have been duly executed.

#### GALOPS CANAL.

Length of canal.....	7½ miles.
Number of locks.....	3
Dimensions of locks .....	200 feet by 45 feet.
Total rise, or lockage .....	15¾ feet.
Depth of water on sills .....	9 “
Breadth of canal at bottom.....	50 “
Breadth of canal at surface of water .....	90 “

From the head of Rapide Plat Canal to Iroquois at the foot of the Galops Canal, the St. Lawrence is navigable for 4½ miles. This canal enables vessels to overcome the rapids at Pointe aux Iroquois, Pointe Cardinal, and the Galops.

The canal was closed on the 10th December, 1881, and re-opened on the 24th April, 1882.

The repairs have been of an ordinary character.

#### GALOPS RAPIDS IMPROVEMENT.

The progress on these works, which consist of the excavation of a straight channel through the rapids, 3,300 feet long, 200 feet wide, and adapted to a 14-foot navigation, has been all that could be desired in view of the difficult nature of the undertaking. It comprises the completion of a cutting to the full depth, and of one-half the necessary width, through one of the shoals, representing the removal of over 6,000 cubic yards of rock. Details of the work will be found in the appended report of the Engineer in charge.

#### WELLAND CANAL

MAIN LINE, FROM PORT DALHOUSIE, LAKE ONTARIO, TO PORT COLBORNE, LAKE ERIE.

By the works of enlargement, passage is now afforded, at all stages of the Lake Erie level, to vessels drawing 12 feet of water, excepting at the point where the canal is carried by an aqueduct over the Chippewa River.

Here, the necessity of continuing to use the old work, pending the building of the enlarged aqueduct, the completion of which cannot be looked for before two years, renders care advisable, and the draught of vessels using their own motive power should not at this point, exceed  $11\frac{1}{2}$  feet; the draught of vessels in tow, however, may be 12 feet. At periods of low water in Lake Erie, and especially during a continuance of strong easterly winds, the draught of all vessels, to enable them to pass freely through the present aqueduct, should not exceed  $11\frac{1}{2}$  feet.

	OLD LINE.	ENLARGED OR NEW LINE.
Length of canal.....	$27\frac{1}{2}$ miles.	$26\frac{3}{4}$ miles.
Pairs of guard gates. (formerly 3).	2	2
Number of locks { lift .....	26	lift 25
{ guard .....	1	guard 1
Dimensions .....	2 locks 200 x 45 1 (tidal) 230 x 45 24 150 x $26\frac{1}{2}$	270 feet x 45 feet.
Total rise or lockage.....	$326\frac{3}{4}$ feet.	$326\frac{3}{4}$ feet.
Depth of water on sills.....	$10\frac{1}{2}$ "	12 "

WELLAND RIVER BRANCHES.

Length of Canal—Port Robinson Cut to River Welland.....	2,622 feet.
“ From the Canal at Welland to the River <i>via</i> lock at Aqueduct.....	300 “
“ Chippawa Cut to River Niagara.	1,020 “
Number of locks—One at Aqueduct and one at Port Robinson.....	2
Dimensions of locks.....	150 by $26\frac{1}{2}$ feet.
Total lockage from the Canal at Welland down to River Welland.....	10 feet.
Depth of water on sills.....	9 feet 10 inches.

GRAND RIVER FEEDER.

Length of canal.....	21 miles.
Number of locks.....	2
Dimensions of locks..... {	1 of 150 by $26\frac{1}{2}$ feet. 1 of 200 by 45 “
Total rise or lockage.....	7 to 8 feet.
Depth of water on sills.....	9 feet.

## PORT MAITLAND BRANCH.

Length of canal.....	1 $\frac{3}{4}$ miles.
Number of locks.....	1
Dimensions of lock .....	185 by 45 feet.
Total rise of lockage.....	7 $\frac{1}{2}$ feet.
Depth of water on sills.....	11 "

The canal was closed on the 15th December, 1881, and re-opened on the 20th April, 1882.

The Welland Canal has one entrance from Lake Ontario at Port Dalhousie, two from Lake Erie, one for the main line at Port Colborne, and one for the feeder route at Port Maitland; it has also an entrance from the River Niagara at the Town of Chippewa. The enlarged route lies between Port Dalhousie and Port Colborne.

From Port Dalhousie to Allanburgh, 11 $\frac{3}{4}$  miles, there are now two distinct lines of canal in operation, the Old line, and the enlarged or New line.

From Allanburgh to Port Colborne, a distance of 14 miles, there is only one channel, the old canal having been enlarged.

## NEW WORKS.

The navigation of the enlarged canal has been conducted throughout the season with but one interruption; the use of the old canal on this occasion obviated all serious inconvenience.

Arrangements are now completed for the lighting of the new canal with gas under a system of burners affording a greatly intensified illuminating power. The old canal will henceforward be unlighted.

Work still remains to be done in widening the section between Humberstone and Port Colborne, known as the "rock cutting." It was found necessary to relet the work, and it is now being successfully carried on by sub-aqueous excavation, and without interruption to navigation.

The work of building the new enlarged aqueduct, whereby the waters of the canal are to be carried over the Chippewa River, is making fair progress.

Out of the 36 contracts given out for the enlargement of the canal, 28 have been finally settled for, three are under reference to Mr. Page as sole arbitrator, three are awaiting a final estimate of the work, and in two cases, as above shown, the work is unfinished.

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 OLD CANAL.

## PORT DALHOUSIE TO ALLANBURG.

On this section navigation has been interrupted twice during the year.

On the 24th November, 1881, the propeller "Europe" ran into the head gates of Lock No. 1, and four gates were carried away.

On the 6th June, 1882, the barge "Oriental" also ran into the head gates, and again four gates were carried away.

On each occasion the interruption to traffic lasted three days.

The water supply has been sufficient for all the demands of navigation and manufacture.

The repairs and renewals executed here have been unusually heavy. Amongst the former is included the restoration of weirs, bridges and raceways; in the latter, the substitution of an iron superstructure, on stone piers, carrying an enlarged flume designed to take the place of the old hydraulic race aqueduct.

It has been decided to make some improvements to lock No. 2, of the old canal, including the lengthening of the lock chamber to 270 feet: the work has been placed under contract.

## FEEDER JUNCTION TO DUNNVILLE AND PORT MAITLAND.

The east pier at Port Maitland has been substantially rebuilt.

All needed repairs have been made, and the works are in good condition.

## BURLINGTON BAY CANAL.

Length of canal .....	$\frac{1}{2}$ mile.
Average breadth between piers.....	138 feet.
Least " .....	108 "

This canal is cut through the sand bar which separates Burlington Bay from Lake Ontario, and is navigable without locks for vessels drawing ten feet of water. It gives access to the Port of Hamilton, and to the Town of Dundas, *via* the Desjardins Canal.

The canal was closed on the 19th of December, 1881, and re-opened on the 20th of April, 1882.

No serious interruption to the passage of vessels occurred during the season.

The greater portion of the work of renewing the superstructure of the piers, part of which were destroyed by fire some years ago, has been now completed, and the remainder will be placed under contract so that it may be finished during next season.



## MONTREAL, OTTAWA AND KINGSTON.

This route extends from the Harbour of Montreal to the Port of Kingston, passing through the Lachine Canal, the navigable sections of the Lower River Ottawa and the Ottawa Canals to the City of Ottawa, thence by the River Rideau and the Rideau Canal to Kingston on Lake Ontario—a total distance of  $246\frac{1}{4}$  miles.

After leaving the Lachine Canal, the works constructed to overcome the difficulties of navigation are:—

The St. Anne's Lock;  
 Carillon Canal;  
 Chute à Blondeau Canal;  
 Grenville Canal;  
 Rideau Canal.

The total lockage (not including that of the Lachine Canal), is  $533\frac{1}{2}$  feet—( $356\frac{1}{2}$  rise, 177 fall)—and the number of locks 59.

The following table exhibits the intermediate distance from Montreal Harbour:—

Sections of Navigation.	Intermediate distance.	Total distance from Montreal.
The Lachine Canal.....	$8\frac{1}{2}$	.....
From Lachine to St. Anne's Lock.....	15	$23\frac{1}{2}$
St. Anne's Lock and Piers.....	$\frac{1}{8}$	$23\frac{5}{8}$
From St. Anne's Lock to Carillon Canal.....	27	$50\frac{3}{8}$
The Carillon Canal.....	$2\frac{1}{8}$	$52\frac{3}{4}$
From Carillon Canal to Chute à Blondeau.....	4	$56\frac{3}{4}$
Chute à Blondeau Canal.....	$\frac{1}{8}$	$56\frac{7}{8}$
From Chute à Blondeau Canal to Grenville Canal.....	$1\frac{3}{8}$	$58\frac{1}{4}$
The Grenville Canal.....	$5\frac{1}{4}$	64
From the Grenville Canal to entrance Rideau Navigation.	56	120
Rideau Navigation, ending at Kingston.....	$126\frac{1}{4}$	$246\frac{1}{4}$

## ST. ANNE'S LOCK.

Length of canal.....  $\frac{1}{8}$  mile.  
 Number of locks..... 1  
 Dimensions of locks ..... 190 feet by 45 feet.  
 Total rise or lockage..... 3 "  
 Depth of water on sills.....  $\left\{ \begin{array}{l} 6 \text{ feet at low water.} \\ 7 \text{ feet at ordinary high water.} \end{array} \right.$

This work, with guide piers above and below, surmounts the St. Anne's Rapids between Ile Perrot and the head of the Island of Montreal, at the outlet of that por-

tion of the River Ottawa which forms the Lake of Two Mountains, 23½ miles from Montreal Harbour.

This lock was closed to navigation on the 20th of November, 1881, and opened on the 11th April, 1882.

No interruption to traffic occurred during the season.

The usual repairs to lockgates, ice breakers, wharves, &c., were duly made.

#### NEW WORKS IN PROGRESS.

These works embrace the construction of a lock, 200 feet long between the gates, 45 feet wide at bottom, with a depth of 9 feet of water on the sills; also the formation of channels of approach, 100 feet in width at the bottom, increasing to 150 feet at the upper entrance, and of such depth as to give 10 feet of water at the lowest known level of the river.

The masonry of this work is now completed, but the channels of approach are not yet fully excavated. It is, however, expected that the whole work will be open for navigation in the course of next season. The excavation of a further extent of channel above the lock is under contract and in progress.

#### THE CARILLON CANAL.

Length of canal.....	¾ miles.
Number of locks.....	2.
Dimensions of locks.....	200 feet x 45 feet.
Total rise or lockage.....	26 feet.
Depth of water on sills.....	9 "
Breadth of canal at bottom.....	100 "
Breadth of canal at water surface.	100 "

This canal overcomes the Carillon Rapids.

From St. Anne's Lock to the foot of the Carillon Canal, there is a navigable stretch of twenty-seven miles, through the Lake of Two Mountains and the River Ottawa.

The canal was closed on the 26th of November, 1881, and re-opened on the 28th April, 1882.

Two slight interruptions occurred to traffic in the course of the season—one from a barge grounding in the Chute à Blondeau Rapid, the other from the falling in of a wing wall of Lock No. 3 of the old canal.

The repairs executed, in addition to those which may be classed as of an ordinary character, have embraced a considerable amount of work on the North River feeder and dam.

NEW WORKS.

The new works consist of a dam across the River Ottawa  $\frac{3}{4}$  of a mile above the village of Carillon, also a canal of  $\frac{3}{4}$  of a mile long with two locks 200 feet by 45 feet with 9 feet of water on the sills.

The dam and slide completed in November, 1881, have shown, in working, the need for changes of a minor character in the entrance to the slide, and for an extension and alteration in the position of the guide booms leading thereto.

These improvements are now in progress.

The new canal itself and the locks in connection with it have been completed and in use since the 27th of May last.

In order to reap the full advantage from the new works it will be necessary to deepen and improve the channel of the river above the dam for a distance of about three-quarters of a mile. The execution of this work is in contemplation.

CHUTE À BLONDEAU CANAL.

Length of canal.....	$\frac{1}{3}$ of a mile.
Number of locks.....	1
Dimensions of lock.....	130 $\frac{5}{8}$ ft. x 32 $\frac{5}{8}$ ft. at upper end and 36 $\frac{1}{2}$ feet at lower end.
Total rise, or lockage.....	3 $\frac{3}{4}$ feet.
Depth of water on sills.....	6 "
Breadth of canal at water surface.....	30 "
Breadth of canal at bottom.....	30 "

Between the Carillon and Chute à Blondeau Canal there is a navigable stretch of four miles. The canal is cut through solid rock, and has only one lock. It is only used by vessels going up the river; all down vessels run the rapids.

Closed on the 26th of November, 1881, re-opened on the 28th April, 1882.

Considerable repairs were executed on this lock during the year.

A large mass of rock obstructing the channel has been removed by blasting, but the ledge forming the crest of the rapids will have to be similarly removed before any sensible reduction and equalization of the strength of the current between Greece's Point and the dam can be effected.

GRENVILLE CANAL.

Length of canal.....	5 $\frac{3}{4}$ miles.
Number of locks.....	7
Dimensions of locks—Lift Lock No. 5 } Combined	{ 130 $\frac{2}{3}$ feet x 32 $\frac{1}{3}$ feet.
"          6 }	{ 128 $\frac{1}{3}$ " x 32 $\frac{1}{3}$ "
"          7 }	{ 128 $\frac{1}{3}$ " x 31 $\frac{5}{6}$ "
"          8 }	{ 128 " x 32 $\frac{1}{4}$ "

Locks Nos. 9 and 10, and Guard Lock No. 11, (new works) .....	200 feet x 45 feet.
Total rise, or lockage.....	45 $\frac{3}{4}$ "
Depth of water on sills .....	6 "
Depth of water on sills of Locks Nos. 9, 10 and 11 ..	9 "
Breadth of canal at bottom.....	40 to 50 feet.
Breadth of canal at surface of water.....	50 to 80 "

From the head of the Chute à Blondeau Canal to the foot of the Grenville Canal there is a navigable stretch of 1 $\frac{3}{8}$  miles.

This canal is about 56 miles below the City of Ottawa; the Long Sault Rapids being thereby avoided.

The canal was closed on the 26th of November, 1881, and re-opened on the 1st of May, 1882.

Extensive repairs have been called for to maintain the old locks on this canal.

All ordinary repairs have been executed.

#### NEW WORKS.

The works for the enlargement of the canal, commenced in 1871, comprise the construction of five locks 200 feet long and 45 feet wide, with 9 feet of water on the sills; the main channel having a depth of 10 feet and a mean width at bottom, of 40 feet, varying at the surface from 50 to 80 feet, with crossing basins constructed at approximate intervals of half a mile.

The locks are now approaching completion; three are already in use, as shown above, and of the two enlarged locks which are to take the place of the present four at the outlet of the canal and immediately above it; one will be completed in time for the opening of navigation next season, and the other some time in the summer. The work of excavation for the widening of the reach between the river and the guard lock was prosecuted during last winter.

### UPPER OTTAWA RIVER.

#### CULBUTE LOCKS AND DAMS.

Number of locks.....	2
Dimension of locks.....	200 x 45
Total rise, or lockage .....	18 to 20 feet
Depth of water on sills.....	6 feet.
Aggregate length of dams.....	625 feet.

From the Grenville Canal to the City of Ottawa, a distance of about 56 miles, the river is navigable. Beyond the city, for a distance of 107 miles, to L'Islet or Culbute, continuous navigation is rendered impracticable by the undermentioned rapids:—The Chaudière, the Duchêne, the Chats, the Chenaux, the Portage du Fort, and the Grand Calumet.

The Culbute works, situated at L'Islet, surmount the Culbute and L'Islet Rapids on the north channel of the Ottawa.

These works comprise two locks and three continuous dams, all built of wood. The dams reduce the rapids to smooth water, enabling the river to be navigated from the head of the locks to Des Joachims, a distance of 37 miles.

The repairs on these works have been unimportant.

NEW WORKS.

To render the river navigable below the lock, as far as Bryson, it has been necessary to remove part of three shoals and to build two submerged dams.

All the work has been completed with the exception of a small portion which will be finished during the present winter, opening up a navigable route of 80 miles, with a minimum depth of 7 feet at extreme low water, between Des Joachims to Bryson, making a total above and below Culbute of 117 miles.

RIDEAU NAVIGATION.

The Rideau system connects the River Ottawa at the City of Ottawa with the eastern end of Lake Ontario at Kingston.

Length of navigable waters.....	126½ miles.
Number of locks going from Ottawa to Kingston	{ 33 ascending. 14 descending.
Total lockage.....446½	{ 282½ rise, and 164 fall. } at high water.
Dimensions of locks.....	134 by 33 feet.
Depth of water on sills, 5 feet; navigable depth through the several reaches..	4½ feet.
Breadth of canal reaches at bottom.....	{ 60 feet in earth. 54 feet in rock.
“ at surface of water.....	80 feet in earth.

For table of distances of Stations between Ottawa and Kingston see Appendix 11, page 144.

The summit level of this system is at the Upper Lake Rideau, but several of the descending reaches are also supplied by waters which have been made tributary to them. The following description gives the sources of supply.

From the summit, the route towards Ottawa follows the River Rideau, and that towards Kingston follows the River Cataraqui. The whole duty of keeping up the water to its proper level is effected by the reserves, given in detail below.

They may be divided into three systems, viz :

1. The summit level, supplied by the Lake Wolf system. 2. The eastern descending level to Ottawa, supplied by the River Tay system, discharging into the Lake Rideau. 3. The south-west descending level to Kingston, supplied by the Mud Lake system, formerly known as the Devil Lake system, discharging into Lake Openacon.

Lake Openacon receives the waters of Buck Lake and Rock Lake.

All these waters on the descending level, supplemented by those of Lake Loughboro, flow into Cranberry Lake, which discharges through Round Tail outlet, forms the River Cataraqui; this river, rendered navigable by dams at various points, affords a course of navigation to Kingston.

The navigation stopped at Kingston Mills on the 30th of November, 1881, and recommenced on the 1st of May, 1882.

At Ottawa navigation stopped the 23rd of November, 1881, and recommenced on the 1st of May, 1882.

During the fall season of 1881, the water supply on the Kingston and summit levels was maintained within a few inches of the level required for navigation, but on the reach between Burritt's and Long Island the deficiency amounted to nearly a foot.

During the season of 1882, the supply has been ample.

Heavy repairs have been called for during the past fiscal year, mainly in closing leaks at the Kingston mills.

#### TAY CANAL.

A survey has been carried out having in view the construction of a short branch canal to connect the town of Perth and the extensive mineral interests, now being developed, of which it is the centre, with the Rideau Canal; such connection formerly existed by means of a channel maintained by dams and locks, which have long fallen into disuse and decay, along the line of the River Tay, ending at Port Elmsley on Lake Rideau, a distance of about 10 miles. It has been decided to adopt a line of communication, starting from Beveridge's Bay on Lake Rideau, at which point a short cut, in which two locks, the only ones to be constructed, will be built, giving access from the lake to the river.

At the point of junction with the river a dam will be formed, raising the river waters sufficiently to give, with the deepening of the channel in certain places, a navigable depth up to Perth. Some of the more abrupt bends of the river will also be cut through, making the distance to be traversed about six miles.

## RICHELIEU AND LAKE CHAMPLAIN.

This system, commencing at Sorel, at the confluence of the Rivers St. Lawrence and Richelieu, 46 miles below Montreal, extends along the River Richelieu through the St. Ours' Lock to the Basin of Chambly, thence by the Chambly Canal to St. John's and the River Richelieu to Lake Champlain. The distance from Sorel to the Boundary Line is 81 miles.

At Whitehall, the southern end of Lake Champlain, the Champlain Canal is entered and connection obtained with the River Hudson, by which the City of New York is directly reached. From the Boundary Line to New York the distance is 330 miles.

The following table shows the distance between Sorel and New York :—

Sections of Navigation.	Intermediate distance in Miles.	Total distances.
Sorel to St. Ours' Lock.....		14
St. Ours' Lock to Chambly Canal.....	32	46
Chambly Canal.....	12	58
Chambly Canal to Boundary Line.....	23	81
Boundary Line to Champlain Canal.....	111	192
Champlain Canal to Junction with Erie Canal.....	66	258
Erie Canal from Junction to Albany.....	7	265
Albany to New York.....	146	411

## ST. OURS' LOCK AND DAM.

Length of canal.....	$\frac{1}{8}$ mile.
Number of locks.....	1
Dimensions of locks.....	200 feet by 45 feet.
Total rise, or lockage.....	5 feet.
Depth of water on sills.....	7 feet at low water.
Length of Dam in Eastern Channel.....	300 feet.
“ “ Western Channel.....	600 feet.

At St. Ours', fourteen miles from Sorel, the River Richelieu is divided by a small island into two channels. The St. Ours Lock is in the eastern channel.

There is a navigable depth of 7 feet between St. Ours Lock and Chambly Basin, a distance of 32 miles.

The lock was closed on the 25th November, 1881, and opened on the 13th April, 1882.

Navigation was conducted without any interruption of consequence, and all needed repairs were duly executed.

## CHAMBLY CANAL.

Length of canal.....	12 miles.
Number of locks.....	9

## Dimensions of locks—

Guard Lock, No. 1, at St. John's.....	122 feet by	22 $\frac{1}{2}$ feet.
Lift “ “ 2,.....	124 “	23 “
“ “ “ 3, 4, 5, 6.....	118 “	22 $\frac{1}{2}$ to 24 feet.
“ “ “ 7, 8, 9 combined.....	125 “	22 $\frac{1}{2}$ to 23 feet.
Total rise, or lockage.....	74 “	
Depth of water on sills.....	7 “	
Breadth of canal at bottom... ..	36 “	
“ “ surface of water.....	60 “	

Succeeding the thirty-two miles of navigable water between St. Ours' Lock and Chambly Basin—a natural reservoir formed by the expansion of the River Richelieu—is the Chambly Canal, which overcomes the rapids between Chambly and St. John's, a distance of 12 miles.

This canal was closed to navigation on the 28th November, 1881, and was re-opened on the 2nd May, 1882.

Navigation was carried on without interruption and all ordinary repairs have been executed.

## WORKS OF IMPROVEMENT.

During the year dredging operations have been carried on satisfactorily.

At the Chambly entrance for 3 $\frac{1}{2}$  miles up, the canal has been deepened. At St. John's the wharves have been improved, and the draught of water increased. The deepening also of the canal from Lock No. 1, downwards, is in progress.

## ST. PETER'S CANAL. CAPE BRETON.

Length of canal.....	about 2,400 feet.
Breadth at water line.....	55 feet.
Lock.....	One tidal lock, 4 pair of gates.
Dimensions.....	48 by 200 feet.
Depth of water on sills.....	18 feet at lowest water.
Depth through canal.....	19 feet.
Extreme rise and fall of tide in St. Peter's Bay	4 feet.

This canal connects St. Peter's Bay, on the southern side of Cape Breton, Nova Scotia, with the Bras d'Or Lakes. It crosses an isthmus half-a-mile in width, and gives access from the Atlantic.

Navigation was closed on the 31st December, 1881, and re-opened on the 5th May, 1882.



The canal has been maintained in good order, and increased facilities have been afforded for its use by the provision of lights at the entrance and along its course, and of mooring buoys in St. Peter's Bay and the Bras d'Or Lakes.

TRENT RIVER NAVIGATION.

The term "Trent River Navigation" is applied to a series of water stretches, which do not, however, form a connected system of navigation, and which, in their present condition, are efficient only for local use.

This series is composed of a chain of lakes and rivers extending from Trenton, at the mouth of the Trent, on the Bay of Quinté, on Lake Ontario, to Lake Huron.

Several years ago the utilizing of these waters for the purpose of through water communication between Lakes Huron and Ontario, was projected.

The course in contemplation was as follows:—

Through the River Trent, Rice Lake, the River Otonabee and Lakes Clear, Buckhorn, Chemong, Pigeon, Sturgeon and Cameron to the Lake Balsam, the summit water, about 166 miles from Trenton; from the Lake Balsam by a canal and the River Talbot to Lake Simcoe; thence, by the River Severn to Georgian Bay, Lake Huron, the total distance being about 235 miles.

The execution of this scheme, commenced in 1837, was subsequently deferred. By certain works, however, below specified, sections of these waters were made practicable for navigation and for the passage of timber. A branch of the main course, extending from Sturgeon Lake south, affords communication with the town of Lindsay, and, through Lake Scugog, to Port Perry, a distance of 190 miles from Trenton. Of this distance, 155 miles are navigable for vessels of light draught.

The following table gives the distance of navigable and unnavigable reaches:

	Navigable.	Unnavigable.
From Trenton, Bay of Quinté, to Nine Mile Rapids....		9
“ Nine Mile Rapids to Percy Landing.....	19½	
“ Percy Landing to Heeley's Falls Dam.....		14½
“ Heeley's Falls Dam to Peterboro'.....	51¾	
“ Peterboro' to Lakefield.....		9½
“ Lakefield to Burleigh.....	12	
“ Burleigh Rapids.....		1
“ Burleigh Rapids to Buckhorn Rapids.....	7	
“ Buckhorn Rapids.....		1
“ Buckhorn Dam to Lindsay.....	36¼	
	126½	34¾
“ Lindsay to Port Perry at the head of Lake Scugog	28¾	
	155¼	34¾

Total distance Bay of Quinte to Port Perry .....	190 miles.
Passing to Fenelon Falls the distance from Buckhorn Dam to Fenelon is.....	31½ "

The following is a list of the works:—

*Chisholm's Rapids.*

	Distance from Trenton in miles.
The works here consist of a canal and lock, a dam and slide.	15½

*Percy Landing.*

A retaining boom for saw logs here.....	28½
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*Campbellford.*

Guide booms.....	34¾
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*Middle Falls.*

The work consisted of 4 dams and 2 slides.....	37¾
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*Crow Bay.*

A retaining boom.....	38
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*Heeley's Fall.*

A dam and slide are in operation here.....	42¾
--	-----

*Crook's Rapids, Hastings.*

The works consist of 1 lock, 1 dam and slide for timber..	34¾
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*Whitlas's Rapids.*

The works situated below Peterboro consist of a lock, dam and canal.....	92¾
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*Little Lake.*

The works consist of 3 piers and 1 boom.....	94
--	----

*Burleigh.*

Timber slides.

*Buckhorn Rapids.*

This dam is important in keeping to a high level the water of the lakes west of it as far as Bobcaygeon, including Lakes Pigeon, Ball, Buckhorn and Chemong. The dam is effective.....	125
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*Bobcaygeon.*

There are two dams here with canal, lock and slide.

These dams retain the waters of the reach as far as

Fenelon Falls and Lindsay Lock..... 140½

*Fenelon Falls.*

A large slide and booms..... 155½

*Lindsay.*

The old lock, having become useless, was rebuilt by the Government of the Province of Ontario in 1879. Its dimensions are 134 x 33 feet, with 5 feet water on the sills. The navigation is, by this work, extended to Port Perry, Lake Scugog..... 161½

The dimensions of the Dominion locks are 133 feet 6 inches x 33 feet, with 5 feet depth of water on the sills.

In 1855 portions of the above named works were transferred to a committee of gentlemen connected with the lumber trade. The committee was authorized to collect tolls on timber passing through. The works so transferred, at this date, are the slides and booms at Chisholm's Rapids, the retaining boom at Myersburgh, the guide boom at Campbellford, the dams and slide booms at Middle Falls, the retaining boom at Crow Bay and the slide at Heeley's Falls.

These works are kept in repair by the committee.

The Lindsay lock was constructed by, and is under the control of, the Province of Ontario.

Navigation ceased on the 25th November, 1881, and recommenced on the 15th March, 1882.

In addition to repairs of ordinary character, the clearance of the River Scugog from impediments to navigation has been effected.

**NEW WORKS.**

Under appropriations voted last session by Parliament, works for the connection of certain available lake and river stretches have been commenced.

As the utilizing of this chain of waters, for the establishing of a line of through communication between Lake Huron and Lake Ontario, is a long considered project, which the requirements of the country may hereafter render it expedient to carry out, such points have been selected for the present works as will enable them to afford the greatest immediate advantage to local navigation, while, at the same time, they would form an integral part of the best practicable line of through communication.

Accordingly, after careful surveys and examination, it was decided to build works at the following places :—Fenelon Falls, Buckhorn Rapids, and Burleigh Falls, the completion of which will give communication between Lakefield, about 9 miles from Peterboro' and Balsam Lake, the headwaters of the system, opening up a total of about 150 miles of direct and lateral navigation.

Contracts have been given out ; the necessary lands are being expropriated ; and the works are in progress.

Surveys of the northern and southern portions of the country embraced in the original scheme, together with the possible sources of water supply, are being carried on.

#### MURRAY CANAL.

The scheme of cutting a channel through the Isthmus of Murray to give connection westwards between the head waters of the Bay of Quinté and Lake Ontario, thereby practically extending the navigation system of the River St. Lawrence, and avoiding the circuitous and exposed route south of the Peninsula of Prince Edward has made good progress. After careful surveys, a route making Presqu'île Harbour the terminus on the lake was selected, and steps were taken to have the work of construction pushed forward. A contract was let in August last for the cutting of a channel without locks, 80 feet wide at the bottom and of the depth of 11 feet (determined by the bottom level of the Bay of Quinté), below the lowest known water level of Lake Ontario, its length being somewhat over 6 miles. The greater portion of the lands required has been expropriated, and the work of excavation has since been vigorously prosecuted.

#### BRITISH COLUMBIA.

In compliance with a request preferred by the Provincial Government of British Columbia, that a survey should be made with a view to ascertain the feasibility and cost of a canal to connect Lake Okanagan with the waters of Lake Shuswap, an examination of the district in question has been ordered and is in progress.

Respectfully submitted.

CHARLES TUPPER,

*Minister of Railways and Canals.*

DEPARTMENT OF RAILWAYS AND CANALS,

OTTAWA, 1st February, 1883.

## APPENDIX No. 1

STATEMENT showing the amount Expended by the Department of Railways and Canals, Dominion of Canada, during the Fiscal Year ending 30th June, 1882.

Name of Work.	Construction.	Repairs.	Staff and Maintenance.
	\$ cts.	\$ cts.	\$ cts.
<b>CANALS.</b>			
Lachine.....	252,821 33	17,116 46	41,158 90
do construction of roadway to flour shed.....	2,978 66		
Beauharnois.....		20,813 86	18,804 53
Cornwall.....	44,587 61	6,634 62	15,052 20
Williamsburg.....		7,447 69	7,589 44
St. Lawrence.....	28,933 45		
Welland.....	603,402 17	69,125 79	74,641 51
do rebuilding Dunnville Bridge.....		5,733 46	
do Port Maitland.....		15, 87 50	
Burlington Bay.....		240 62	
do rebuilding pier.....		14,459 29	
St. Anne's.....	193,158 36	2,3 3 99	2,611 30
Carillon.....	212,794 07		
Grenville.....	220,290 32	7,582 68	14,387 49
Culbute.....	29,567 15	162 33	790 00
Rideau.....		13,860 28	26,887 89
Trent.....	5 836 51	8,115 50	2,011 92
Murray.....	7,135 63		
St. Onrs.....		1,902 41	2,002 71
Chambly.....	31,796 41	16,843 60	16,686 78
St. Peters.....	484 00	200 63	1,920 54
Surveys.....			2,243 23
Arbitrations.....			5,023 59
River Tay Survey.....			748 65
St. Frances Lock.....			2,559 41
Total on Canals.....	1,633,785 67	207,770 71	235,120 09
<b>RAILWAYS.</b>			
Pacific.....	3,587,166 41		
do subsidy.....	2,210,000 00		
do advance on rails as per contract.....	375,000 00		
Intercolonial.....	585,568 79		2,069,657 48
Windsor Branch.....			13,099 55
Prince Edward Island.....	402 03		228,259 97
Total on Railways.....	6,758,137 23		2,311,017 00
Grand Total.....	8,391,922 90	207,770 71	2,546,137 09

Total Amount Expended.....\$11,145,830.70.

J. BAINE,  
Accountant.

DEPARTMENT OF RAILWAYS AND CANALS,  
OTTAWA, December, 1882.

## APPENDIX

STATEMENT showing the amount expended on the construction and enlarge-

*(Repairs not*

By whom Expenditure Incurred.	Year ending 30th June.	Lachine Canal.	Beauharnois Canal.
		\$ cts.	\$ cts.
Imperial Government.....	} Up to June 30, 1867. {	40,000 00	.....
Provincial Government.....		2,517,532 85	1,611,424 11
Dominion Government.....	1868	1,852 70	7,008 00
do .....	1869	2,000 00	55 00
do .....	1870	.....	587 50
do .....	1871	12,231 40	187 00
do .....	1872	36,708 15	27 50
do .....	1873	42,982 49	5,280 90
do .....	1874	158,618 35	26 00
do .....	1875	197,420 52	36 00
do .....	1876	327,769 39	.....
do .....	1877	1,439,375 73	.....
do .....	1878	1,484,619 63	.....
do .....	1879	958,053 30	.....
do .....	1880	369,566 74	.....
do .....	1881	292,165 51	.....
do .....	1882	252,821 33	.....
<b>Total.....</b>		<b>8,163,718 09</b>	<b>1,624,632 01</b>

## No. 2.

ment of the Canals of the Dominion of Canada, up to 30th June, 1882.  
*included.*)

Cornwall Canal.	St. Lawrence Canals. — Not apportioned.	Williamsburg Canals.	St. Lawrence. — Chain Vessel and Improvement of Navigation.	Surveys, St. Lawrence and Canals.	Welland Canal.
\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
					222,220 00
1,933,152 69	116,821 31	1,320,655 54			7,416,019 83
2,786 00					12,097 84
10,692 04					43,486 36
17,780 05					24,173 72
7 50					47,869 10
10,000 21		1,077 00			59,702 76
1,011 75				35,326 44	130,158 47
				26,541 30	746,420 61
1,780 00				22,611 36	1,046,714 91
			28,500 00	21,715 47	1,570,178 19
49,211 37			28,064 67	19,312 64	2,199,962 61
145,015 45			1,623 76	3,946 70	2,138,392 99
143,092 05		4,580 00		4,685 77	1,552,697 41
109,454 95			623 52	8,591 04	1,252,924 75
53,948 14			6,927 96		1,242,943 37
44,587 61			28,933 45		603,402 17
2,522,519 81	116,821 31	1,326,312 54	94,673 36	142,730 72	20,309,365 09

## APPENDIX

STATEMENT showing the amount expended on the construction and  
(Repairs not

By whom Expenditure Incurred.	Year ending 30th June.	Ste. Anne's Lock.	Carillon and Grenville Canals.
		\$ cts.	\$ cts.
Imperial Government.....	} Up to June 30, 1867. {	.....	(*)
Provincial Government.....		134,456 51	63,053 64
Dominion Government.....	1868	.....	19,817 22
do .....	1869	.....	.....
do .....	1870	.....	4,167 96
do .....	1871	.....	23,119 37
do .....	1872	1,939 46	165,257 28
do .....	1873	540 11	136,250 48
do .....	1874	12,753 27	245,258 38
do .....	1875	32,627 71	339,864 76
do .....	1876	24,935 85	326,203 16
do .....	1877	30,003 08	245,738 04
do .....	1878	14,618 85	22,676 20
do .....	1879	22,113 02	243,141 24
do .....	1880	3,054 68	281,514 27
do .....	1881	69,042 76	336,707 53
do .....	1882	193,158 36	433,084 39
Total.....	.....	539,243 66	2,885,853 92

\* Expenditure not given.



No. 2.—*Concluded.*

enlargement of the Canals of the Dominion of Canada, &c.—*Concluded.*  
*included.*)

Culbute Lock.	Rideau Canal.	Chambly Canal.	St. Peter's Canal.	Survey, Baie Verte Canal.	Total.
\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
	3,911,701 47				4,173,921 47
	153,062 60	643,711 76	88,949 39		16,028,840 23
	7,593 67		21,519 72		72,675 15
			70,719 80		126,953 20
			46,193 57		92,902 80
	11,732 88	2,872 85			98,020 10
	4,967 59	1,906 40			281,586 26
	18,070 97	759 00		4,877 83	375,258 44
38,388 99	5,793 16			4,018 90	1,237,818 96
63,659 29	9,310 85	2,415 00	20 97	443 00	1,716,904 37
76,842 44	2,163 96		11,125 00	110 75	2,389,544 21
56,081 87	214 11	80 00	63,330 18	22 30	4,131,396 60
5,933 53			26,511 51		3,843,338 62
20,694 19	7,703 88		107,337 75		3,064,098 61
16,688 20	355 05		80,120 54		2,122,893 74
4,721 62			69,434 76	520 00	2,076,411 65
29,567 15			484 00		1,586,038 46
312,577 28	4,132,670 10	651,745 01	585,747 19	9,992 78	43,418,602 87

## APPENDIX No. 3.

### CANADIAN PACIFIC RAILWAY.

OFFICE OF THE ENGINEER-IN-CHIEF,  
OTTAWA, 26th September, 1882.

SIR,—I have the honor to submit my Report upon the progress made, up to this date, with the works of construction, the surveys, etc., in connection with the Canadian Pacific Railway.

#### GENERAL REMARKS.

The Trunk line is divided into the following sections, viz:

	Miles.
No. 1.—From Callander Station (120 miles west of Pembroke) to Prince Arthur's Landing, an estimated distance of.....	650
No. 2.—From Prince Arthur's Landing to the Red River (St. Boniface, opposite Winnipeg).....	432
No. 3.—From the Red River to Savona's Ferry (foot of Kamloops Lake), an estimated distance of.....	1,350
No. 4.—From Savona's Ferry to Port Moody, a distance of	215

Approximate length of Trunk line..... 2,647

The branch lines, constructed and under construction, are as follows:—

	Miles.
Sault Ste. Marie Branch .....	118
Pembina " .....	65
West Selkirk " .....	20
Stonewall " .....	22
Colville Landing " .....	2
South-western " .....	164
	391

Total mileage (approximate)..... 3,038

Of which the Government are constructing Sections Nos. 2 and 4 of the Trunk line.....	647
Pembina and Colville branches.....	67

714

Leaving the following sections and branches to be constructed by the Canadian Pacific Railway Company, viz.:

	Miles.
Sections Nos. 1 and 3, Trunk line.....	2,000
Sault Ste. Marie, West Selkirk, Stonewall, and South-western branches.....	324
	2,324

In the foregoing statement of distances, I have treated the Trunk line as passing through the city of Winnipeg.

SUBSIDIZED LINE.

Canada Central Railway Extension, now Canadian Pacific, Pembroke to Callander Station, 120 miles.

GENERAL PROGRESS.

*Pembroke to Callander Station, 120 miles.*

This portion of the road, (formerly known as the Canada Central Railway Extension), is being constructed under a Government subsidy of \$12,000 per mile, making a total subsidy of \$1,440,000. The work of construction is drawing towards completion. The station houses and other buildings are complete; the water service also. The track is laid throughout, the bridging all erected, the culverts built; and there remains only a little ballasting, the filling of some ravines crossed by temporary trestle bridges, and the widening of a few embankments to complete the work and place the road in good running order. That portion of the road between Pembroke and Mattawan, a distance of 94 miles, is now under traffic, and that between Mattawan and Callander, 26 miles, is used for the transport of material and supplies for the construction of the line from Callander westward.

*Callander Station to Prince Arthur's Landing.*

The location of this section not having been determined in its entirety, the actual mileage has not yet been ascertained, and may therefore for the present be assumed to be 650 miles, according to the original estimate. Early in the present season a route *via* Algoma Mills and Sault Ste. Marie was under consideration; but I am informed that the Company have abandoned this route, and now propose to follow the Algoma Mills location from Callander to Wahnapiatae River, 82 miles, thence in a direct line for about 336 miles, forming a junction with the Algoma Mills route near the Pic River, and from this point along the Algoma Mills route to Prince Arthur's Landing, about 194 miles. Provided a feasible line can be obtained in the direction indicated, of which the Company express great confidence, it is estimated that the ground between Callander and Prince Arthur's Landing will be covered in 612 miles. From Callander to near North Bay, a distance of 20 miles, the grading and bridging are finished and the track laid, and from the latter point to one near the Sturgeon River, about 23 miles, the grading and bridging are in a forward state and are being prosecuted vigorously. From near the Sturgeon River to the Wahnapiatae River, 39 miles, the line is located, and from the latter river to the Pic, some 336 miles, the preliminary surveys are in progress. From the Pic River to Red Rock, about 128 miles, a trial location is being made, and from the latter point to Prince Arthur's Landing, about 66 miles, the works of construction are in progress. The Company are fully confident that they will be in a position to exhibit a favorable profile in this route early in the winter season.

*Prince Arthur's Landing to Red River (opposite Winnipeg.)*

This section is 432 miles in length and was divided, for construction purposes into the following sub-sections, viz. :—

	Miles.
Prince Arthur's Landing and Kaministiquia Railway....	6
Grading Contract, No. 13 - - - - -	32½
“ “ No. 25 - - - - -	80
“ “ No. 41A - - - - -	113½
“ “ No. 42B - - - - -	66½
“ “ No. 15 - - - - -	36½
“ “ No. 14 - - - - -	76
“ “ No. 5a - - - - -	21
	432

The Prince Arthur's Landing and Kaministiquia Railway was graded and bridged by a company, and subsequently purchased by the Government for \$14,000. It has since been laid with steel rails, and spur tracks have been run down to two wharves at Prince Arthur's Landing. Though not ballasted, the road is in fair condition for the passing of trains. Last year, I reported the work on Contracts 13 and 25, complete. Owing, however, to the lapse of time since the sleepers were cut and the bridges built, the former will need considerable renewals, and some of the smaller structures among the latter should be replaced; and owing to the swampy nature of much of the country through which the line passes, a great subsidence has taken place in many of the embankments, and this must be made up. Many of the cuttings, also, will require to be cleared of slurry in order to afford free drainage. It will be necessary to provide funds for these purposes, a considerable sum having already been expended on this service.

The works on Contract 41A are drawing near to completion, and had not an unexpected settlement taken place, during the summer, in a heavy embankment, they would by this time have been still further advanced. The track was laid throughout on the 25th August, 1881, the bridging is practically completed, all but about 18 miles of the track has received a lift of ballast, and the earthwork, if prosecuted with vigor, can be completed in about five weeks. Many of the embankments crossing the long stretches of swampy country have settled, and the subsidence will have to be made up and the track reset. Construction and supply trains have been passing over this contract during the present season.

During the past twelve months, satisfactory progress has been made with the works on Contract 42B. The rock work, which was very heavy, was finished early in the summer, and by the 19th June the track was laid throughout, crossing a large number of deep and wide ravines by means of temporary trestle bridges, from which the material forming the embankments will be dumped by the construction trains. It is estimated that, at the close of the present season, from 400,000 to 450,000 cubic yards of earth filling will remain to be done, of which the execution will occupy the greater portion of the next working season probably up to the 1st October. The ballasting has been carried on with great vigor, the track having received a lift throughout. A few culverts remain to be built, but the masons are now at work upon them, and it is believed they will soon be finished.

In my Report of last year, I mentioned the fact, that Contract 15 was completed. It was transferred to the Canadian Pacific Railway Company on the 1st December last, and from that date they have had it under traffic. I passed over it a few days ago, and am pleased to say that it is in first class running condition, the embankments and other works having stood well.

Upon that portion of the road known as Contract 14, the ballasting is not yet completed. With a view to the rapid construction of the road west of Winnipeg, it was deemed very important that the Canadian Pacific Railway Company should have full control of this section, which was to become the chief source of their supply of timber and sleepers; and it was, therefore, transferred to them, with the understanding that they should complete the ballasting, which they have been unable to do, owing to the road being constantly occupied by trains carrying construction materials. The road is in fair running order, and the traffic has been uninterrupted during the season.

The work on Contract 5a, Selkirk to St. Boniface (opposite Winnipeg), has been completed, and the road under traffic for several years.

Between Prince Arthur's Landing and St. Boniface the water service is in working order, except at two or three stations on Contract 42, where some work is still required to place it in satisfactory condition. The Haggas' water system has been introduced between Prince Arthur's Landing and Cormack, and the elevated system from that point to the Red River, opposite Winnipeg.

Between Prince Arthur's Landing and Rat Portage, a number of station houses and platforms have yet to be built.

On the section between Red River and Savona's Ferry at the foot of Lake Kamloops, the Company have obtained the approval of the location from the Red River to Moose Jaw Creek, a distance of 406 miles; and upon this location the road has been built and is in good running order, 372 miles (from Red River to Regina) being under traffic. From Moose Jaw Creek to Fort Calgary, a distance of about 454 miles, the Company, I am informed, have made a location with a view to passing through the Kicking Horse Pass. This location has not yet been approved, but the Company apparently have great faith in the existence of a feasible way through the mountains in the direction indicated, having constructed a line on this location from Moose Jaw Creek to a point near Old Wives' Lake, about 455 miles west of Red River, completed the work of grading for about 60 miles in advance of that point. The grading is also in a forward state for a further distance of about 70 miles. The Company also inform me that they intend to complete the road to the crossing of the South Saskatchewan River, about 660 miles west of Red River, before the close of the present season. I presume they have assumed this responsibility, not desiring to check their unprecedentedly rapid construction, and feeling assured by information already obtained from their engineers that they will succeed in finding a favorable passage *via* the Kicking Horse Pass. Several parties of engineers, under Major Rogers, have been busily engaged during the summer in surveying through this Pass; and the Company inform me that they expect reports from him which will, they believe, definitely settle the route. They also state that they intend to push the work of construction to the foot of the Rocky Mountains next season, and thus open up a base of supplies to enable them to carry the line through the mountain region vigorously to completion in the following years.

*Savona's Ferry (foot of Lake Kamloops) to Port Moody.*

This section, 215 miles in length, has been divided for convenience of construction into the following sub-sections, viz:

	Miles.
Contract 63, Savona's Ferry to Junction Flat - - -	42 $\frac{3}{4}$
“ 62, Junction Flat to Lytton - - - - -	23 $\frac{1}{4}$
“ 61, Lytton to Boston Bar - - - - -	29
“ 60, Boston Bar to Emory's Bar - - - - -	29
“ 92, Emory's Bar to Port Moody - - - - -	85 $\frac{1}{2}$

The works upon these contracts are probably heavier than those upon any equal number of consecutive miles upon the whole of the Canadian Pacific Railway. Mr. D. O. Mills is the contractor for Nos. 63, 62, 61 and 60, and Mr. Andrew Onderdonk for No. 92.

On Contract No. 63, no work has been done since my Report of last year.

Upon Contract No. 62 the work of grading is far advanced, but as I understand that it is intended to transport the timber for the bridges by train, which cannot be done until the track is laid on Contract No. 61, little or no bridge work can be done until the material can be carried by train to points near the sites of the structures.

The work on Contract No. 61 consists largely of rock excavation, the vigorous prosecution of which only commenced in the early part of the present season. A very considerable amount of work of various kinds has been done, and I fully expect that the track will be laid over this contract next season.

On Contract No. 60 the work is almost completed, and is the heaviest in its nature of any yet undertaken on the Canadian Pacific Railway. This contract is 29 miles in length, and the track is laid and partially ballasted over 22 miles. Upon the remaining 7 miles the work is so far advanced that the track will probably cover it within a few months.

Upon the opening of the working season, the contractor for No. 92 commenced his preparations for the prosecution of the works, which were entered upon in April. But it is only now that they are well under way, and appearances indicate that

during the next few months a large amount of work will be done. Up to the end of August, work to the value of about \$270,000 had been executed. A considerable number of the embankments having to be made up by train, temporary trestling is resorted to, and the rails are delivered along the line of the works as they advance, with a view to their being laid at an early day.

The foregoing remarks give a general idea of the condition of the works, etc. throughout the trunk line. I shall now offer a few observations on the progress made and being made with the branch lines.

The Canadian Pacific Railway Company have located the Sault Ste. Marie branch from Wahnapiatae River to Algoma Mills, and have carried on the work of grading and bridging during the summer upon the first 60 miles east of the latter point. They have also graded about 100 miles of the south-western branch (Winnipeg to Smuggler's Point, etc.) on which the track is laid southerly from Winnipeg for about 37 miles. I am informed the Company have also located the West Selkirk branch (20 miles, Winnipeg to Selkirk) along the west bank of the Red River, and that grading is in progress upon it.

The Stonewall Branch, 22 miles in length, was built by the Government, the cost being charged to the Company, by whom it is now owned and operated.

The Pembina Branch (Emerson to St. Boniface, 65 miles), and the Colville Landing Branch, (Selkirk to Colville Landing, 2 miles), were built by the Government and were transferred to the Company on the 1st May, 1881.

#### CONTRACTS NOT ALREADY REFERED TO.

##### *Iron Bridges, Contracts 71 and 73, Toronto Bridge Company.*

The two 200 feet iron bridges spanning the Winnipeg River, have been completed; also the three on the Pembina Branch.

##### *Contract No. 77, Barbed-wire Fencing, Messrs. Stubbs & Co.*

The work under this contract has been in progress during the past season. The contract having been transferred to the Company with the Pembina Branch and the work west of Winnipeg, it merely remained for the Government to see that the contractors were settled with under the terms of the contract.

##### *Contract No. 78, Barbed-wire Fencing, Messrs. Skead & Haycock.*

The contractors delivered a quantity of wire and posts, after which the contract was cancelled, and the materials paid for.

##### *Contract No. 93, Iron Bridge, Andrew Onderdonk.*

This contract is for the erection of a cantilever iron bridge over the Fraser River, near Lytton, having one span of 300 feet, and two of 100 feet, and was entered into on the 22nd February last. The bridge is in course of manufacture in England, and Mr. Tomlinson, who is engaged in inspecting the work at the shops, reports satisfactory progress, and thinks that the bridge will be ready for shipment in January next.

##### *Steel Rails.*

8,800 tons of steel rails, with fastenings, have been purchased, to be delivered at Port Moody, B.C., early next spring. These, with the 4,600 tons which the Company were allowed to loan, and which are about to be replaced, make up the full complement required for those sections of the road under construction by the Government.

I have much pleasure in stating that the Canadian Pacific Railway Company are making unprecedentedly rapid progress with the construction of the road west of

Winnipeg, and that they are building a good and substantial work. On Contracts 41 and 42 the work has also been executed substantially and well.

*Telegraph Lines.*

The section between Thunder Bay and Red River has been maintained and worked by the contractors, Messrs. Oliver, Davidson & Co., under the terms of their contract, and communication has been fairly kept up during the past year.

The section between Red River and Edmonton, including the line from Selkirk to Winnipeg, has been maintained and operated by the Department, under the superintendence of Mr. Latouche Tupper, who also exercises a supervision over the contractors between Thunder Bay and Red River.

Mr. Tupper reports the cost of operation, including maintenance for the year ending the 30th June, - - - - -	\$14,477 78
Revenue - - - - -	3,222 78
	<hr/>
Loss - - - - -	<u>\$11,255 00</u>

The line between Cache Creek and Kamloops is operated in connection with the telegraph system of British Columbia. On the 5th July, 1882, the Canadian Pacific Telegraph was transferred to the Public Works Department.

*Rolling Stock.*

The rolling stock owned by the Government, and employed in connection with the work of construction on the Canadian Pacific Railway, consists of:—

- 13 locomotives,
- 3 first-class passenger cars,
- 1 baggage and postal car,
- 300 flat cars,
- 1 steam shovel car,
- 2 boarding cars,

The rolling stock owned by the Canadian Pacific Railway Company is:—

- 87 locomotives,
- 1 official car,
- 3 sleeping cars,
- 17 first-class passenger cars,
- 5 second-class passenger cars,
- 3 baggage and postal cars,
- 2 baggage cars,
- 1 combined passenger and baggage car,
- 219 box cars,
- 1956 platform cars,
- 30 cabooses,
- 62 wing ploughs,
- 6 flangers,
- 7 snow ploughs.

I have the honor to be, Sir,

Your obedient servant,

COLLINGWOOD SCHREIBER,

*Engineer-in-Chief.*

A. P. BRADLEY, Esq.,

Secretary Department Railways and Canals.

APPENDIX No. 4.

CANADIAN GOVERNMENT RAILWAYS IN OPERATION.

OFFICE OF THE CHIEF ENGINEER AND GENERAL MANAGER,  
OTTAWA, 20th October, 1882.

	Miles.
Intercolonial Railway - - - - -	840
Prince Edward Island Railway - - - - -	199
Windsor Branch Railway - - - - -	32
	1,071

SIR,—I have the honor to submit, herewith, the Reports and accounts in connection with the working of the railways in operation under my charge, for the year ended the 30th June, 1882, comprising the Intercolonial, Prince Edward Island, and Windsor Branch Railways, and having an aggregate length of 1,071 miles.

In my last Annual Report I stated the mileage of railway operated by the Government at 1,300 miles. That mileage, however, included the 229 miles of the Canadian Pacific Railway, transferred to the Company on the 1st May, 1881, leaving the mileage now under Government management, as stated above, 1,071 miles.

I am pleased to be able to state that during the year just closed, the operations of these roads show, in the aggregate, results equally favorable with those of the preceding year; the excess of working expenses over earnings in 1881-82 being \$73,433.61, and, in 1880-81, \$74,488.22.

The following is a summary of the operations of each of the lines under consideration:

Name of Railway.	Length in Miles.	—	Amount.	Profit.	Loss.
Intercolonial Railway. ....	840	Earnings .....	\$ cts. 2,079,262 66	\$ cts. 9,605 18	\$ cts.
		Expenses .....	2,069,657 48		\$ cts.
Prince Edward Island Railway	199	Earnings .....	137,267 54		90,992 43
		Expenses .....	228,259 97		
Windsor Branch Railway.....	32	Earnings.....	21,053 19	7,953 64	
		Expenses .....	13,099 55		
Totals.....	1,071	.....	.....	17,558 82	90,992 43 17,558 82
		Nett Loss.....	.....	.....	73,433 61

INTERCOLONIAL RAILWAY OPERATIONS.

On perusal of the Reports of the Chief Superintendent, Mechanical Superintendent, and Engineer, herewith submitted, it will be seen that the traffic has been



conducted with a good measure of success, and that the road and rolling stock have been well maintained; and as information on these points is very fully given in the reports and accompanying accounts, it is not in my opinion necessary to add any lengthy remarks. I desire, however, to draw the attention of the Honorable Minister to the marked increase in the volume of traffic, attributable, in my opinion, to the continued prosperity of the country's trade, and to the exertions on the part of our officers to secure business; and it may be hoped that with the improved facilities for conducting traffic at Halifax, St. John, and other points, that the rate of increase in the future will be even greater.

It will be observed that the increase of earnings is not in proportion to that of the volume of traffic. This is no doubt owing to the fact that the growth of the traffic has been, to a great extent, in that portion of it which is connected with the manufactories and collieries of the country, upon which very low rates obtain; the Honorable Minister having made arrangements, in this respect, with a view to the promotion of home industries.

The earnings for the past three years were:—

1879-80	-	-	-	-	-	-	-	-	\$1,506,298	48
1880-81	-	-	-	-	-	-	-	-	1,760,393	92
1881-82	-	-	-	-	-	-	-	-	2,079,262	66

The tons of freight carried were:—

1879-80	-	-	-	-	-	-	-	-	561,924
1880-81	-	-	-	-	-	-	-	-	725,577
1881-82	-	-	-	-	-	-	-	-	838,956

The number of passengers carried was:—

1879-80	-	-	-	-	-	-	-	-	581,483
1880-81	-	-	-	-	-	-	-	-	631,245
1881-82	-	-	-	-	-	-	-	-	779,994

The great prosperity throughout the country has caused such a demand for labor, and for all articles entering into the working of railways, that the cost of operating is somewhat enhanced. I am, nevertheless, glad to be able to state that the earnings (as shown in the table given above) exceed the working expenses by several thousand dollars.

#### CAPITAL ACCOUNT.

##### *Halifax Extension.*

The wharf and warehouse at the ocean terminus, at the south end of Her Majesty's dockyard, greatly facilitated the movement of ocean borne traffic last winter, and it is believed that the additional accommodation at this point, now in course of construction, will be sufficiently advanced, by the date of the close of navigation on the St. Lawrence, to receive the business offering, and the facilities for conducting traffic, though not complete, will be very good. The water along each side, and at the end of the main wharf, will be of sufficient depth to float the largest ship owned by any of the ocean lines of steamers. The wharf is large and the warehouse roomy. A separate wharf has been built, having an elevated track which will enable the steamers to receive the coal from the cars directly into the bunkers, a facility not offered, so far as I am aware, by any port on this continent, and which will effect a great saving of time and expense to the ships.

Efforts have been repeatedly made in past years to induce a grain traffic *via* Halifax, but without success; and it was stated by dealers and others competent to judge, that, in the absence of an elevator, it was impossible to ship grain. To meet this requirement an elevator with a capacity of 150,000 bushels has been erected, and will be available for use this winter. Siding storage for cars has been provided at this point, but until the yard room is extended by filling up the shallow water, it

will be rather cramped, and this will necessitate more shunting between Richmond and the terminus than would otherwise have to be done.

The appropriation available will not be sufficient to complete the work undertaken, and it will be necessary to provide a further sum for expenditure next year.

The military authorities have called upon the Department to carry out a condition made when the right of way was granted for the Halifax (North Street) extension through the military grounds to the north of Her Majesty's dockyard, viz.: to cover the track for a distance of 800 feet in the vicinity of the powder magazine. In 1878 a plan of the proposed covering of the track was submitted to the military authorities for approval, and a sum of \$20,000 was placed in the Estimates towards its construction; but so far as I am able to learn, no reply or approval was received, and, in consequence, the work has not been proceeded with, and it will be necessary to provide funds if it is to be undertaken next season.

The work of building a main line along the west side of the Richmond Yard, with the extension of a double track to North Street, is progressing rapidly, and will, it is believed, be completed and ready for use this winter. This will afford great freedom to shunting operations in the Richmond Yard and between that point and the ocean terminus at the south end of Her Majesty's dockyard.

#### *Increased accommodation at St. John.*

In my report of last year, I mentioned that the existing cramped accommodation was quite inadequate to the business, and I recommended that, as a beginning, provision be made in 1882-83 for the erection of a freight house, flour shed, and bonded warehouse, and also for an extension of the yard. An appropriation was made for these objects, and the works are now in progress. These, together with the projected passenger station, and its attendant accommodation, will render the facilities for the conduct of business much more satisfactory to the public. The passenger station will be so located and designed as to permit of the approach of trains at both ends. This, when the bridge over the St. John River is built, will afford the means for direct communication with the United States *via* St. John, without change of cars. If the erection of the passenger station is to be proceeded with next season, funds should be provided.

#### *St. Charles Branch.*

During the last session of Parliament an appropriation was made for the construction of a branch line from the St. Charles station on the Intercolonial Railway *via* Indian Cove to Point Lévis, thence traversing the water front of the town of Lévis and forming a connection with the Grand Trunk Railway at Point Lévis station.

Tenders for this work were invited early in the season. The contract for the grading etc. of the line from St. Charles Station to Point Lévis, a distance of about 13 miles, was awarded to Mr. M. J. Hogan, and that for the wooden breast-work along the water front of the town of Lévis, to Mr. Lachance. The grading is completed and the track laid for some eight miles westward from St. Charles station, and the grading and bridging are in progress on the balance of the contract. It is hoped that the track will be laid into Lévis this winter. Mr. Lachance is making good progress with his work which is fast drawing towards completion. Owing to the late period of the season it is probable that the buildings will not be commenced before next spring.

It is proposed, when this work is completed, to give the Quebec Central Railway Company running powers over that portion of the branch from their junction to Point Lévis, with certain privileges as to the use of the passenger station, upon fair and equitable terms to be agreed upon hereafter. I would suggest that it is very important that a deep-water wharf be constructed in connection with this work.

*Train Ferry.*

Provision was made during the last session of Parliament for a contribution towards the establishment of a ferry for the conveyance of cars across the river between Point Lévis and Quebec; the arrangement being that the Quebec Government, or the owners of the North Shore Railway, should undertake the provision of suitable boats and other necessary appliances, and the establishment of the ferry, submitting their plans to the Federal Government for approval. Early in the season they were called upon to do so, but up to the present time they have not been heard from.

*Rolling Stock.*

Owing to the great increase in the traffic, it will be necessary to provide at once seven shunting engines, ten road engines, twenty second-class, ten first-class, three baggage, 200 gondola, and 200 platform cars, also ten conductors vans; and if the business continues to increase, as of late, further additions to the rolling stock will be required from time to time, if the traffic is to be conducted with promptness and despatch.

## PRINCE EDWARD ISLAND RAILWAY.

The reports of the Superintendent and Mechanical Superintendent hereto attached, will be found to deal very fully with the operations of the year. The nett results are not so favorable as might be desired. The earnings indeed show a slight increase over those of the preceding year, but it is, in my opinion, impossible to work up the traffic to any material extent, there being a certain volume and no more. The working expenses were very considerably increased by reason of many new works of improvement, such as additional station buildings, the increase of the number of sleepers per mile by 440 over half the road, the extension of siding accommodation, the purchase of additional land for snow fence protection, the establishment of water service at five additional stations. These works were charged to maintenance, and together with the unprecedentedly heavy cost of the removal of snow from the track, produced a much larger deficit than would otherwise have obtained. I may safely state that the road and rolling stock were never in a condition of greater efficiency, and it is intended to improve the track still further, during the current year, by the introduction of a further quantity of steel rails now afloat. Owing to the ravages of the *teredo navalis*, it is probable that the cost of wharf repairs will be heavy during the current season.

The stock of engines, 18 in number, furnished at the cost of capital, will be immediately increased by the delivery of two engines built by the Canadian Locomotive and Engine Company of Kingston, who are also building two others at the cost of maintenance, to be delivered at the same time. These, with the engine about to be built for the purpose of keeping up the stock, will make the locomotive power ample for the service for many years to come.

The passenger car stock has been fitted with Millar couplers and buffers, and is in good condition. It is sufficient for the ordinary traffic, but in the picnic season it falls short of the demand upon it; and it would add greatly to the safety of picnic trains if about six additional second class cars were provided. The management has been so far fortunate in escaping injury to passengers travelling on the crowded platform cars fitted up for excursion trains.

The stock of 100 platform and 150 box cars is being increased at the cost of capital, by the addition of 25 cars of each kind, which will make a full stock of 125 platform and 175 box cars. These are now in course of construction in the workshops of the railway at Charlottetown, and will probably be ready for this autumn's work. The eight ton freight cars show signs of decay, and a considerable number of them will have to be rebuilt during the current year. The expense of the renewal of this stock is unusually heavy, as it is being replaced by 10 ton cars with heavier

wheels and axles. The snow ploughs received very severe usage last winter and many of them will have to be replaced.

In November, 1881, Mr. Stronach was transferred from the position of Mechanical Superintendent of this road to that of Inspector of Rolling Stock on the Canadian Pacific Railway, Mr. Joseph Unsworth being appointed to the vacancy thus created.

#### WINDSOR BRANCH RAILWAY.

The Chief Superintendent and Engineer of the Intercolonial Railway, in their reports herewith submitted, give a full statement of the working and condition of this line.

It will be observed that the one-third earnings reserved by the Government has been more than sufficient to meet the cost of maintenance, but as it may be necessary to renew the track to a certain extent with steel rails during the current year, it is probable that so favorable an exhibit may not appear in the next report. The road has been maintained in good running order, and has also been worked without accident.

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

COLLINGWOOD SCHREIBER,  
*Chief Engineer and General Manager of Government Railways.*

A. P. BRADLEY, Esq., Secretary,  
Department of Railways and Canals.

#### INTERCOLONIAL RAILWAY.

OFFICE OF THE CHIEF SUPERINTENDENT,  
MONCTON, N.B., 4th October, 1882.

COLLINGWOOD SCHREIBER, Esq.,  
Chief Engineer and General Manager of Government Railways,  
Ottawa.

SIR,—I have the honor to submit the following Report upon the working of the Intercolonial Railway, for the fiscal year which ended 30th June, 1882.

I enclose the reports of the Engineer and the Mechanical Superintendent, and also the following statements prepared by the Chief Accountant and Treasurer.

- |  |                   |
|--|-------------------|
| No. 1. Capital Account.                  |                   |
| “ 2. Revenue Account.                    |                   |
| “ 3. Locomotive Power                    | (Abstract No. 1). |
| “ 4. Car Expenses                        | ( “ “ 2).         |
| “ 5. Maintenance of Way and Works        | ( “ “ 3).         |
| “ 6. Station Expenses                    | ( “ “ 4).         |
| “ 7. General Charges                     | ( “ “ 5).         |
| “ 8. General Stores Account.             |                   |
| “ 9. General Balance.                    |                   |
| “ 10. Comparative Statement of Averages. |                   |

The length of railway worked was the same as last year, 840 miles.

#### CAPITAL ACCOUNT.

The total cost of the road and equipment was, on the 30th June, 1881,  
\$38,974,452.44.

The additions during the year were as follows:—

For the Halifax Extension	- - - - -	\$173,109 84
“ The Deep-water Terminus, St. John	- - - - -	19,712 16
“ Repairs and Improvements of the Rivière du Loup Line	- - - - -	14,980 47
“ Rolling Stock for the Rivière du Loup Line	- - - - -	153,853 84
“ The Completion of the Intercolonial Railway	- - - - -	18,246 98
“ Additional Rolling Stock	- - - - -	205,005 20
“ St. Charles Branch	- - - - -	660 30
		<hr/>
		\$585,568 79

Making the total cost to the 30th June, 1882 - \$39,560,021 23

The property at Halifax, purchased for the new deep-water terminus, came into possession of the railway in the month of July, and the work of preparing it for the winter's business was at once commenced.

To connect it with the Intercolonial system a track was laid on the eastern side of Water Street, from the freight yard near North Street as far as the wharf formerly known as the Granite Wharf. This was done with the consent of the City Council, and under the authority of an Act of the Provincial Parliament.

The necessary sidings were laid, a wharf 800 feet long and 80 feet broad was constructed, and on it a large warehouse 46 feet wide and 400 feet long. The whole was ready by the month of November, and the premises were used last winter for the passenger and freight traffic by the British mail steamers.

At St. John, at the deep-water terminus, a large warehouse was built on the wharf; there were also erected an elevated trestle and large storehouse for coal to be used by the mining companies for retailing purposes.

Some earth filling was also done, and new sidings were laid to accommodate the lumber and other traffic.

The ballasting and other repairs of the Rivière du Loup Line were completed, and the balance of the rolling stock for that part of the railway was all received and paid for.

The amount for completion of the Intercolonial Railway consists of payments on account of claims in connection with the construction of the line between Rivière du Loup and Truro, and of the legal and other expenses of settling the same.

The expenditure for additional rolling-stock was rendered necessary by the great increase of traffic, as was fully explained in my report of last year.

#### REVENUE ACCOUNT.

It is very gratifying to me to have to report that this account again shows an excess of earnings over expenditure, the nett earnings being considerably more than last year.

The gross earnings of the year were.....	\$2,079,262 66
The working expenses were... ..	2,069,657 48
	<hr/>
Nett earnings.....	\$ 9,605 18

The gross earnings shew a large increase over last year. The following statement shows the increase of gross earnings for two years:—

	Gross Earnings.	Increase.
1879-80 .....	\$1,506,298 48	
1880-81 .....	1,760,393 92	\$254,095 44
1881-82 .....	2,079,262 66	318,868 74
		<hr/>
Increase in two years.....		\$572,964 18

Both the through traffic and the local traffic in passengers and in freight have increased, but the greatest increase is in freight traffic. The local freight traffic shows a steady increase from year to year.

The earnings per mile of railway compare as follows with those of the last three years:—

	Earnings per mile of railway.	Increase.
1878-79 .....	\$1,812 46	
1879-80 .....	1,825 81	\$ 13 35
1880-81 .....	2,095 70	269 89
1881-82 .....	2,475 31	379 61

The following is a comparative statement of a few of the chief articles of freight shewing the quantity carried in this and in the previous year:—

	1880-81	1881-82	Increase.	Decrease.
Barrels flour.....	672,310	692,095	19,785	—
Bushels grain.....	565,678	560,253	—	5,425
Lumber in feet.....	72,841,388	78,356,418	5,515,030	—
Head of live stock.....	61,574	73,479	11,905	—
Other goods in tons.....	544,354	647,561	103,207	—

The following shows the quantity of each of the above articles carried each year for three years:—

	1879-80	1880-81	1881-82
Barrels flour.....	525,248	672,310	692,095
Bushels grain.....	324,021	565,678	560,253
Lumber in feet.....	55,462,654	72,841,388	78,356,418
Head of live stock.....	70,990	61,574	73,479
Other goods in tons.....	422,256	544,354	647,561

The traffic in lumber has increased, and it is now frequently carried longer distances by railway than in former years.

The quantity of coal shipped at Halifax increased from 28,326 tons, in 1880-81, to 36,836 tons in 1881-82. A large wharf for storing and shipping coal is now being constructed and will be completed this fall. This wharf is especially designed for supplying steamers with bunker coal, and the facilities provided should cause a large increase in this business.

Large quantities of coal were carried to the Upper Provinces, amounting during the year to 44,400 tons, an increase of 23,400 tons over last year.

The traffic in connection with the works of the Steel Company at Londonderry continued to increase. The traffic in raw and in refined sugar has continued to increase.

A number of manufacturing establishments have been erected near the railway, the principal being glass works and steel works at New Glasgow and cotton factories at Windsor, Halifax, Moncton and St. John. All these works are connected with the railway by sidings.

In last year's report, reference was made to the steamer "Rimouski" as being unsuitable for the mail tender service. It was sold in May last, and the service for this season is being performed by contract.

The British mail steamers landed the mails, and also passengers and freight, weekly, at Halifax last winter. Other ocean steamers called there more or less regularly, and landed freight for the Lower Provinces and for the west. The competition between the different lines of railway, for the ocean traffic, is very keen; it is, therefore, gratifying to know that the amount of traffic furnished to the Inter-colonial by ocean steamers last winter was considerably larger than in previous winters.

Efforts are being made to secure a larger share of this business. The wharf and warehouse built at Halifax last year are now being more than doubled in size; another wharf is being built for coaling ocean steamers, and a grain elevator of one

hundred and fifty thousand bushels capacity is being erected. These works, with, perhaps, the exception of the elevator, will be finished and ready for use by the month of December next.

In order to provide for the increasing traffic at St. John, extensive improvements are now being made. The property between the railway boundary line and Pond Street has been purchased, the old buildings on it have been removed, and three large warehouses of brick are being built for the storage of bonded goods, of flour, and of miscellaneous freight.

A large coal store is being built on the deep-water wharf, and in connection with it tracks will be provided at a sufficient elevation to allow of the shipment of coal direct from cars in vessels of the largest size.

All these works will be completed and ready for use this autumn; they will greatly facilitate business, and should have the effect of still further increasing our traffic.

There has been a large increase in the passenger traffic, the number carried during the year 1881-82 being.....	779,994
While in 1880-81 it was.....	631,245
An increase of.....	148,749

A great part of this increase is due to summer tourist travel from Western Canada and the United States. This travel increases from year to year, and must continue to increase, as the beautiful and picturesque scenery along the Intercolonial becomes more widely known.

The number of immigrants landed at Halifax last winter, was much larger than in previous seasons.

**EXPENDITURE.**

The working expenses for the year were \$2,069,657.48.

The work performed by locomotives and cars was much greater than last year.

The engine mileage

	Miles.
In 1881-82 was.....	3,000,850
In 1880-81.....	3,453,078
An increase of.....	447,772

The train mileage compared with last year was:—

	Miles.
1881-82 .....	3,195,566
1880-81 .....	2,813,723
Increase.....	381,843

The car mileage compared with last year was:—

	Miles.
1881-82 .....	37,489,376
1880-81 .....	32,201,157
Increase.....	5,288,219

The gross tonnage carried

	Tons.
In 1881-82.....	834,956
In 1880-81.....	725,577
An increase of.....	113,379

The working expenses per mile, run by engines, were :

	Cents.
In 1881-82.....	53·05
In 1880-81 .....	50·96
	2·09

And per mile, run by trains, they were :

	Cents.
In 1881-82 .....	64·77
In 1880-81 .....	62·54
	2·23

The necessary repairs were made to the permanent way and structures, and all the works in connection with the railway were maintained in a thorough state of efficiency.

During the working season 57 miles of the main tracks were ballasted, 342,859 new sleepers were put in, and new steels rails were laid where necessary.

The rails now on the track weigh 57 lbs. to the yard, but in consequence of the greatly increased tonnage passing over the road, the increased load carried by cars, and the heavier engines used, it has been determined to lay in future, as these wear out, rails weighing 67 lbs. to the yard.

Ten miles of new sidings were laid at different parts of the line to accommodate the increased traffic.

The necessary repairs were made to fences on all parts of the line, and more than eighty miles of new fences were built, the whole costing \$33,583.49.

Great care has been exercised in the inspection and repair of bridges, both as regards masonry and superstructure, and they are all in good order.

The buildings on all parts of the line received necessary repairs. A combined passenger and freight station was erected at Derby, and also a similar building at Eel River; a dwelling house for the station master was built at Causapescal, and also at Jacquet River and at Painsec. At Aulac and at Sackville extensive repairs and improvements were made to the station houses.

Improvements were also made at several points in the water supply for locomotives.

The cost of all these repairs and improvements, and of others which I have not specified, forms part of the working expenses.

The rolling stock of the railway consists of 124 locomotives, 3,830 cars of all kinds, and 55 snow ploughs and flangers.

These are all in good condition, having received from time to time the necessary repairs.

Four of the smaller locomotives were sold and four new and more powerful ones were purchased to supply their place, the difference in price between those sold and the new ones purchased being charged to working expenses.

146 cars were condemned and replaced by new ones at the cost of working expenses.

The increase of traffic referred to elsewhere in this report, makes it necessary that more rolling stock should be procured. Additional passenger cars and baggage cars are required, and also more platform and coal cars.

#### STORES.

The stores account compares as follows with the previous year.

The value of stores purchased was :—

In 1881-82.....	\$692,400 12
In 1880-81.....	630,277 98
	62,122 14

Increase. .... 62,122 14



The stock of stores on hand compares as follows with the previous year:—

	1880-81.	1881-82.
Ordinary stores, including fuel.....	\$226,272 43	\$265,031 13
Iron and steel rails.....	67,030 13	42,106 54
Old materials for sale....	20,398 50	78,013 08
Totals.....	\$313,701 06	\$385,150 75

To promote the efficiency of the service, it was considered desirable, in consequence of the great competition and of the increased traffic, to make certain changes in the staff.

The department of the General Freight and Passenger Agent was divided. Mr. Taylor being relieved of the passenger business by the appointment of Mr. Busby, as General Passenger and Ticket Agent, Mr. Taylor retaining the freight business with the title of General Freight Agent.

The portion of the line of which Mr. Busby was Superintendent, was divided into two districts, Mr. J. E. Price being promoted to the position of Superintendent of the district from Moncton to St. Flavie, and Mr. A. R. McDonald being promoted to the position of Superintendent of the district from Quebec to St. Flavie. These changes were made on 1st November, 1881.

I regret that Mr. Foot, the Treasurer, has, on account of health, found it necessary to sever his connection with the railway. During last winter he had a rather severe illness, on account of which he obtained leave of absence for a time, but, as at its expiry, his health was not re-established, he was, at his own request, placed upon the retired list, and Mr. Thomas Williams, Accountant of the Prince Edward Island Railway, was appointed Chief Accountant and Treasurer in his stead. Mr. Foot entered the service of the Nova Scotia Railway in June, 1853. He was Accountant of that Railway in the year 1861, and retained that made position until the Government Railways in Nova Scotia and New Brunswick were amalgamated in 1872, forming the Intercolonial Railway, when he was appointed Accountant of the Intercolonial. His title was changed to that of Treasurer, on the 23rd December, 1881.

The length of his service was thus about twenty-seven years, and it gives me great pleasure to testify that he performed the responsible duties devolving upon him in the most faithful, painstaking and efficient manner.

The cost of clearing snow and ice from the track, last winter, was more than in any former year, and amounted to over \$28,000, exclusive of the cost of repairing snow-ploughs and flangers, which was \$14,600, making the total expenditure for clearing the track for the season \$52,600.

Snow ploughs were run during the winter 32,600 miles, and notwithstanding the heavy snow fall last winter, the trains were only interrupted on one or two occasions, and then but for a few hours.

It gives me pleasure to be able to state, that in general the several officers and employes have performed their duties in a satisfactory and efficient manner, and it must be gratifying to you to know that the operations of the year have been so successful.

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

DAVID POTTINGER,  
*Chief Superintendent.*

ENGINEER'S OFFICE,  
MONCTON, N.B., 1st August, 1882.

SIR,—I have the honor to submit my Report of the working of the Engineering Department for the year ending 30th June, 1882.

TRACK.

The mileage of the main line and branches is the same as previously reported (840 miles); one mile of the old iron rails on the Shediac Branch and  $1\frac{1}{4}$  miles on the Pictou Branch, have been renewed with partially worn steel rails from the main line.

The steel rails on the main line on the Eastern Division have now been down about 10 years and many of them are considerably worn, especially on the sharp curves around Bedford Basin. It is proposed to renew about 10 miles of them this year with a rail weighing 67 lbs. to the lineal yard, with the double angle fish plates.

The old steel taken up is not by any means worn out, and will yet last for years in sidings and branches.

SLEEPERS.

During the year 342,859 sleepers have been put in track as against 75,901 last year. Where the sleepers are being renewed now, they are placed 2 feet apart from centres, instead of  $2\frac{1}{2}$  feet as laid originally.

This is very necessary on account of the greatly increased weight of the locomotives the past few years. The weight on each of the driving wheels of the last 4-wheeled coupled locomotives is 7 tons. This is  $2\frac{1}{2}$  tons more than on the driving wheels of the heaviest engine in use four years ago.

BALLASTING.

The ballasting of the Rivière du Loup Branch referred to in my Report of last year has been completed, and 57 miles of the old part of the line, on the eastern, western and northern divisions, have been re-ballasted.

Five ballast trains are now at work on different divisions with a large force of men.

SIDINGS.

Additional siding accommodation has been provided to the extent of 54,877 feet, or about 10 miles. Another mile at Moncton and about the same at Halifax would be required this season, to meet the largely increased traffic.

FENCING AND SNOW SHEDS.

During the year, 19,400 feet of new snow fencing has been erected, and a large quantity has been repaired throughout the line.

In cleared parts of the line the barbed wire on cedar posts has been adopted as the standard fence. It has been in use for the past three years, and in only two cases have animals been injured by coming in contact with the wire. 60 miles were erected during the year and a large quantity is in course of erection now.

In wooded sections of the line 23 miles of new pole fencing have been erected. Several snow sheds that have been taken down, will be rebuilt before winter.

TURNTABLES.

One 30 feet iron turntable was put in on the deep-water wharf at St. John, and extensive repairs were made to the old wooden tables at Point du Chêne and Pictou. These latter are the only wooden tables now left on the line.

## WHARVES, &amp;c.

Last year it was decided to extend the line from North Street into the city to the property known as West's Wharf, and provide terminal facilities for ocean steamers at that place. Eight hundred and sixty feet of water frontage was procured from the Admiralty, the city and from private parties for this purpose.

A wharf 800 feet long and 80 feet wide, and a warehouse 400 feet long and 46 feet wide were erected before the close of the working season last year.

During the current year the wharf has been widened from 80 to 132 feet and the warehouse from 46 to 117 feet and lengthened 100 feet.

A bunker coal wharf 800 feet long and 32 feet wide is in course of erection parallel to and 57 feet from the large shipping wharf.

On either side of the dock, elevated coal trestles are being erected, from which coal may be shipped direct from the cars to the bunkers whilst the steamers are discharging or taking in cargo.

On the coal bunker wharf the trestle is to be housed over and storage capacity will thus be provided for about 3,000 tons of coal.

A grain elevator of 150,000 bushels capacity is in course of erection, and is being vigorously pushed forward to completion. It is located on the east side and close to Water street. The grain will be elevated and conveyed on a belt running in a gallery on trestle-work, about 30 feet above the level of the wharf, so that grain, coal and goods may be delivered simultaneously to ocean steamers.

Extensive repairs were made to the wharves at Richmond, Pictou, Point du Chêne and Newcastle. At the latter place an additional crib was built and a heavy derrick erected for hoisting grindstones.

## BUILDINGS AND PLATFORMS.

New platforms have been erected at Graham's Siding, Brookfield, Onslow, Londonderry, Wentworth, Greenville, Salt Springs, on the main line on the Eastern Division, also at Valley, Battery Hill, Stellarton and New Glasgow on the Pictou Branch.

An addition was made to the tank house at Greenville, to admit of a second tub being put in.

An addition was made to the station at Salt Springs.

New cattle guards were put in at Maccan, Salt Springs, Thompson, Greenville, Westchester and Wentworth. The roofs of Pictou Landing engine-house and station were renewed.

The station at West River was re-shingled; at Painsec an addition was made to the station to provide dwelling apartments for the agent.

Extensive repairs were made to the stations at Aulac and Sackville. The apartment of the station formerly used as a freight shed was converted into an office and ladies waiting-room.

At Moncton new offices were built in freight shed and platform at east end extended 100 feet.

The building formerly used as a cattle shed was required by the Stores Department for lumber, and a new cattle shed 250 feet long by 48 feet wide was erected. A new iron store was also provided for the Stores Department, and a coal shed for the storage of hard coal.

The platforms were renewed at Point du Chêne, Dorchester Road, Moncton, Petitcodiac, Anagance and Brookville. A large covered cattle pen was erected at St. John. It is provided with troughs, and is supplied with water from the city pipes.

A large warehouse 313 feet by 32½ feet, a coal shed 300 feet by 30 feet, and additional sidings have been provided at the deep water terminus, St. John.

A shed of 1,000 tons capacity is in course of erection on the breakwater wharf for coal bunker purposes.

The yard at St. John is being thoroughly re-arranged.

The whole of the land lying to the south of and between the station grounds and Pond Street has been purchased, and the following buildings are in course of erection :—

Brick Freight Shed 600 feet by 50 and 45 feet.

“ Flour Shed 300 feet by 30 feet.

“ Bonded Warehouse 300 feet by 40 feet.

A brick sewer 4 feet by 2 feet 4 inches, with necessary branches, has been laid throughout the whole length of the yard (about 1,200 feet):

At Coal Branch the interior of station, badly damaged by fire, was repaired.

At Weldford the freight house was moved across the track, thoroughly overhauled and refitted. A baggage room was provided in the station and a new platform built at the north end.

At Newcastle some considerable changes and improvements were made in the agent's office. A stone ash pit 100 feet long was built for the Mechanical Department. The floors in tank-house and boiler-room were renewed. A roof 110 feet long by 28 feet span was built to shelter the track from snow between the two coal sheds.

At Derby the flag station was removed to Dickey's platform, near Jacquet River, and a new combined passenger and freight station erected in its place.

A loading platform 60 feet long and 20 feet wide was also erected at this place.

At Red Pine a loading platform 160 feet long and 20 feet wide was provided for the accommodation of lumber, shipped from there in large quantities; at Bathurst, a loading platform 200 feet long by 15 feet wide was provided.

At Eel River a new combined passenger and freight station was erected.

At Jacquet River an addition was made to the station, to provide dwelling apartments for the agent.

At Campbellton the old coal shed was taken down, and a new one 300 feet long by 30 feet wide erected in its stead. A new floor was laid in the round-house, and new doors provided to admit of a track being carried through the round-house to the car shop.

Necessary repairs have been made to nearly all stations and platforms between Moncton and Campbellton.

At Causapsca, the station was overhauled thoroughly, and new dwelling apartments provided for the agent.

At Amqui a new house was erected for the section foreman in place of one destroyed by fire.

At Ste. Flavie two iron smoke stacks of engine house were renewed. The stringers and floors of round-house were renewed. The dwelling apartment of locomotive foreman and agent also received extensive repairs.

At Trois Pistoles the station restaurant and tank house were painted.

At Rivière du Loup two new tank tubs and trestles were built in round house.

Necessary repairs and alterations were made to the stations at St. Alexandre, Ste. Hélène, St. Paschal, Ste. Anne's, and St. Phillippe de Neri.

Cattle yards were built at St. Alexandre and St. Phillippe de Neri, Ste. Hélène and St. François.

New platforms were erected at Trois Saumons and Elgin Road.

#### IRON BRIDGES.

In seasonable weather a gang of painters have been steadily engaged in scraping and painting iron bridges on different divisions of the road.

A gang of riveters were also employed on the bridges between Moncton and Ste. Flavie about three months during the year. Also a gang on northern division No. 3 about the same time.

The overhead lateral bracing of the Sackville bridge being too low, it was taken out and replaced with a new system which gives the headway required by law. The

same change was made in the 100-foot span (Howe truss) over the Missequash, near Amherst.

The cost of carrying out this work was about \$2,000.

Two iron spans of fifteen feet each, built of rails, were put in south of Painsec.

The floors of the following bridges have been renewed during the year: Jones's Mill, Weldford, Perris, Barnaby River, Mill Creek, Petit Rocher, Moffat's, Gilmour's, Cairn's, Clarke's and Metis.

The masonry for the renewal of Otty's overhead bridge is built, ready to receive the iron work. This is the eighth and last overhead wooden bridge that has been replaced with iron between Moncton and St. John since 1879.

#### MASONRY.

Three gangs of masons have been engaged during the working season on different divisions, overhauling and pointing masonry where required.

#### WATER SUPPLIES.

A good gravitation water supply has been provided at Spring Hill, and two pump men are thus dispensed with.

A steam pump was put in at Westcock.

A new water crane was put in at the round house, St. John.

I have the honor to be, Sir,

Your obedient servant,

P. S. ARCHIBALD,

*Engineer.*

#### INTERCOLONIAL RAILWAY.

MECHANICAL SUPERINTENDENT'S OFFICE,

MONCTON, N. B., 27th September, 1882.

DEAR SIR,—I beg to submit, for your information, the following statements showing the operations of the Mechanical Department for the year ending June 30th, 1882.

A.—Statement showing the number of locomotives and the various classes of cars.

B.—Statement showing the locomotive and car mileage, and the average number of passenger and freight cars hauled per mile run by engines.

C.—Abstract of locomotive returns.

D.—Statement of the cost of locomotive power for each month during the year.

E.—General statement of the expenses of the Mechanical Department.

During the year 4 new engines were purchased and charged to working expenses, 66 hopper cars were condemned and taken off the register, and 80 box and platform cars to replace an equal number condemned, and 22 gondolas, to replace the 66 hoppers, were rebuilt at the cost of working expenses.

Four of the oldest engines which had been replaced by new at the cost of working expenses were this year sold.

Three engines, 3 first class cars, 3 second class cars, 243 box freight, 250 gondola, 43 platform cars, 6 cattle cars, 100 hoppers and 6 vans were received on the road this year on account of Capital and Rivière du Loup Branch.

The rolling stock is in good condition.

I am, Sir,

Your obedient servant,

H. A. WHITNEY,

*Mechanical Superintendent.*

D. PORTINGER, Esq.,

Chief Superintendent Intercolonial Railway,

A.—INTERCOLONIAL RAILWAY.

STATEMENT showing the number of Locomotives and the various classes of Cars on the 1st July, 1881, and on the 30th June, 1882.

Particulars.	The Various Classes of Cars.															
	Locomotives.	First Class Passenger.	Second Class Passenger.	Postal and Smoking.	Baggage and Express.	Vans.	Box Freight.	Cattle.	Platform—15 Tons.	Hoppers—5 Tons.	Gondola—20 Tons.	Total.	Snow Ploughs.	Wing Ploughs.	Ploughs.	Total.
On hand, 1st July, 1881, serviceable .....	121	48	38	15	20	39	1,152	66	1,115	636	76	3,205	28	9	18	55
do do condemned .....					12		12		3			15				
Total stock, 1st July, 1881 .....	121	48	38	15	20	39	1,164	66	1,118	636	76	3,220	28	9	18	55
NS Purchased and charged to working expenses .....	4															
do do Capital Account .....	3	3				6	243		43	100	250	642				
Built at Moncton works, charged to Capital Account .....								6				12				
Sold—replaced by new .....	4															
Condemned—replaced by Gondola cars .....										*66	22	*66				
Total stock .....	124	51	41	15	20	45	1,407	72	1,161	670	348	3,830	28	9	18	55
Condemned on hand, 1st July, 1881 .....							12		3			15				
Condemned during the year .....						1	9	2	53	181		146				
Less—Rebuilt during the year .....						1	21	2	56	181		161				
Add—Serviceable and repairing .....							7	2	56	181		146				
Total stock, 30th June, 1882 .....	124	51	41	15	20	44	1,393	72	1,161	670	348	3,815				
	124	51	41	15	20	45	1,407	72	1,161	670	348	3,830	28	9	18	55

\* "Deduct." † Replaced by 22 Gondola cars.

B.—INTERCOLONIAL RAILWAY.

STATEMENT of Locomotive and Car Mileage for Year ending 30th June, 1882.

Months.	Locomotive Mileage.		Car Mileage.							Average.		Snow Ploughs.
	Pas-senger.	Freight.	1st Class.	2nd Class.	Express, Postal and Baggage.	Box and Stock.	Platform and 8-wheel Coal.	Hoppers.	Total.	Pas-senger.	Freight.	
1881—July .....	69,962	139,702	220,918	130,597	130,624	1,414,263	403,868	115,998	2,446,269	6.88	14.06	.....
August ...	69,611	144,631	216,503	128,848	130,493	1,423,045	388,356	149,866	2,436,747	6.82	13.58	.....
September	67,120	155,983	225,307	120,804	126,303	1,673,678	374,098	166,976	2,687,066	6.88	14.20	.....
October....	66,649	174,949	185,077	121,085	126,717	1,843,539	470,667	147,754	2,894,839	6.49	14.07	.....
November	67,082	183,295	177,978	125,517	125,967	1,730,384	716,056	122,640	3,068,542	6.39	14.29	972
December.	68,717	211,960	178,336	128,701	137,664	1,869,242	774,089	130,752	3,248,784	6.47	13.23	691
1882—January ..	66,421	218,947	170,443	115,379	122,035	1,933,419	778,523	185,619	3,305,418	6.13	13.23	9,554
February..	59,115	176,444	139,192	95,164	115,780	1,632,089	572,031	107,070	2,661,326	5.93	13.09	12,836
March .....	68,053	255,515	170,468	126,809	131,220	2,431,050	945,585	190,419	3,995,551	6.30	13.96	7,152
April.....	70,741	249,778	217,523	133,171	125,486	2,475,938	1,013,129	137,571	4,102,818	6.71	14.52	991
May.....	73,201	225,002	203,947	136,419	120,616	1,923,183	1,122,331	168,804	3,675,270	6.29	14.29	418
June .....	69,126	185,526	199,658	114,228	120,662	1,649,407	794,748	98,123	2,976,746	6.28	13.70	.....
Total ...	815,798	2,321,722	2,305,350	1,476,356	1,513,487	22,119,107	8,363,482	1,721,592	37,469,376	6.49	13.71	32,614

C.—INTERCOLONIAL RAILWAY.

ABSTRACT of Locomotive Returns for Year ending 30th June, 1882.

Months.	Hours in Steam.	Locomotive Mileage.	Consumption.				Average Consumption per 100 Miles.				
			Tons of Coal.	Pints of Oil.	Lbs. of Tallow.	Lbs. of Waste.	Miles to hour in Steam.	Lbs. of Coal.	Pints of Oil.	Lbs. of Tallow.	Lbs. of Waste.
1881—July .....	24,983	265,276	5,910	14,322	8,362	4,267	10·61	49·90	5·40	3·15	1·61
August.....	24,750	266,853	5,861	13,897	8,199	4,464	10·77	49·19	5·20	3·11	1·67
September .....	25,639	276,772	6,382	13,711	8,315	4,210	10·70	51·65	4·95	2·96	1·62
October.....	28,092	299,729	7,438	14,755	7,076	4,653	10·67	55·59	4·92	2·36	1·55
November.....	28,928	308,605	7,751	13,810	8,305	4,486	10·86	56·26	4·47	2·69	1·45
December.....	31,486	344,537	8,566	15,352	9,330	4,773	10·94	55·69	4·46	2·71	1·39
1882—January.....	34,558	357,106	9,768	17,108	9,447	4,807	10·33	61·27	4·79	2·64	1·35
February.....	31,694	305,647	8,520	16,569	8,350	3,155	9·64	61·43	5·42	2·73	1·03
March.....	40,072	399,537	10,807	21,167	11,717	5,443	9·97	60·59	5·30	2·93	1·36
April.....	38,218	393,247	10,135	18,810	12,141	5,012	10·29	57·73	4·78	3·09	1·27
May.....	35,987	367,854	8,901	19,027	11,463	5,298	10·22	54·20	5·17	3·01	1·44
June.....	30,426	315,687	6,942	16,245	9,552	4,679	10·37	49·26	5·15	3·03	1·46
Total.....	374,833	3,900,850	96,981	194,763	112,157	55,247	10·41	55·69	4·99	2·87	1·42



D.—INTERCOLONIAL RAILWAY.

STATEMENT of the cost of Locomotive Power for each month, from 1st July, 1881, to 30th June, 1882.

Months.	Miles run by Engines.	Drivers' and Firemen's Wages.		Fuel.	Oil, Tallow and Waste.		Repairs.		Water.	Miscellaneous, Engine-houses, Mechanical Staff.		Total.	Average cost per 100 Miles.															
		\$	cts.		\$	cts.	\$	cts.		\$	cts.		Wages.	Fuel.	Oil, Tallow and Waste.	Repairs.	Water.	Miscellaneous.	Total.									
1881—July .....	265,276	11,012	55	14,020	30	2,299	23	18,148	37	782	21	2,355	52	48,605	18	4	15	5	28	87	6	84	0	29	0	89	18	32
August .....	266,853	11,867	66	14,422	48	2,747	88	16,635	54	2,747	88	3,400	49	51,347	26	4	44	5	40	85	6	23	1	02	1	30	19	24
September .....	276,772	12,125	92	16,267	32	2,600	66	19,179	81	2,742	49	3,059	35	55,705	55	4	38	5	87	94	6	93	0	89	1	11	20	12
October .....	299,729	11,544	77	17,698	00	2,531	36	17,196	72	1,581	13	3,088	01	53,639	99	3	85	5	90	84	5	74	0	53	1	03	17	89
November .....	308,605	12,280	14	19,553	70	2,704	08	19,066	72	2,172	14	3,626	54	59,403	32	3	98	6	34	87	6	18	0	70	1	18	19	25
December .....	344,537	13,668	90	22,083	23	2,980	20	19,951	83	2,826	85	4,722	88	66,143	89	3	93	6	41	87	5	79	0	82	1	37	19	19
1882—January .....	387,106	11,825	93	18,940	81	2,680	40	9,473	85	1,849	53	3,812	21	48,282	73	3	23	5	30	75	2	66	0	51	1	07	13	52
February .....	305,647	12,507	78	22,937	45	2,856	09	8,204	24	2,237	33	2,999	19	51,742	08	4	09	7	50	93	2	68	0	74	0	98	16	92
March .....	399,537	13,771	94	27,751	83	3,568	42	19,753	70	2,727	94	4,213	25	71,787	08	3	45	6	94	89	4	95	0	68	1	06	17	97
April .....	393,247	13,954	58	27,638	51	3,656	06	16,449	35	2,215	49	4,074	79	67,988	78	3	54	7	00	93	4	18	0	59	1	04	17	28
May .....	367,854	12,908	93	22,645	86	3,469	57	16,050	49	1,558	54	3,220	35	59,863	74	3	50	6	15	94	4	37	0	43	0	88	16	27
June .....	315,687	11,630	47	17,721	60	2,936	25	12,179	09	1,384	66	3,839	74	49,691	81	3	68	5	61	93	3	86	0	45	1	22	15	75
Total .....	3,900,850	148,699	57	241,681	69	34,565	53	192,289	71	24,556	20	42,412	32	684,191	41	3	84	6	19	88	4	93	0	63	1	07	17	54

## E.—INTERCOLONIAL RAILWAY.

GENERAL STATEMENT of the Expenses of the Mechanical Department, for  
the Year ending 30th June, 1882.

The miles run by trains were.....		3,195,566
do engines were.....		3,900,850
do cars were.....		37,489,376
do snow ploughs were.....		32,614
The cost of locomotive power.....		\$684,191 45
The cost of car repairs:		
Repairs to passenger cars.....	\$ 45,527 06	
do postal, express and baggage cars.....	18,435 27	
do freight cars and vans.....	179,061 92	
Oil and waste for packing.....	21,378 52	
Miscellaneous.....	2,493 52	
		\$266,896 29-
The cost of locomotive power per 100 miles run by trains was.....		21·41
do do do engines.....		17·54
do do do cars.....		18·1
The cost of repairs to cars per 100 miles by train.....		7·60-
do do engines.....		6·23-
do do cars.....		0·64
The cost of oil and waste for packing per 100 miles by train.....		0·66
do do engines.....		0·54
do do cars.....		0·05
The cost of repairs to passenger cars per 100 miles run by them.....		1·20
do postal, express and baggage do.....		1·21
do freight cars and vans do.....		0·55

H. A. WHITNEY,

*Mechanical Superintendent.*



No. 2.—INTERCOLONIAL RAILWAY.

CR.

REVENUE ACCOUNT, Year ending 30th June, 1882.

DR.

Previous Year.	Expenditure.	Year ending 30th June, 1882.	Previous Year.	Earnings.	Year ending 30th June, 1882.
\$		\$	\$		\$
586,988 84	Locomotive power	684,191 41	545,114 48	Passenger traffic.....	651,296 94
411,391 76	Car expenses	469,331 23	1,113,872 21	Freight do.....	1,303,495 00
380,312 89	Maintenance way and works	476,134 17	101,407 23	Mails and sundries.....	124,470 72
241,194 44	Station expenses	270,355 70			
122,708 59	General charges	162,134 29			
17,244 75	Car mileage.....	7,510 68			
1,759,851 27	Balance.....	2,069,657 48			
542 65		9,605 18			
1,760,393 92		2,079,262 66	1,760,393 92		2,079,262 66

THOS. WILLIAMS,  
Chief Accountant and Treasurer.

MONCTON, N.B., 30th June, 1882.

## No. 3.—INTERCOLONIAL RAILWAY.

## LOCOMOTIVE POWER.—(Abstract No. 1.)

Previous Year.		Year ending 30th June, 1882.
\$ cts.		\$ cts.
5,814 00	Mechanical Superintendent's salary, Clerks Office and Travelling expenses	6,401 77
137,417 89	Wages, Drivers, Firemen and Cleaners .....	148,699 57
183,168 19	Fuel.....	241,681 09
31,211 15	Oil, Tallow, Waste and Small Stores .....	34,565 53
167,290 27	Repairs to Engines, Tenders and Engine Tools.....	192,289 71
23,492 16	Water, including Pump and Tank repairs .....	24,563 19
35,605 18	Miscellaneous .....	35,990 55
586,998 84		684,191 41

THOS. WILLIAMS,

*Chief Accountant and Treasurer.*

MONCTON, N.B., 30th June, 1882.

## No. 4.—INTERCOLONIAL RAILWAY.

## CAR EXPENSES.—(Abstract No. 2.)

Previous Year.		Year ending 30th June, 1882.
\$ cts.		\$ cts.
56,983 46	Repairs to passenger cars.....	45,527 06
16,003 50	do postal, express and baggage cars. ....	18,435 27
146,842 74	do freight cars and vans .....	179,061 92
138,969 23	Wages of Conductors, Train Baggage Masters and Brakemen .....	142,202 34
15,422 49	Oil and waste for packing .....	21,378 52
35,179 54	Small stores and fuel .....	47,313 70
11,990 80	Miscellaneous .....	15,412 42
411,391 76		469,331 23

THOS. WILLIAMS,

*Chief Accountant and Treasurer.*

MONCTON, N.B., 30th June, 1882.

## No. 5.—INTERCOLONIAL RAILWAY.

## MAINTENANCE OF WAY AND WORKS—(Abstract No. 3.)

Previous Year.		Year ending 30th June, 1882.
\$ cts.		\$ cts.
7,089 38	Engineer's salary, Clerks, Office and Travelling expenses .....	7,798 82
248,528 51	Wages in repairing roadway, fences and semaphores, including new sidings laid in .....	278,009 42
9,280 09	Rails and Fastenings, including new Sidings laid in .....	16,692 38
9,731 13	Sleepers .....	44,729 08
18,087 40	Timber, Lumber, etc., for repairs to Bridges, Cattle-guards, Crossings, Snow sheds, Fences, etc. ....	21,114 77
4,696 89	Repairs to Wharves. ....	3,679 21
31,015 82	Repairs to Buildings and Platforms, including extension of and additions to same .....	48,148 95
17,319 15	Repairs to Snow Ploughs, Flangers and Tools .....	14,601 69
32,244 24	Clearing Ice and Snow .....	38,047 34
2,320 28	Miscellaneous .....	3,312 51
<b>380,312 89</b>		<b>476,134 17</b>

THOS. WILLIAMS,  
*Chief Accountant and Treasurer.*

MONCTON, N.B., 30th June, 1882.

## No. 6.—INTERCOLONIAL RAILWAY.

## STATION EXPENSES—(Abstract No. 4.)

Previous Year.		Year ending 30th June, 1882.
\$ cts.		\$ cts.
184,049 40	Salaries and wages of Station Masters, Agents, Clerks, Telegraph Operators, Station Baggage Masters, Yard Masters, Switchmen, Watchmen and Laborers .....	209,309 73
57,145 04	Fuel, Oil, Light, Stationery, Tickets and other incidental expenses .....	61,045 97
	Miscellaneous .....	
<b>241,194 44</b>		<b>270,355 70</b>

THOS. WILLIAMS,  
*Chief Accountant and Treasurer.*

MONCTON, N.B., 30th June, 1882.

## No. 7.—INTERCOLONIAL RAILWAY.

## GENERAL CHARGES—(Abstract No. 5.)

Previous Year.		Year ending 30th June, 1882.
\$ cts.		\$ cts.
45,052 75	Chief Superintendent, District Superintendents, Train Despatchers, and the General Freight Agent, General Passenger Agent, Clerks, Office and Travelling expenses.....	55,791 08
21,155 01	Accounting Department, salaries of the Treasurer, Traffic Auditor, Paymaster, Cashier, Clerks, Office and Travelling expenses.....	20,618 04
3,675 60	Damages to men, animals and goods.....	14,527 95
23,277 05	Ferry service.....	23,087 76
1,247 46	Telegraph expenses (not including pay to operators).....	2,561 07
21,765 07	Miscellaneous, printing, advertising, etc.....	29,887 50
6,535 65	Agency expenses.....	15,660 89
122,708 59		162,134 29

THOS. WILLIAMS,  
*Chief Accountant and Treasurer.*

MONCTON, N.B., 30th June, 1882.

No. 8.—INTERCOLONIAL RAILWAY.

DR. GENERAL STORES ACCOUNT, Year ending 30th June, 1882. CR.

		1881.		1882.		June 30, 1882.					
		\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
1881.	To Balance .....			313,701	06			832,796	42		
								87,363	83		
1882.	Purchases during year .....	692,400	13							920,160	25
	Charges from other Departments ...	287,743	62								
	Pay Rolls .....	11,466	20								
				991,600	94			265,031	13		
								42,106	54		
								78,013	08		
				1,305,311	00					385,150	75
										1,305,311	00

THOS. WILLIAMS,  
Chief Accountant and Treasurer.

MONGTON, N.B., 30th June, 1882.



No. 9.—INTERCOLONIAL RAILWAY.  
GENERAL BALANCE, 30th June, 1882.

Dr.

Cr.

	\$	cts.	\$	cts.	\$	cts.
Cash .....	10,612	97				
General stores—						
Ordinary Stores, including Fuel.....	265,031	13			598,392	65
Iron and Steel Rails, &c.....	42,106	54			5,965	19
Old material .....	78,013	08			270	98
Stations .....					34	26
Intercolonial Express Co.....					7,884	66
Rents .....					60	94
Steel Company of Canada.....					6,975	43
Acadia Coal Co.....						
Intercolonial Coal Co.....						
Spring Hill and Parrshoro' Railway.....	15,893	35				
Western Counties Railway, general account .....	1,657	43				
do do .....						
do Halifax and Cape Breton Railway.....	17,550	77				
Windsor Branch Railway.....	119	88				
Windsor and Annapolis Railway, new account.....	1,912	75				
do do .....						
St. Martins and Upham Railway .....	8,183	56				
Elgin Branch Railway .....	4,107	39				
Kent Northern Railway .....	726	10				
Canada Pacific Railway, old account .....	165	50				
do do new account.....	2,007	24				
do do .....	8	81				
Chicago and Grand Trunk Railway .....	2,016	05				
Central Vermont Railway .....	28	00				
Canada Pacific Railway Co.....	17	00				
Chatham Branch Railway .....	140	00				
Grand Trunk Railway, general account .....	268	13				
Prince Edward Island Railway .....	3,710	52				
Great Western Railway.....	146	21				
Oxford Branch Railway.....	12,324	80				
Coldbrook Rolling Mills .....	1,967	41				
Moncton Sugar Refinery Co.....	2,938	45				
Nova Scotia Government.....	280	45				
Halifax Cotton Co, siding.....	9,188	48				
Carried forward.....	564,639	79				
Carried forward.....					619,584	11



## No. 10.—INTERCOLONIAL RAILWAY.

## COMPARATIVE STATEMENT of Averages, Year ending 30th June, 1882.

	1882.	1881.
Mileage of railway .....	840	840
Engine mileage .....	3,900,850	3,453,078
Train do .....	3,195,566	2,813,723
Cars do .....	37,489,376	32,201,157
	\$ cts.	\$ cts.
Receipts per engine mile.....	53 30	50 98
do mile of railway .....	2,475 31	2,095 70
	Per cent.	Per cent.
Percentage of passenger earnings to gross earnings .....	31 32	30 97
do freight do do .....	62 69	63 27
do other do do .....	5 99	5 76
Expenses per engine mile—		
Drivers', Firemen's and Cleaner's wages.....	3 81	3 98
Fuel.....	6 20	5 37
Oil, tallow, waste and small stores.....	0 89	0 90
Repairs to engines.....	4 93	4 84
Water and tank repairs .....	0 63	0 71
Miscellaneous .....	0 92	1 03
Total .....	17 38	16 83
Mechanical Superintendent's salary, office and travelling expenses.....	0 16	0 17
	17 54	17 00
Locomotive power per engine mile .....	17 54	17 00
Car expenses do .....	12 03	11 92
Maintenance of way and works do .....	12 21	11 01
Station expenses do .....	6 93	6 98
General charges do .....	4 15	3 55
	52 86	50 46
Car mileage.....	0 19	0 50
Total per engine mile .....	53 05	50 96
Locomotive power per train mile.....	21 41	20 86
Car expenses do .....	14 69	14 62
Maintenance of way and works do .....	14 90	13 52
Station expenses do .....	8 46	8 57
General charges do .....	5 07	4 36
	64 53	61 93
Car mileage .....	0 24	0 61
Total per train mile .....	64 77	62 54
Working expenses per mile of railway.....	\$2,463 88	\$2,095 06

THOS. WILLIAMS,  
Chief Accountant and Treasurer.

MONCTON, N.B., 30th June, 1882.

## INTERCOLONIAL

## RETURN of Accidents and Casualties which have occurred in Canada

31st Decem

*(This Return is made up in compliance with the Provisions*

Date.	Time of Night or Day.	Number of Train.	Description of Train.	Name of Conductor.	Name of Driver.	No. of Engine.
1881.						
July 15...	4.30 p.m.		Shunting .....		R. James .....	94
do 18...	9 15 a.m.	12	Freight.....	J. Coffey .....	A. Donald.....	106
do 22...	2.00 p.m.		Special.....	J. W. King .....	J. J. Smith .....	92
do 23...	10.00 p.m.	10	Express .....	A. Hillson.....	R. Carr .....	71
Aug. 4...	7.00 a.m.		Shunting.....	Cummings, Yard Master.	J. W. Boyd .....	37
do 10...	11.40 p.m.	33	Freight .....	A. V. Bourret .....	Thomas Quinn.....	45
do 18...	3.40 p.m.	34	Express .....	N. Merrill .....	W. D. Martin .....	34
do 23...	2.45 p.m.		Shunting .....		M. F. Jones.....	53
do 26...	1.00 p.m.		.....		.....	.....
Sept. 11...	8.00 p.m.		Shunting .....	J. A. Pratté, Agent....	.....	97
do 23...	7.10 p.m.		Special .....	F. A. Davison .....	C. Edwards .....	6
Sept. 24...	8.00 a.m.	18	Express....	John Ahern.....	Jos. Glennon .....	35
do 26...	4.40 a.m.		Special.....	F. A. Davidson.....	H. Smith.....	80
Oct. 3...	5.30 a.m.		do .....	W. J. Ross.....	Jos. Probert .....	127
do 7...	2.15 a.m.	14	Freight.....	John Berry.....	P. Ashe .....	108
do 12...	6.45 p.m.		Special.....	J. Craigie .....	C. Edwards.....	6
do 23...	7.25 p.m.	2	Express.....	R. G. Duncan.....	M. Tobin.....	55
do 23...	7.00 a.m.		.....	J. W. Pitfield, Station Agent.	.....	.....

## RAILWAY.

on the Line of the Intercolonial Railway, during the Half Year ending  
ber, 1880.

(of the Railway Act of 1868, 31 Vic., cap. 68, sec. 43.)

Place of Accident.	Name of Person Injured.	Whether Passenger or Employé.	Particulars of Accident.	Extent of Injury.	Verdict of Coroner's Jury.
St. John.....	Geo. Knowles .	Employé..	While coupling cars, got finger on right hand caught.	Cut off first joint of finger.	
Dorchester .....	L. G. Smith ....	do ...	When applying brake, the spindle dropped through.	Crushed finger	
do .....	— Luper .....	do ...	Thrown off a car .....	Back hurt .....	
St. John.....	A. Hillson .....	do ...	Stepped from platform of car into a hole.	Anklesprained	
Truro .....	Chas. Hall .....	do ...	When coupling engine to car, got caught.	Seriously injured.	
Near Mill Stream	— Sawyer.....	do ...	Train ran into a rock weighing ten tons, throwing engine from track.	Fatal.....	No inquest held.
Carleton .....	J. Johnson .....	Passenger.	Attempted to get on train when in motion, and fell under the cars.	do .....	Accidental death
St. John.....	Chs. McDonald	Employé..	Was struck by engine while attempting to cross main line.	do .....	do
York Point Wharf St John.	Rosa and Eddie Donahoe.	Neither....	Fell over wharf.....	do .....	Accidentally drowned.
Rivière du Loup.	— Chatigny ...	Employé..	Coupling cars.....	Arm injured...	
Londonderry.....	J. McIntosh ....	do ...	When applying the brakes	do ...	
Stellarton.....	— McEvoy .....	Employé .	Loading heavy freight....	Hurt his side...	
Wellington .....	Lewis Cuttle....	do ...	Slipped on station platform.	do ...	
Stellarton.....	A. Fraser.....	do ...	While coupling cars.....	Hand jammed.	
Maccan.....	— Cormier .....	do ...	While shunting, got his thumb caught.	Jammed piece off the end of his thumb	
Polly Bog.....	T. Johnston ....	do ...	Fell while jumping off train.	Anklesprained	
Richmond .....	G. M. Connor..	do ...	do do ..	Badly injured.	
Moncton.....	Joseph Noel ...	Neither....	Found dead alongside track.	Fatal. ....	Accidental death

## INTERCOLONIAL

## RETURN of Accidents and Casualties which have occurred in Canada,

Date.	Time of Day or Night.	Number of Train.	Description of Train.	Name of Conductor.	Name of Driver.	No. of Engine.
1881.						
Oct. 25...	2.40 a.m.		Special .....	W. Foster .....	W. Sproul .....	85
do 29...	2.15 a.m.	13	Freight .....	J. Berray .....	G. B. Storey .....	108
do 31...	2.05 p.m.	29	do .....	J. McLeod .....	G. Morrison .....	105
Nov. 19...	8.00 a.m.		Shunting .....	H. H. Shcafer, Station Agent.	A. Davey .....	33
do 26...	9.00 a.m.	33	Freight .....	W. Sutherland .....	C. E. Sawyer .....	75
do 29...	6.00 p.m.		Working .....	M. Daley .....	— McAuley .....	98
Dec. 3...	5.50 p.m.		Shunting .....	J. W. Pitfield, Station Agent.	J. McDermott .....	99
do 10...	3.00 p.m.		Special .....	J. Craigie .....	G. Futham .....	27
do 20...	10.15 p.m.		do .....	M. W. Broad .....	D. A. Connor .....	91
do 21...	3.40 p.m.		do .....	M. Cummings .....	— Stratten .....	45
do 21...	6.45 p.m.		Shunting .....	B. White, Yard Master.	P. Fogarty .....	94
do 24...						
1882.						
Jan. 3...	11.00 a.m.		Shunting .....	W. G. Robertson, Station Master.	R. James .....	100
do 4...	1.00 a.m.		Special .....	P. E. Heine .....	E. S. White .....	47
do 8...	8.30 a.m.		Shunting .....	O. A. Barberie, Station Master.	B. Goodwin .....	2
do 17...	6.50 a.m.		Special .....	G. Walker .....	S. Jones .....	105
do 17...	6.50 a.m.		Light .....		A. Ferguson .....	101
do 18...	7.30 p.m.		Special .....	W. T. Sprague .....	A. McCabe .....	104
do 23...	1.00 p.m.		do .....	R. Johnson .....	C. C. Brown .....	115
do 26...	3.30 p.m.		Shunting .....	W. G. Robertson, Station Master.	R. James .....	100

## RAILWAY.

on the Line of the Intercolonial Railway, &c.—*Continued.*

Place of Accident.	Name of Person Injured.	Whether Passenger or Employé.	Particulars of Accident.	Extent of Injury.	Verdict of Coroner's Jury.
Drummond .....	Wm. Fleming..	Employé..	Fell off train.....	do .....	Accidental death
Amherst.....	H. Buchanan...	do ...	Fell while running over cars.	Side badly hurt	
St. Luce .....	P. McGee.....	do ...	While coupling cars.....	Arm jammed..	
Point du Chene.	Fred. Smith...	do ...	do .....	Hand jammed.	
St. Simon.....	H. Michaud.....	do ...	do .....	Thumb hurt....	
Near Moncton....	L. Connell .....	do ...	do .....	Arm jammed..	
Moncton.....	Jas. Everett....	do ...	While coupling engine to flat cars, got hand jammed.	Third finger amputated.	
Near River Philip	Chas. Lockart.	do ...	Struck by engine while lying on the track.	Fatal.....	do
St. John.....	— Ryan.....	do ...	Fell from top of cars to ground.	Slightly hurt..	
Charlo.....	T. Cormier.....	do ...	Slipped off the d of car	Hurt his back..	
Moncton.....	Jackson Laird.	do ...	While coupling cars, got left hand caught.	Broke forefinger and burst thumb.	
Richmond.....	A. R. Chambers	Neither....	Crushed between two cars he was moving.	Fatal.....	do
St. John.....	Robt. Irvine....	Employé..	While coupling cars, arm caught.	Fingers crushed.	
Near Newcastle.	W. Fitzpatrick.	do ...	Parallel rod breaking and knocking him off engine.	Badly cut on the head.	
Campbellton....	W. England....	do ...	Jumped from engine to ground.	Sprained his knee.	
Near St. Arsène..	— Lebel.....	do ...	Collision between engines Nos. 101 and 105.	Slightly injured about head & side	
do ..	— Duhamel.....	do ...	do do ...		
Carleton .....	Wm. Treen.....	do ...	While coupling cars.....	Crushed his elbow seriously.	
Nigadoo .....	— Blais .....	Neither....	Struck with wing plough.	Seriously injured.	
St. John.....	A. Manning ...	Employé..	Flanger ran off track.....	Slightly injured.	

## INTERCOLONIAL

## RETURN of Accidents and Casualties which have occurred in

Date.	Time of Day or Night.	Number of Train.	Description of Train.	Name of Conductor.	Name of Driver.	No. of Engine.
1882.						
Feb. 1...	8.30 p.m.		Shunting	W. H. Williams, Asst Station Agent.	P. Fogarty	94
do 2...	4.45 p.m.	34	Freight	— Macpherson	W. Russell	51
do 4...	10.30 p.m.		Shunting	W. H. Williams, Asst. Station Agent.	P. Fogarty	94
do 5...	1.50 a.m.		do	C. F. Dery, Station Agent.	W. Bastien	103
do 6...	6.10 p.m.		Special	W. J. Dickson	E. Blair	30
do 6...	6.10 p.m.	13	Accommodation.	W. H. Donkin	H. Smith	52
do 8...	3.00 p.m.	23	Freight	G. McLeod	J. J. Smith	121
Feb. 10...	10.45 p.m.	23	Freight	G. McLeod	A. Calder	32
do 3...	8.15 a.m.		Express	R. G. Duncan		
do 13...	5.50 a.m.		Special	D. Buchanan	J. Glennon	60
do 15...	3.30 a.m.	5	Freight	R. A. Rainnie	J. J. Irvine	50
do 15...	5.15 a.m.		Shunting	W. H. Williams, Asst. Station Agent.	A. B. White	94
do 21...	5.30 a.m.			H. H. Carvell, Freight Agent.		
do 21...	10.25 a.m.	34	Freight	N. Merrill	C. Atkinson	44
do 24...	8.00 p.m.		Special	— McLeod	J. J. Smith	92
do 28...	9.15 a.m.		do	W. J. Dickson	J. Stockall	69
March 3...	7.30 p.m.	1	Express	A. Rainnie	T. W. Prince	74
do 13...	4.05 p.m.		Special	Y. C. Campbell	R. Mc Mann	50



## RAILWAY.

## Canada on the Line of the Intercolonial Railway, &amp;c.—Continued.

Place of Accident.	Name of Person Injured.	Whether Passenger or Employé.	Particulars of Accident.	Extent of Injury.	Verdict of Coroner's Jury.	
Moncton .....	C. Myshraal ....	Employé.	Was struck on side by car.	Considerably bruised.		
Near Beaver Brook.	T. Sullivan.....	do ...	Hand car ran over him ...	Badly hurt.....		
Moncton .....	Jas. Powal ....	do ...	While coupling cars, got arm jammed.	Slightly injured.		
St. Flavie .....	A. Lebel .....	do ...	While coupling cars. ....	Thumb taken off		
Near Windsor Junction.	{ A. Cameron. W. H. Donkin Simeon Hall.	do ...	} In collision between	Fatal.....	Mistake in detention order.	
do ...		do ...		trains.		Not seriously..
do ...		do ...				do ...
Athol .....	M. Cooke.....	do ...	While cleaning out ash pan.	Slightly injured.		
Grenville.....	Chas. Lunn....	do ...	While coupling cars, arm caught between buffers	Arm amputated.		
Halifax.....	Jas. Keys.....	do ...	While adjusting bell cord in 1st class car, slipped off step ladder.	Foot sprained.		
Near Memramcook.	Jos. Brean .....	Neither....	Struck by engine while lying on track.	Fatal .....	Struck by train. No blame attached to railway.	
Salisbury.....	Isaac Campbell	Employé..	While putting pin between car and tender.	Bruised knee...		
Moncton.....	Jas. E. Elliott.	do ...	Oil box struck him on hip.	Arm and hip injured.		
do .....	Jno Arthur....	do ...	Case of goods fell across his leg.	Severely injured.		
Charlo .....	Jas. Treen ....	do ...	While coupling cars.....	Hand crushed.		
Spring Hill .....	— McLeod .....	do ...	Caught between plough and door of shed.	Seriously injured.		
Amherst.....	D. Stevens .....	do ...	While coupling cars.....	Very bad.. ....		
Hampton.....	Geo. Buchanan	Neither....	Found lying on main track with one leg cut off.	Fatal .....	Accidental death while under the influence of liquor.	
Near Moncton....	A. G. Graham.	Employé in shops.	While attempting to cross track with a team, was run into.	do .....	Accidental death	

## INTERCOLONIAL

## RETURN of Accidents and Casualties which have occurred in

Date.	Time of Day or Night.	Number of Train.	Description of Train.	Name of Conductor.	Name of Driver.	No. of Engine.
1882.						
March 22...	3.00 p.m.		Special .....	N. W. Broad .....	J. Brownell .....	63
do 24...	1.00 p.m.		do .....	J. Craigie .....	B. Cooke .....	31
do 25...	7.30 a.m.		do .....	E. L. Watts .....	S. Watson .....	43
do 26...	9.00 a.m.		Shunting .....	J. W. Pitfield, Station Agent.	P. Fogarty .....	99
do 30...	4.45 a.m.		Special .....	J. Geldert .....	Wm. Hunt .....	73
do 30...	4.45 a.m.		do .....	Geo. Logan .....	J. W. Nairn .....	28
do 31...	1.30 a.m.		do .....	A. Armstrong .....	A. Lacroix .....	116
April 13...	11.00 a.m.			W. G. Robertson, Station Master.		
do 24...	1.40 p.m.		Special .....	T. S. Moore, Station Agent.	Jas. McAuley .....	121
do 26...	10.00 a.m.		Shunting .....	R. MacDonald, Station Agent.	Wm. Lovett .....	83
do 27...	7.45 p.m.			T. Laverdière, Station Agent.		
May 2...	8.00 p.m.	6	Freight .....	W. J. Campbell .....	J. J. Irvine .....	50
do 2...	9.00 p.m.		Shunting .....	R. Williams .....	Jno. Leonard .....	95
do 4...	11.45 a.m.		Special .....	Wm. Foster .....	N. Sproule .....	85
do 6...	6.00 p.m.		Working .....	A. MacPherson .....	A. McCabe .....	64
do 12...	1.00 p.m.			R. MacDonald, Station Agent.		
do 18...	11.00 p.m.		Shunting .....	Ed. Boak, Station Agent.	C. Tobin .....	98
do 24...	4.00 p.m.		do .....	W. G. Robertson, Station Master.	A. James .....	100

## RAILWAY.

Canada, on the Line of the Intercolonial Railway, &amp;c.—Continued.

Place of Accident.	Name of Person Injured.	Whether Passenger or Employé.	Particulars of Accident.	Extent of Injury.	Verdict of Coroner's Jury.
Sussex .....	Sam'l Sprague.	Employé.	While coupling cars.....	Fingers badly crushed.	
Calhoun's .....	Jane Sewell ....	Neither....	Struck by engine while walking on track.	Badly hurt.	
Red Pine .....	W. Pride .....	Employé.	While coupling cars.....	Hips jammed.	
Moncton.....	N. C. Daley ....	do .....	While coupling cars.....	Thumb broken & 2 fingers inj.	
Grand Lake .....	{ J. E. Geldert.	do .....	} Rear collision be- tween trains.	Fatal.....	Accidental death
do .....	{ B. Peterson...	do .....		Slightly inj'd.	
	{ J. W. Nairn ..	do .....		do	
St. Fabien.....	D. Michaud ....	do .....	Fell from top of box car..	Arm broken & severely inj'd about the head	
St. John.....	E. P. Shaw.....	do .....	While unloading machinery.	Foot crushed severely.	
Amherst .....	N. W. Broad ...	do .....	While shunting, fell under cars.	Fatal.....	Accidental death
Halifax.....	Henry Garrett..	do .....	Struck a fence .....	Head & shoulders injured.	
Chaudière Junction.	{ Jos. Ouellet.	do .....	} Oil in tank ignited...	Fatal.....	No inquest held.
	{ Geo. Langlois	do .....		Face and hands burnt.	
	{ Ph. Ouellet...	do .....		do	
	{ C. Hobrough, jun.	do .....		Face and hands burnt very slight.	
Petitcodiac.....	Thos. McKee ...	do .....	While coupling cars.....	Crushed very bad.	
Truro .....	Jno. Leonard...	do .....	Gauge glass broke .....	Hand scalded.	
Smelt Brook .....	Hugh Fraser ...	do .....	While coupling cars.....	Finger badly injured.	
Berry Mills.....	W. G. Peters...	do .....	While distributing sleepers.	Breast crushed	
Halifax.....	William Roast (boy).	Neither....	Found between buffers of two cars.	Fatal.....	Accidental death
Richmond .....	Fred. Forrest...	Employé..	While coupling cars.....	Left hand badly injured.	
St. John.....	Samuel Ritchie	do .....	do .....	Top of thumb badly crushed	

## INTERCOLONIAL

## RETURN of Accidents and Casualties which have occurred in

Date.	Time of Day or Night.	Number of Train.	Description of Train.	Name of Conductor.	Name of Driver.	No. of Engine.
1882.						
May 26...	5.15 a.m.	15	Freight.....	J. Berry.....	G. B. Storey.....	112
do 31...	10.30 p.m.		Special.....	F. Dumout.....	W. Bastien.....	13
June 8...	11.10 p.m.		do.....	J. Huppe.....	A. Lacroix.....	116
do 15...	11.15 a.m.	29	Express.....	M. Letarte.....	W. Wall.....	133
do 19...	11.30 a.m.		Shunting.....	J. W. Pitfield, Station Agent.	B. White, Yardmaster.	
do 21...	7.04 p.m.	15	Freight.....	J. W. Miller.....	Geo. Futham.....	9
do 22...	4.40 p.m.	8	Accommodation.	Kelly.....	F. Whitney.....	52
do 24...	5.25 a.m.		Special.....	A. B. Yeo.....	H. Gorham.....	3
do 27...	7.30 a.m.		do.....	Proulx.....	Jas. Miller.....	119

## RAILWAY.

Canada on the Line of the Intercolonial Railway, &c.—*Continued.*

Place of Accident.	Name of Persons Injured.	Whether Passenger or Employé.	Particulars of Accident.	Extent of Injury.	Verdict of Coroner's Jury.
Painsec Junction	Jos. Phinney...	Employé..	While coupling cars. ....	Had a piece of finger amputated.	
Bic.....	.....	Passenger	Getting off train when in motion.	Injured himself about the head.	
Rivière du Loup.	E. Roberge.....	Employé..	While coupling bell cord on engine, fell off.	Broke his leg in two places.	
St. Octave .....	— Chamberland (boy).	Neither....	Trying to jump on train in motion.	Lost his leg. ...	
Moncton....	C. H. Angus....	Employé..	While coupling cars.....	Smashed finger	
Brookfield .....	J. Hamilton.....	Station employé	Jumping on train when in motion.	Foot amputated.	
St. John.....	A. Kimball.....	Employé..	While coupling engine to train.	Two fingers injured.	
Near Bic.....	Jas. Kelly.....	do ...	Found lying on track.....	Fatal.....	No inquest held.
Near St. Alexandre.	Conductor Proulx.	do ...	Fell off train.....	Broke one leg and head badly cut.	

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 PRINCE EDWARD ISLAND RAILWAY.
 

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 SUPERINTENDENT'S OFFICE,  
 CHARLOTTETOWN, 1st August, 1882.

SIR,—I have the honor to submit the following Report on the operation of the Prince Edward Island Railway for the year ending 30th June, 1882, and to enclose herewith the accounts for the year, comprising:—

- |     |  |
|-----|--|
| No. | 1. Capital account.                    |
| "   | 2. Revenue account.                    |
| "   | 3. Locomotive power.                   |
| "   | 4. Car expenses.                       |
| "   | 5. Maintenance of way and works.       |
| "   | 6. Station expenses.                   |
| "   | 7. General charges.                    |
| "   | 8. Monthly statement of earnings.      |
| "   | 9. Statement of general store account. |
| "   | 10. General balance.                   |
| "   | 11. Comparative statement of averages. |

I also enclose the report of the Mechanical Superintendent and Storekeeper, with statement prepared by him.

## CAPITAL ACCOUNT.

The total expenditure on capital account to 30th June, 1881, was \$3,466,588.57, since which date \$402.03 have been expended for land taken in connection with the Souris extension, and for legal expenses connected therewith, making a total outlay on capital account to date of \$3,466,990.60.

## REVENUE ACCOUNT.

The gross earnings for the year were the largest in the history of the road, and amounted to		\$137,267 54
Previous year		131,131 43
Increase		<u>\$6,136 11</u>

The earnings per mile of railway compare, with the previous year, as follows:—

1880-81 (198½ miles operated)	\$660 61
1881-82 " "	691 52
An increase per mile of	<u>\$30 91</u>

The passenger traffic is increasing, as shown by the following comparative statement:—

	Passengers carried.	Receipts.
1879-80	90,533	\$51,679 86
1880-81	102,937	57,188 30
1881-82	118,436	63,949 26

During the year the general freight tariff was revised, and very considerable reductions were made in the rates, more particularly on the long distances.

There is a slight increase in the tonnage of freight moved, but a decrease in earnings from this source, arising no doubt from reduced rates before mentioned.

	Freight carried tons.	Receipts.
1880-81 .....	45,336 .....	\$65,326 13
1881-82 .....	48,315 .....	64,776 28
Increase.....	2,979	\$549 85

The partial failure of the fisheries last fall, the suspension of the Bank of Prince Edward Island, the extreme severity of the winter and late opening of navigation this spring, all combined to operate against the business of the road.

The engine mileage compared with last year, was:—

	Miles.
1880-81.....	314,918
1881-82 .....	317,194
Increase .....	2,276

The train mileage, compared with last year, was:—

1880-81.....	255,353
1881-82 .....	253,185
Decrease .....	2,168

The car mileage, compared with last year, was:—

1880-81 .....	1,122,419
1881-82 .....	1,117,989
Decrease .....	4,430

#### EXPENDITURE.

The operating expenses for the year amounted to \$228,259.97. Of this amount, a large sum was expended in the erection of new stations, freight-houses, coal sheds, and other improvements beyond ordinary maintenance of the line. The unprecedented severity of the winter also added very materially to the operating expenses, the removal of snow and ice alone costing \$14,622.18. Some idea of the difficulty encountered in operating the road during the last two winters can be formed when it is stated that the snow-plough mileage on the 200 miles of the line was 61,137. On the 29th of March last, in a district extending over 121 miles, there was 14 miles of snow-drifts from 5 to 10 feet deep, four and one-fifth miles from 10 to 15 feet deep, and one and one-fifth mile from 15 to 20 feet deep.

#### MAINTENANCE OF WAY.

The road-bed has received great attention and is now in excellent order; 105,984 sleepers were replaced during the year, as against 63,801 in the previous year, being an increase of 42,183. On one-half of the line the number of sleepers has been increased from 2,200 to 2,640 per mile. This has very greatly improved the road, and by affording more support will undoubtedly prolong the life of the rails. It is proposed to continue this increase of 440 sleepers per mile, so as to complete the entire line during the next two years.

New sidings were laid down during the year, as follows:—

	Length in feet.
Charlottetown, Spur .....	226
Peake's Starch Factory, " .....	250
Georgetown, Y " .....	735
"    Through .....	350
Alberton, " .....	374
Cascumpec, " .....	263
Pinsville, " .....	309
Conway, " .....	384
Summerside, " .....	226
New Annan, " .....	546
And the following were extended:—	
Elmsdale, Spur .....	72
Alberton, through.....	450

Aggregating in length ..... 4,185

There are now on the line 145 sidings, equivalent in length to about 14 miles of second track.

Twelve hundred car loads of ballast were distributed where most required. It is much to be regretted that the quality is very poor, rendering it extremely difficult in the spring when the frost is leaving the ground, to keep the road in good running order.

#### BRIDGES.

The masonry of all bridges and culverts was carefully examined, thoroughly repaired and pointed with cement where necessary, while the superstructures received all requisite attention. All are now in good order.

Twenty-three cattle guards were built, and 40 received new stringers and other repairs.

#### BUILDINGS.

Combined passenger and freight stations were erected at Bloomfield and Free-town. At Ellerslie a dwelling house and freight house combined was built.

The station houses at Cardigan, St. Peters, Hunter River, Kensington and County Line were greatly enlarged, re-arranged, thoroughly repaired and painted inside and out; while general repairs were made to Mount Stewart, Charlottetown and Bredalbane, and platforms rebuilt at Mount Stewart, Hunter River, Port Hill and St. Peters.

At Alberton the old freight house was moved to the north end of the station and 100 feet added to its length, making it one of the most commodious and best arranged freight houses on the line.

The coal shed at Charlottetown was enlarged by the addition of 40 feet, and the building arranged with inclines, so that coal is now dumped into the engines from small coal cars, in place of being handled in baskets as formerly. At Summerside 100 feet was added to the coal shed proper, and a building similar to that at Charlottetown for dumping purposes was erected. This will enable the coaling to be done at both these stations in much less time than formerly, and will be of great advantage in winter. The coal sheds at Georgetown, Mount Stewart, Hunter River and O'Leary, also received necessary repairs.

The railway wharves at Charlottetown and Georgetown have received attention. Considerable additional work will be required on those at Charlottetown and Summerside this fall. The worms at these places are very destructive to the piles.

#### FENCING.

During the year  $6\frac{1}{2}$  miles of barbed wire fence and about  $3\frac{1}{2}$  miles of pole fence was built. Land was purchased for, and the erection of 8,095 feet of new snow fence completed during the year; while a large amount of old fence was rebuilt.

The heavy snow falls of last winter did much damage to fencing.



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**WATER SUPPLY.**

The Haggas Water Elevator, which was adopted during the previous year, continued to give satisfaction, and additional watering stations on that principle have been constructed at Elliott's, Miscouche, Port Hill, Alberton and Union. All of the old tank houses, with the exception of those at Baldwin's, Charlottetown and Hunter River, have been taken down. That at Alberton has been converted into a coal shed.

**MECHANICAL DEPARTMENT.**

This department received particular attention during the year, and extensive renewals and repairs were made to both locomotives and cars.

Engines Nos. 13, 14, 15, 16, 17, and 18, have been thoroughly overhauled, and are now in first-rate order. Engine No. 12 is undergoing repairs, and will shortly be fit for service. Up to this date, seven of the old tank engines, with which the road was originally equipped, have been condemned. Four have been already replaced by purchase, and others are now being constructed at Kingston to replace the balance.

Two locomotives of the Mason-Fairlie type were purchased from the New Brunswick Railway Company, in November last, and have given great satisfaction.

The passenger cars are in good order. A sufficient number to equip the express trains were painted and otherwise improved during the winter.

All express trains on this road are now supplied with Miller platforms and air-breaks, thereby adding materially to the comfort and safety of the travelling public.

Eight 10-ton box and five 10-ton platform cars were rebuilt to replace an equal number of 8-ton cars which have been condemned.

Owing to the severity of the winter, the snow-ploughs received hard service, and three will require to be renewed before another winter sets in.

**STORES.**

The purchases during the year amounted to \$64,843.28. The value of stores on hand, 30th June, was as follows:—

General stores.....	\$41,693 99	
Rails and fastenings.....	17,789 05	
		\$59,483 04
Coal.....		32 51
		<u>\$59,450 53</u>

The purchases, as usual, are largely made by tender and contract, and only material of the best quality has been used in the maintenance of the road.

**CASUALTIES.**

I am glad to say that no accident of any description happened to any passenger on the line during the year, but regret to report the following fatalities:

On 10th September, a lad named George Henry Taylor, who was lying asleep or in a fit on the track near Brudenell Station, was run over and so badly injured by No. 13 train, that he died within a few hours. The verdict of the jury was as follows:—"That deceased, George Henry Taylor, appears to have been sleeping on the railway track at Brudenell Station. His death was caused by the train passing over him. It appears to the jury, from the evidence, that the train hands did all possible to stop the train, which was found impossible by reason of the short distance and heavy train, and down grade, and that the said George Henry Taylor, in manner and by means aforesaid, casually and by misfortune, came to his death and not otherwise."

On the 24th February, while engaged in opening the line after a severe snow-storm, Archibald Macfarlane, an engine driver, fell from his engine, was run over, and instantly killed. The verdict of the coroner's jury was as follows:—"The said Archibald Macfarlane, on the 24th February, being driver of engine No. 20, going west on special snow clearing train, of which Daniel McDonald was conductor, when about a mile west of Summerside, slipped and fell from said engine, the outside running gear striking him on the head, which, together with the snow plough passing over his head, inflicted wounds which, we believe, caused instant death."

In conclusion, I am happy to say the whole road was never in better order, nor the public better served than at present. Express trains are run in summer with the utmost regularity, and afford great accommodation to the people. In winter, owing to snow, it is impossible at times to maintain regularity, but the most untiring efforts are made to keep the line open and traffic moving.

In short, the line will compare favorably with any of the same gauge on the continent.

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

L. B. ARCHIBALD,  
*Superintendent.*

COLLINGWOOD SCHREIBER, Esq.,  
Chief Engineer and General Manager Government Railways,  
Ottawa.

#### PRINCE EDWARD ISLAND RAILWAY.

MECHANICAL SUPERINTENDENT'S OFFICE,  
CHARLOTTETOWN, 14th August, 1882.

SIR.—I beg to submit the following statement showing the operations of the Mechanical Department of this Railway for the year ending 30th June, 1882.

- A.—Monthly statement of the cost of locomotive power.
- B.—Statement of performance and consumption of locomotives.
- C.—Monthly statement of car mileage.
- D.—Statement showing number of locomotives and cars.
- E.—Statement of the expenses of the Mechanical Department for the year 1882.

I was appointed Mechanical Superintendent and Storekeeper of this Railway on 22nd November, 1881, and, in compliance with your instructions, I immediately commenced a thorough inspection of the machinery and rolling stock of the road, and reported upon the condition of the same. Since then, the work of carrying out those of my suggestions which met with your approval for bettering the condition and increasing the efficiency of the service has been diligently prosecuted.

The stationary engine, being urgently in need of thorough repair, was first taken in hand and carefully overhauled. From long service with the use of water of an alkaline nature the boiler was much encrusted, and the crown sheet, bars, and stays had to be entirely renewed. By temporarily substituting one of the old tank engines in its place, repairs to this engine were made without any interruption to the working of the machinery in the shops. In this connection I would suggest that if possible a supply of better water be procured for the use of the Mechanical Department at Charlottetown, as all the locomotives are suffering more or less from the use of bad water at this place.

#### LOCOMOTIVES.

Four of the ten tank engines with which the road was originally equipped have been condemned up to this date, and, four engines were purchased replacing them.

Three others have been condemned during the year, and others to replace them are in course of construction at Kingston (and it is expected will be on the road this fall), leaving now on the road, fit for service, fifteen locomotives, which are numbered as follows:—

1, 2, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20.

No. 1, which was purchased from the New Brunswick Railway Co. last fall, is of the Mason-Fairlie type built by the Mason Machine Works at Taunton, Mass., in 1873, and is in good order.

No. 2, which is an engine precisely the same in every respect as No. 1, and purchased at the same time, is also in good order, but will shortly require a new set of tires. These engines have given every satisfaction since they were put on the road.

Nos. 7, 9 10 are tank engines, and are used only as switch engines, not being suitable, on account of their limited tank capacity, for running passenger or freight trains. They have received the repairs necessary during the year to keep them in good condition for their work.

No. 11, built at the Baldwin Works, Philadelphia, in 1874, will shortly require to be taken into the shop and thoroughly repaired.

No. 12, built at the Baldwin Works in 1874, is now in the shops undergoing heavy repairs.

No. 13, built at the Baldwin Works in 1874, has been carefully overhauled during the past winter and is now in excellent working order.

No. 14, built at the Baldwin Works in 1874, has also received extensive repairs and is in first class condition.

Nos. 15, 16, 17, and 18, built at the Kingston Works in 1876, have also been thoroughly overhauled. No. 17 since her repairs has seen a good deal of hard service, and will shortly require some additional labor expended on her. The others are in first rate order. All of the tenders of these American pattern locomotives had only one truck and a pair of pony wheels under them. They have all been furnished with new tender frames, which have been lengthened so as to enable us to put in two pairs of trucks. This adds very much to their safety, as previous to this they were continually getting off the track.

Engines Nos. 19 and 20, built at the Kingston Works in 1880, are of the "Mason-Fairlie" pattern, with outside link motion. These engines have required continual attention in order to keep them running.

The boilers and steam gauges of all the locomotives are duly tested and a record of the same kept.

#### CARS.

The road is equipped with 282 cars, as follows:—

First class passenger cars .....	14
Second class cars.....	3
Second class and baggage cars combined.....	8
Baggage car.....	1
Postal cars.....	2
Pay car .....	1
Conductors' vans.....	3
Box cars.....	142
Cattle cars.....	4
Sheep cars.....	4
Flat cars.....	100

Of the 150 box, stock and sheep cars, 104 are 8-ton cars, and are those with which the road was first equipped. The greater number of these have small, light trucks, with 24-inch wheels. The other 46 are 10-ton cars, and are in good condition, having 33-inch wheels and standard trucks.

Of the 100 flat cars, 37 are 8-ton cars, and are those with which the road was originally supplied.

The balance, 63, are 10-ton cars, and are in good order. All of the 8-ton cars will very shortly require to be rebuilt.

There are 5 snow ploughs, 2 of which are in good condition, the other 3, from the hard service to which they have been subjected during the past two winters, will require to be thoroughly repaired or rebuilt this fall.

There are also one auxiliary car and 6 flangers; 2 of the latter have been rebuilt during the past year, and are in good order.

The passenger car stock is in satisfactory condition, and with but few exceptions is equipped with the Miller platform and air-brake. A sufficient number of these cars to equip the express trains received extensive repairs and painting during the winter.

No. 12 coach was rebuilt and very much improved.

Six box cars, 2 flangers and 5 platform cars, each of 10-ton capacity, were built during the year to replace an equal number of 8-ton cars condemned.

The machinery and tools in the shops have been efficiently maintained, and the following additions made to them: 2 emery grinders, 1 milling machine, 1 lathe, 1 cut off saw and 1 bolt heading machine.

In the blacksmith's shop, 4 forges have been rebuilt.

All the pits and the floor of the round-house at Charlottetown have been renewed, and I would recommend that new iron turn-tables be procured without delay for the Charlottetown, Summerside and Tignish engine houses.

I have the honor to be, Sir,

Your obedient servant,

J. UNSWORTH,

*Mechanical Superintendent and Storekeeper.*

L. B. ARCHIBALD, Esq.,  
Superintendent P.E.I. Railway,  
Charlottetown.

PRINCE EDWARD ISLAND RAILWAY.

MECHANICAL DEPARTMENT.

A.—STATEMENT of the cost of Locomotive Power for the year ended 30th June, 1882.

Months.	Miles run by Engines, less Ballasting.		Cost of										Average Cost per Mile run.									
			Engine men's Wages.	Fuel.	Oil, Tallow, &c.	Repairs.	Water, including Tank and Pump repairs.	Miscellaneous, including expenses of Office and Engine-houses.	Total.	Engine men.	Fuel.	Oil, Tallow, &c.	Repairs.	Water.	Miscellaneous.	Total.						
			\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.						
1881—July.....	31,704		1,085	58	1,186	27	127	88	764	55	0	23	166	93	3,331	44	3.42	0.41	2.41	0.01	0.52	10.51
August.....	34,215		1,142	42	1,331	82	151	78	1,052	65	31	33	194	86	3,904	86	3.34	0.44	3.08	0.09	0.57	11.41
September.....	29,593		1,015	94	1,492	12	108	08	1,313	45	42	33	183	04	4,155	46	3.43	0.36	4.44	0.15	0.62	14.04
October.....	31,649		1,037	55	1,637	60	136	25	1,061	30	340	53	211	83	4,425	05	3.28	0.42	3.35	1.08	0.68	13.98
November.....	34,589		1,169	52	2,018	28	161	53	1,075	53	460	92	388	96	15,274	74	3.38	0.47	32.02	1.33	1.13	44.16
December.....	21,810		851	62	1,362	72	131	76	2,530	54	2,868	19	303	04	8,067	81	3.91	0.60	11.60	13.26	1.39	36.99
1882—January.....	19,935		844	18	1,245	63	143	20	2,724	50	19	00	544	62	5,521	12	4.33	0.73	14.00	0.10	2.80	28.36
February.....	22,265		1,329	78	1,599	48	158	08	2,890	89	108	80	378	26	6,464	99	6.87	0.93	14.50	0.55	1.89	32.43
March.....	20,797		1,482	07	1,975	80	175	42	3,414	67	4	56	261	47	7,313	99	6.66	0.79	15.34	0.02	1.17	32.85
April.....	22,393		1,156	47	1,437	94	128	44	4,157	22	26	38	241	50	3,147	92	5.56	0.61	0.75	0.13	1.16	15.13
May.....	28,779		1,160	61	1,217	44	127	77	568	60	10	78	199	34	2,147	32	5.18	0.57	2.53	0.04	0.89	9.68
June.....	28,779		1,248	17	1,413	68	166	37	145	31	26	06	242	04	3,241	63	4.33	0.58	0.50	0.09	0.84	11.26
Totals.....	317,194		13,523	91	17,918	77	1,716	56	26,562	01	3,959	19	3,315	89	66,996	33	4.26	0.54	8.38	1.25	1.04	21.12

(Signed) J. UNSWORTH, Mechanical Superintendent and Storekeeper.

## PRINCE EDWARD

## MECHANICAL

## B.—STATEMENT of the Performance and Consumption

Months.	Hours in steam.	Train Mileage.				Miles run by Engines.			
		Passengers.	Freight and Mixed.	Fallasting.	Piloting.	With train.	Light.	Shunting.	Total.
1881—July .....	3,700	12,535	13,399	923	.....	26,857	63	5,802	32,722
August .....	3,893	13,500	14,448	312	.....	28,269	147	6,150	34,557
September .....	3,660	10,546	13,198	1,892	.....	25,636	408	5,980	32,024
October .....	3,845	11,143	14,088	930	32	26,193	167	6,416	32,776
November .....	4,051	11,175	16,318	.....	.....	27,493	334	6,762	34,589
December .....	2,757	1,400	15,583	68	.....	17,051	113	4,734	21,898
1882—January .....	2,397	1,574	13,442	.....	898	15,914	44	3,507	19,465
February .....	3,581	.....	8,936	.....	6,473	15,409	714	3,812	19,935
March .....	4,136	.....	11,438	.....	5,505	16,943	769	4,553	22,265
April .....	2,959	400	12,885	.....	3,406	16,691	275	3,831	20,797
May .....	2,980	2,619	14,848	.....	253	17,720	22	4,651	22,393
June .....	3,376	9,818	13,232	.....	93	23,143	184	5,452	28,779
<b>Totals .....</b>	<b>41,335</b>	<b>74,710</b>	<b>161,815</b>	<b>4,125</b>	<b>16,660</b>	<b>257,310</b>	<b>3,240</b>	<b>61,650</b>	<b>322,200</b>

## ISLAND RAILWAY.

## DEPARTMENT.

of Locomotives, for the Year ended 30th June, 1882.

Total Mileage.		* Average of cars per mile run with train.	Average Mileage.		Consumption.				Consumption per 100 miles run by Engines.			
Cars.	Snow Ploughs		Miles to one hour in steam.	Of Cars to one of Engine.	Bushels of coal.	Pints of oil.	Pounds of tal-low.	Pounds of waste.	Bushels of coal.	Pints of oil.	Pounds of tal-low.	Pounds of waste.
118,258	.....	4.40	8.84	3.61	12,880	948	805	272	39.36	2.89	2.46	0.83
130,004	.....	4.60	8.87	3.76	14,353	1,156	924	319	41.53	3.34	2.67	0.92
126,208	.....	4.92	8.75	3.94	14,196	860	872	266½	44.33	2.74	2.72	0.83
129,502	419	4.95	8.26	3.95	15,311	1,032	955	283	46.71	3.14	2.91	0.86
126,436	179	4.60	8.53	3.66	17,519	1,108	997	303	50.65	3.20	2.91	0.87
94,115	4,192	5.52	7.94	4.30	11,864	838	660	303	54.18	3.82	1.90	1.38
59,820	10,081	3.98	8.12	3.07	10,379	828	702	266	53.32	4.25	3.60	1.35
31,274	10,609	3.50	5.57	1.56	13,420	1,056	811	207	67.32	5.30	4.07	1.04
48,306	5,075	3.34	5.38	2.17	15,651	1,012	819	245	70.29	4.54	3.67	1.10
69,155	269	5.20	7.03	3.32	12,183	868	630	276	58.58	4.17	3.02	1.32
103,356	.....	5.91	7.51	4.61	11,046	1,151	146	330½	49.32	5.14	0.85	1.02
107,153	.....	4.65	8.52	3.72	12,266	1,048	732	380½	42.62	3.64	2.54	1.32
1,143,587	30,827	4.75	7.80	3.54	161,068	11,925	9,053	3,451½	49.99	3.70	2.80	1.07

\* Deduct piloting from train mileage in making these averages.

J. UNSWORTH,  
*Mechanical Superintendent and Storekeeper.*

## PRINCE EDWARD ISLAND RAILWAY.

## MECHANICAL DEPARTMENT.

## C.—MONTHLY STATEMENT of Car Mileage for the year ended 30th June, 1882.

Months.	First class.	Second class.	Postal, Baggage & Express.	Box, Stock and Hay.	Platform.	Total.
1881—July.....	29,385	29,602	2,000	33,396	23,875	118,258
August .....	32,172	31,994	1,789	37,652	26,397	130,004
September .....	23,740	26,667	1,244	44,933	29,624	126,208
October .....	27,172	27,503	1,470	48,809	24,548	129,502
November .....	24,767	28,351	1,535	59,403	12,380	126,436
December .....	15,619	23,846	1,106	41,317	12,227	94,115
1882—January .....	14,664	17,162	1,529	20,136	6,329	59,820
February .....	8,010	9,640	735	8,975	3,914	31,274
March .....	9,886	12,067	805	13,888	11,670	48,306
April.....	12,518	14,588	2,654	22,333	17,062	69,155
May .....	17,331	21,643	6,114	41,047	17,221	103,356
June .....	25,532	27,414	4,492	38,443	11,272	107,153
Totals.....	240,796	270,467	25,473	410,332	196,519	1,143,587
Less Ballasting .....		2,713		236	22,649	25,598
Balance .....	240,796	267,754	25,473	410,096	173,870	1,117,989

J. UNSWORTH,  
Mechanical Superintendent and Storekeeper.

## PRINCE EDWARD ISLAND RAILWAY.

## MECHANICAL DEPARTMENT.

## D—STATEMENT showing the number of Locomotives and the various classes of Cars on hand, 1st July, 1881 and 1882.

Particulars.	Locomotives.	Classification.							Total.
		1st Class.	2nd Class.	Postal, Baggage & Express.	Box and Stock.	Platform.	Vans.	Pay Car.	
On hand, 1st July, 1881 .....	19	14	12	2	150	100	3	1	282
Condemned during the year .....	6				6	5			11
Serviceable .....	13	14	12	2	144	95	3	1	271
Purchased during the year .....	2								2
Rebuilt during the year .....					6	5			11
Total Stock, 1st July, 1882 .....	15	14	12	2	150	100	3	1	282

J. UNSWORTH,  
Mechanical Superintendent and Storekeeper.



## PRINCE EDWARD ISLAND RAILWAY.

## MECHANICAL DEPARTMENT.

## E.—COMPARATIVE STATEMENT of the Expenses of the Mechanical Department, for the Years ended 30th June, 1881 and 1882.

	1882.	1881.
The miles run by trains were.....	253,185	255,353
do engines were.....	317,194	314,918
do cars were.....	1,117,989	1,122,419
do snow ploughs were.....	30,827	30,310
	\$ cts.	\$ cts.
The cost of locomotive power was.....	66,996 33	45,025 92
do repairs to cars was.....	16,872 71	12,587 92
do labor, oil and waste for packing was.....	850 74	643 28
do repairs to passenger cars was.....	10,984 41	6,762 00
do do postal, express and baggage cars was.....	506 05	800 51
do do freight cars and vans was.....	5,382 25	5,025 41
The cost of locomotive power per 100 miles run by trains was.....	26 46	17 63
do do do engines was.....	21 12	14 29
do do do cars was.....	5 89	4 01
The cost of repairs to cars per 100 miles run by trains was.....	6 66	4 93
do do do engines was.....	5 31	3 99
do do do cars was.....	1 50	1 12
The cost of labor, oil and waste for packing per 100 miles run by trains was.....	0 33	0 25
do do do engines was.....	0 26	0 20
do do do cars was.....	0 08	0 08
Repairs to passenger cars per 100 miles run by trains.....	4 33	2 64
do postal, express and baggage cars.....	0 20	0 31
do freight cars and vans.....	2 12	1 96

J. UNSWORTH,  
*Mechanical Superintendent and Storekeeper.*

No. 1.—PRINCE EDWARD ISLAND RAILWAY.

CR.

CAPITAL ACCOUNT.

DR.

1881.						\$	cts.
June 30.....	To cost of Road and Equipment to date.....		1881.			3,446,588	57
			June 30.....	By Dominion of Canada.....			
1882.			1882.				
June 30.....	To Expenditure, year ended 30th June, 1882, on Extension of Railway at Souris, Land Damages and Buildings.....		June 30.....	By Dominion of Canada.....		402	03
						3,466,990	60

W. T. S. HUGGAN,  
*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1882.

No. 2.—PRINCE EDWARD ISLAND RAILWAY.  
REVENUE ACCOUNT for Year ended 30th June, 1882.

Previous Year.	Expenditure.	Year ended 30th June, 1882.	Previous Year.	Earnings.	Year ended 30th June, 1882.
\$ cts.		\$ cts.	\$ cts.		\$ cts.
45,025 32	Locomotive Power	66,996 33	57,188 30	Passenger Traffic .....	63,949 26
25,823 34	Car Expenses	30,844 32	65,326 13	Freight Traffic .....	64,776 28
98,301 59	Maintenance Way and Works	92,735 10	8,617 00	Mails and Sundries .....	8,542 00
22,165 99	Station Expenses	23,560 16		Total Earnings .....	137,267 54
11,806 04	General Charges	14,124 06	131,131 43	Balance .....	90,992 43
	Totals .....	228,259 97	71,991 45	Totals .....	228,259 97
203,122 88			203,122 88		

CHARLOTTETOWN, P.E.I., 30th June, 1881.

W. T. S. HUGGAN.  
*Accountant and Auditor.*

## No. 3.—PRINCE EDWARD ISLAND RAILWAY.

## LOCOMOTIVE POWER. (Abstract No. 1.)

Previous Year.	Détails.	Year ended 30th June, 1882.
\$ cts.		\$ cts.
1,329 29	Mechanical Superintendent's salary, Clerks, Office and Travelling expenses	1,711 36
12,351 15	Wages of Drivers, Firemen and Cleaners.....	13,523 91
11,909 88	Fuel .....	17,918 77
1,098 19	Oil, Tallow, Waste and Small stores .....	1,716 56
12,860 86	Repairs to Engines, Tenders and Engine Tools .....	26,562 01
4,364 36	Water, including Pump and Tank repairs.....	3,959 19
1,112 21	Miscellaneous .....	1,604 53
45,025 92	Totals .....	66,996 33

W. T. S. HUGGAN,  
*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1882.

## No. 4.—PRINCE EDWARD ISLAND RAILWAY.

## CAR EXPENSES. (Abstract No. 2.)

Previous Year.		Year ended 30th June, 1882.
\$ cts.		\$ cts.
6,762 00	Repairs to passenger cars .....	10,984 41
800 51	do postal and baggage cars.....	506 05
5,025 41	do freight cars and vans.....	5,382 25
9,725 87	Wages of Conductors, Train Baggage-men and Brakemen .....	10,221 25
643 28	Oil and waste for packing.....	850 74
2,455 75	Small stores and fuel.....	2,578 48
410 52	Miscellaneous .....	321 14
25,823 34	Totals .....	30,844 32

W. T. S. HUGGAN,  
*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1882.

No. 5.—PRINCE EDWARD ISLAND RAILWAY.  
MAINTENANCE OF WAY AND WORKS.—(Abstract No. 3.)

Previous Year.	Details.	Year ended 30th June 1882.
\$ cts.		\$ cts.
688 36	Engineer's salary, Clerks, Office and Travelling expenses.....	350 43
31,976 31	Wages in repairing road way, Fences and Semaphores.....	31,940 98
24,396 12	Rails, Chairs and Spikes.....	1,249 64
15,411 79	Sleepers.....	20,771 00
5,029 16	Timber and Lumber for repairs to bridge, Cattle guards, Fences, etc.....	7,933 14
501 26	Repairs to Wharves .....	519 19
5,513 14	do Buildings .....	11,724 68
3,369 23	do Snow-ploughs, Flangers and Tools.....	3,623 86
11,426 22	Clearing ice and snow .....	14,622 18
<b>96,301 59</b>	<b>Totals .....</b>	<b>92,735 10</b>

W. T. S. HUGGAN,  
*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1882.

No. 6.—PRINCE EDWARD ISLAND RAILWAY.  
STATION EXPENSES—(Abstract No. 4.)

Previous Year.	Details.	Year ended 30th June, 1882.
\$ cts.		\$ cts.
16,146 02	Salaries and wages of Station Masters, Agents, Clerks, Telegraph Operators, Station Baggage-men, Yardmasters, Switchmen, Watchmen and Labourers.....	17,445 81
6,019 97	Fuel, Oil, Light, Stationery, Tickets and other incidental expenses.....	6,114 35
.....	Miscellaneous.....	.....
<b>22,165 99</b>	<b>Totals .....</b>	<b>23,560 16</b>

W. T. S. HUGGAN,  
*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1882.

## No. 7.—PRINCE EDWARD ISLAND RAILWAY.

## GENERAL CHARGES.—(Abstract No. 5.)

Previous Year.	Details.	Year ended 30th June, 1882.
\$ cts.		\$ cts.
5,141 38	Superintendent's and Train Despatcher's salaries, Clerks, Office and Travelling expenses.....	5,119 92
4,872 82	Accountant and Auditor's, Paymaster's and Cashier's salaries, Clerks, Office and Travelling expenses.....	5,489 03
558 65	Advertising.....	289 00
495 78	Damages to men, animals and goods.....	1,888 81
304 13	Telegraph men (not including pay to Operators).....	444 94
433 28	Miscellaneous.....	891 76
11,806 04	Totals.....	14,124 06

W. T. S. HUGGAN,

*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1882.

## No. 8.—PRINCE EDWARD ISLAND RAILWAY.

## MONTHLY STATEMENT OF EARNINGS.

Months.	Passenger Traffic.	Freight Traffic.	Mails and Sundries.	Total Receipts.
1881.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
July.....	7,979 22	5,165 90	707 00	13,852 12
August.....	7,760 20	5,288 79	711 00	13,759 99
September.....	5,192 35	5,472 40	713 00	11,377 75
October.....	7,288 20	7,337 79	706 00	15,331 99
November.....	6,020 43	11,040 84	707 00	17,768 27
December.....	5,716 00	7,497 02	704 00	13,917 02
1882.				
January.....	3,728 35	2,153 95	702 00	6,584 30
February.....	1,968 07	940 94	752 00	3,661 01
March.....	2,367 23	2,299 55	704 00	5,370 78
April.....	3,797 65	4,230 09	702 00	8,729 74
May.....	6,628 13	6,881 83	702 00	14,211 96
June.....	5,503 43	6,467 18	732 00	12,702 61
Totals.....	63,949 26	64,776 28	8,542 00	137,267 54

W. T. S. HUGGAN,

*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1882.

## No. 9.—PRINCE EDWARD ISLAND RAILWAY.

STATEMENT of General Store Account, Year ended 30th June, 1882.

1881.	Dr.	\$ cts.	\$ cts.
June 30...	To balance brought forward.....		65,658 08
1882.			
June 30...	To Purchases during the year.....	64,843 28	
	Charges from other Departments.....	24,184 27	
	Pay-rolls .....	3,416 14	
			92,443 69
1882.	Cr.		158,101 77
June 30...	By Issues during the year.....		98,651 24
	Balance. { Ordinary stores.....	\$41,661 48	} ..... 59,450 53
	{ Rails and fastenings.....	17,789 05	

W. T. S. HUGGAN,

*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1882.

No. 10.—PRINCE EDWARD ISLAND RAILWAY.

GENERAL BALANCE.

Dr.

Cr.

	\$	cts.	\$	cts.
General Stores.....	59,450	53	60,199	97
Cash.....	769	54	2,436	72
Stations.....	1,186	41	1,791	22
Post Office Department.....	2,016	00		
Militia Department.....	13	35		
Suspense Account.....	992	08		
Total.....	64,427	91	64,427	91
			Dominion Account.....	
			Accident Insurance.....	
			Through Ticket Ledger.....	
			Total.....	

W. T. S. HUGGAN,  
*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1882.



## No. 11.—PRINCE EDWARD ISLAND RAILWAY.

## COMPARATIVE STATEMENT of Averages, for Year ended 30th June, 1882.

Details.	1882.	1881.
Mileage of railway open .....	198½	198½
Engine mileage .....	317,194	314,918
Train do .....	253,185	255,353
Car do .....	1,117,989	1,122,419
Receipts per engine mile..... Cents	43·27	41·64
do mile of railway..... \$	691·52	669·61
Percentage of passenger earnings to gross receipts.....	46·58	43·61
do freight do do .....	47·20	49·82
do other do do .....	6·22	6·57
Expenses per engine mile :—		
Drivers', Firemen's and Cleaners' wages.....	4·26	3·92
Fuel .....	5·65	3·78
Oil, tallow, waste and small stores.....	·54	·35
Repairs to engines .....	8·37	4·09
Water and tank repairs.....	1·25	1·39
Miscellaneous .....	·51	·35
Total.....	20·58	13·88
Mechanical Superintendent's salary, office and travelling expenses.....	·54	·42
	Cents	14·30
Locomotive power per engine mile.....	21·12	14·30
Car expenses do .....	9·72	8·20
Maintenance way and works, per engine mile.....	29·24	31·21
Station expenses do .....	7·43	7·04
General charges do .....	4·45	3·75
Total..... Cents	71·96	64·50
Locomotive power, per train mile.....	26·46	17·63
Car expenses do .....	12·18	10·11
Maintenance way and works, per train mile .....	36·63	38·50
Station expenses do .....	9·31	8·68
General charges do .....	5·58	4·62
Total..... Cents	90·16	79·54
Working expenses per mile of railway .....	\$ 1,144 89	1,023 29

W. T. S. HUGGAN,

*Accountant and Auditor.*

CHARLOTTETOWN, P.E.I., 30th June, 1882.

## PRINCE EDWARD ISLAND RAILWAY.

## DESCRIPTIVE STATEMENT of Freight Earnings for the Year ended 30th June, 1882.

Description of Freight.	Quantities.		Tons.		Amounts.	
	1881.	1882.	1881.	1882.	1881.	1882.
Oats..... Bush.	412,526	473,859	7,029	8,056	\$ 8789 02	10,091 54
Wheat and other Grain..... do	5,353	4,177	151	123	245 73	205 97
Potatoes and Roots..... do	105,223	156,664	3,159	4,709	2,037 51	4,382 72
Flour..... Brls.	15,939	24,819	1,543	2,434	2,743 01	3,954 46
Mackerel..... do	20,387	9,913	3,059	1,614	3,576 23	1,770 33
Herring..... do	2,078	1,437	312	215	442 49	323 21
Cod and other Fish..... do			608	165	1,373 19	306 89
Canned Fish..... Cases		21,480		788		1,596 86
Oysters..... Brls.	1,929	1,375	198	138	280 46	178 06
Fish Barrels..... No.	24,817	8,557	468	499	1,170 45	459 19
Timber, hewn and unhewn..... C. Ft.	75,397	115,159	2,187	2,919	1,767 43	1,905 90
Lumber, sawn..... S. Ft.	2,901,314	3,319,675	3,645	4,270	2,980 83	3,111 95
Shingles.....	4,544	6,631	796	994	873 15	1,020 86
Cordwood and Tanbark..... Cord.	1,945	2,166	3,489	3,997	1,981 03	2,252 15
Shingle, Timber, &c..... Cars.	98	55	925	534	892 30	481 95
Coal..... do	123	133	1,053	1,205	717 62	689 09
Lime..... Brls.	1,871	1,734	204	190	220 58	246 24
Limestone..... Cars.	107	165	968	1,441	370 92	435 84
Brick and Building Stone..... do	83	31	755	274	465 37	157 65
Mussel Mud..... do	63	124	574	1,172	170 00	393 62
Salt.....			1,571	804	2,005 21	837 60
Live Stock..... No.	6,320	4,716	863	789	1,949 03	1,718 33
Pressed Hay.....			433	537	418 41	548 02
Fresh Beef.....			83	70	295 48	167 69
Pork, in carcass.....			248	288	710 61	820 45
do in barrels..... Brls.	3,083	1,070	462	159	798 78	237 33
Butter.....			37	39	143 49	127 16
Eggs..... Packages.	16,369	19,609	607	711	1,583 50	1,772 58
Merchandise.....			9,909	9,182	25,486 10	23,669 54
Wharfage, Storage, &c.....					838 40	913 10
			45,336	48,315	65,326 13	64,776 28

## STATEMENT OF PASSENGER TRAFFIC.

	1881.	1882.
Total Number carried.....	102,937 00	118,436 00
do Receipts.....	\$ 57,188 30	\$ 63,949 26
Receipt for each Passenger.....	55 56	53 99

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WINDSOR BRANCH RAILWAY.

RAILWAY OFFICE,  
MONCTON, N. B., 10th October, 1882.

SIR,—I have the honor to transmit the following statements showing the results of the working of the Windsor Branch Railway for the year which ended 30th June, 1882:—

- No. 1.—Revenue Account.
- No. 2.—Maintenance of Way and Works.
- No. 3.—General Balance.
- No. 4.—Statement of Monthly Earnings.

I also send you the Report of the Engineer on the condition of the permanent way and works.

This line, thirty-two miles in length, was operated during the year by the Windsor and Annapolis Railway Company on the same terms as last year, the Company being allowed to retain two-thirds of the gross earnings, the balance, one-third, being paid over to the Government, the latter maintaining the line.

The gross earnings accruing to the Government amounted to \$21,053.19.

The expenditure for maintenance of way and works was \$10,934.89.

The permanent way and all the works belonging to the railway have been maintained in good working order.

A large number of new sleepers were put in the track.

Extensive repairs were made to the masonry and superstructure of several bridges, and a number of culverts and cattle guards were rebuilt.

A considerable length of new fence was built, and the old fences were repaired.

A large cotton factory has been erected at Windsor, and a siding 1,000 feet long has been laid to it.

It is gratifying to find that the traffic of the line has increased.

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

D. POTTINGER,  
*Chief Superintendent.*

C. SCHREIBER, Esq.,  
Ch ef. Engineer and General Manager Government Railways,  
Ottawa.

No. 1.—WINDSOR BRANCH RAILWAY.

REVENUE ACCOUNT, year ending 30th June, 1882.

Previous Year.	Expenditure.	Year ending 30th June, 1882.	Previous Year.	Receipts.	Year ending 30th June, 1882.
\$ cts.		\$ cts.	\$ cts.		\$ cts.
20,502 26	Maintenance of Way and Works..... (Abstract No. 1.)	10,934 89	7,065 64	Passenger Traffic .....	7,865 31
			13,191 02	Freight Traffic .....	12,238 01
			959 87	Mails.....	959 87
			21,216 53		
			3,753 69	Deduct Traffic between Halifax and Windsor Junction for 7 months ending 30th June, 1880, over-credited previous year.	
	Balance, 1882.....	10,118 30	17,462 84	Balance, 1881.	
		21,053 19	3,039 42		
20,502 26			20,502 26		21,053 19

R. B. BOGGS,  
*Accountant, W.B.R.*

MONCTON, N.B., 30th June, 1882.

No. 2.—WINDSOR BRANCH RAILWAY.  
(ABSTRACT No. 1.)—MAINTENANCE of Ways and Works.

Previous Year ending 30th June, 1882.	Particulars.	Year ending 30th June, 1882.
\$ cts.		\$ cts.
1,125 96	Accountant's office and expenses.....	1,104 63
6,355 15	Repairs of track.....	5,592 99
1,969 37	Rails and fastenings.....	397 00
2,496 89	Sleepers.....	2,834 03
7 15	Switch locks.....	12 90
1,442 21	Bridges.....	678 12
6 14	Signals.....	15 42
539 51	Culverts and cattle guards.....	357 71
5,287 51	Buildings and platforms.....	242 55
338 07	Fences.....	439 05
134 96	Hand cars and trollies.....	8 05
161 53	Tools and repairs.....	235 49
508 9	Removing snow and ice.....	949 50
129 09	Miscellaneous.....	232 11
20,502 26		13,099 55
	Deduct old rails sold Intercolonial Old Material Account .....	2,164 66
		10,934 89

R. B. BOGGS,  
*Accountant, W. B. R.*

MONCTON, N.B., 30th June, 1882.

No. 3.—WINDSOR BRANCH RAILWAY.

DR.	GENERAL BALANCE.		CR.
1882. June 30.	\$ cts.	1882. June 30.	\$ cts.
Windsor and Annapolis Rail- way.....	2,509 11	Intercolonial Railway.....	1,912 75
Stores .....	4,748 26	Dominion Account.....	5,344 62
	7,257 37		7,257 37

R. B. BOGGS,  
*Accountant, W. B. R.*

MONCTON, N.B., 30th June, 1882.

No. 4.—WINDSOR BRANCH RAILWAY.  
MONTHLY STATEMENT of Receipts—One-third Earnings.

Month.	Passengers.	Mails.	Freights.	Total.
1881.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
July.....	740 26	80 75	890 40	1,711 41
August.....	838 17	80 76	766 68	1,685 61
September.....	1,521 12	80 76	1,230 79	2,832 67
October.....	673 43	80 75	1,336 40	2,090 58
November.....	513 18	80 76	1,567 58	2,161 52
December.....	615 69	80 76	1,082 50	1,778 95
1882.				
January.....	390 00	78 71	758 71	1,227 42
February.....	298 18	78 71	518 23	895 12
March.....	415 20	78 71	1,023 80	1,517 71
April.....	515 69	79 74	990 42	1,585 85
May.....	559 12	79 73	917 58	1,556 43
June.....	785 27	79 73	1,144 92	2,009 92
Totals.....	7,865 31	959 87	12,228 01	21,053 19

(Signed) R. B. BOGGS,  
*Accountant, Windsor Branch Railway.*

MONCTON, N.B., 30th June, 1882.

ENGINEER'S OFFICE,  
 MONCTON, N.B., 1st August, 1882.

SIR,—I have the honor to submit the following Report on the maintenance of the Windsor Branch for the year ending 30th June, 1882.

The mileage is the same as reported last year.

During the year 8,100 sleepers were renewed.

A siding 1,000 feet long was laid to the new cotton factory at Windsor.

Extensive repairs were made to the St. Croix Bridge. The timber floor was entirely renewed, and the masonry, piers and abutments were overhauled and repointed.

The masonry of Carroll's Bridge also was overhauled and repointed.

Two stone culverts near Windsor and a pair of stone cattle guards at Three Mile Plains were entirely rebuilt.

Extensive repairs are now being made to a wooden bridge at Jordan's Brook.

A very considerable amount of fencing has been done during the year, and much more will be required next year.

The necessary repairs have been made to all station buildings and platforms.

The scales at Mount Uniacke, Ellershouse and Newport, were thoroughly overhauled and repaired.

The track is in good working order. There was not a wheel off the track during the year.

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

P. S. ARCHIBALD,  
*Engineer.*

C. SCHREIBER, Esq.,  
 Chief Engineer and General Manager Government Railways,  
 Ottawa.

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## APPENDIX No. 5.

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DEPARTMENT OF RAILWAYS AND CANALS,  
SUPERINTENDING ENGINEER'S OFFICE,  
MONTREAL, 30th October, 1882

A. P. BRADLEY, Secretary,  
Department of Railways and Canals,  
Ottawa.

SIR,—I have the honor to submit the Annual Report on the works under my charge, for the fiscal year which ended on 30th June, 1882.

These works are the Lachine Canal and the Beauharnois Canal, on the St. Lawrence River; and the Chambly Canal, and St. Ours Lock and Dam, on the Richelieu River.

They have been maintained in an efficient state, and no accident occurred on them to interrupt the navigation during the fiscal year.

Statements are appended of the amounts collected on each canal for fines, damages, etc., with monthly returns of the highest and lowest water on the mitre sills of both entrance locks on each canal, and of the upper and lower sills of St. Ours Lock.

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### LACHINE CANAL.

The trade through this canal has not been interrupted at any time during the season of navigation.

The canal was closed by ice on the 1st December, 1881, and again opened for traffic on 25th April, 1882. It was unwatered for repairs from the 17th to the 24th April.

The work done by the Superintendent during the fiscal year may be classed under two headings, viz:—

#### “GENERAL REPAIRS” AND “CONSTRUCTION.”

The “Repairs” comprised the maintenance of the canal and all the structures connected with it in good order; and the work done and chargeable to “Construction” was in connection with the enlargement of the canal, such as fitting up working machinery for valves on new gates; building bridge abutments and stationary bridges over head and tail race of old supply weir at Lachine; improving off-take drains; levelling spoil banks for the purpose of unloading lumber, cordwood, etc., thereon; grading and covering with gravel the spaces between the old and new locks; placing roller frames in chain wells, and putting up snubbing posts at new locks, Nos. 2, 3 and 4.

#### *Old Lock No. 1, at lower entrance.*

The gates of this lock were stripped of all their top rigging last fall, and weighted down to prevent them from being displaced by the action of the high water and ice during the spring flood. This lock was refitted early in April. A new fender post was placed at the upper end on north side, and the hand rails on lock gates were



straightened and repaired. Three new roller frames were placed in the chain wells instead of old stationary rollers which had become useless.

*Old Lock No. 2.*

The masonry at the upper gates of this lock and at the north lower gate had been shaken by the accident of 29th June, 1880, and leaked badly. These gates were removed last spring and the masonry in recesses and hollow quoins thoroughly pointed. A new fender post was placed at the upper end on north side; two new roller frames were furnished, the hand rails and machinery put in good order, and two new suspension anchor timbers placed at the upper gate.

*Old Lock No. 3.—(St. Gabriel.)*

This lock received new working chains for the lower gates, one new chain well roller frame, thorough repairs to the top rigging of gates, and new anchor timbers for gate suspension at the lower end.

*Old Lock No. 4.—(Cote St. Paul.)*

New face binders were placed on all the gates of this lock. New working chains were furnished for the lower gates, the hand rails and other top rigging received repairs, and new anchor timbers were placed at lower gates.

*Old Lock No. 5.—(Lachine.)*

The two lower gates of this lock were taken out and replaced by a spare pair. The old gates were hauled out on the bank and thoroughly repaired. The extremely low stage of the water last fall was taken advantage of, and all the masonry above the gates of lock and weir at this place was thoroughly pointed. This lock also received new anchor timbers for the lower gates.

*New Locks Nos. 1 and 2.*

These locks were fitted up this spring, and furnished with apparatus for working the gate valves. Roller frames were placed in the chain wells, and Lock No. 2 received oak snubbing posts.

Both of these locks are now ready for use.

*New Locks Nos. 3, 4 and 5.*

All the gates of these locks have been stepped by the contractor, and will be put in working order as soon as the machinery for operating the valves can be had from the "Caledonia Iron Works," where it is being made.

Roller frames for the working chains were fitted in the wells, and snubbing posts placed on the banks. A large amount of expense was incurred by the Department in cleaning the recesses of these locks by divers before the gates could be stepped.

**BRIDGES.**

The traffic over these bridges is very heavy, and requires to have the planking renewed at least once a year, which was done throughout except on the St. Gabriel Bridge. A new towing path bridge, 50 feet long by 12 feet in width, was built over the tail race of the old weir at Lachine, and a new road bridge over its head race. The latter is to form a connection between the present swing bridge over the old lock and the one to be built at the upper end of the new lock. This proposed swing bridge is much required, as the two temporary bridges now in use are not considered safe for heavy traffic.

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#### WEIRS.

The masonry of all the weirs was pointed where found necessary, and the gates and machinery put in good working order in the spring.

#### WHARVES.

The wharves and basins received a considerable amount of repairs, and are now in fair order; but the wharf accommodation is rather limited compared with the amount of business done, and a good deal of inconvenience is experienced on this account by the people in the trade.

#### FLOUR SHEDS.

The flooring in these sheds has been renewed in many places, and other minor repairs done to them. The sheet-iron covering of the roof of No. 1 Shed, at Basin No. 2, is in very bad condition; the work of repairing it will be commenced immediately.

#### PIERS AND BOOMS.

The long mooring pier at the lower end of Lock No. 4 was rebuilt from the water line. The lower end of the mooring pier on the south side, below Lock No. 5, was renewed for a length of 30 feet; and five of the mooring piers at the timber basin were renewed from low water mark. The corners of all these piers were sheathed with tamarack plank and bound with iron straps.

Eight of the longest booms in the timber basin had become so much water soaked that they would no longer float. They were, therefore, hauled out on the bank of the old canal last fall, and, having dried for some time, received new side pieces, and their bottoms were covered with dry sawed cedar timber fastened with iron bolts. This treatment answered the purpose intended, for when the booms were launched in the spring they floated fully as well as when they were first built. Several of the other booms received new head blocks, cross bolts, &c.

The quantity of timber which arrived at Lachine this season was so much greater than in former years, that it largely exceeded the capacity of the timber basin to receive it; and the rafts for which there was no room were moored along the front of the town of Lachine. In this position they not only prevented access to the wharves, but were liable to be broken up by storms, and thus endanger the navigation of the canal, by obstructing its upper entrance with loose timber. It was therefore urgently necessary to provide a place of safety for these rafts. The difficulty was overcome and danger to navigation averted by connecting the detached guide piers, in the new entrance to Section No. 11, to each other and to the old wing dam by temporary booms. This forms a safe basin, capable of containing over a half a million feet of timber which has been filled with the timber previously exposed. The dues collected for boomage on this timber for one year will fully cover the expenses incurred.

#### BANKS, ROADS, &c.

The towing paths, slopes, walls, and off-take drains have all been kept in good order; and the roads, ramps, slips, &c., leading to the different bridges and wharves, have from time to time, been repaired and kept in a proper and safe condition. The River St. Pierre was also thoroughly cleared of all weeds and other impediments; and the thistles were cut at the proper season on the canal banks and the adjoining Government ground. These two latter items of work have to be done annually and cost a good deal of money. All the old and decayed snubbing posts on the whole line of the canal have been renewed.

### SCOWS.

The two repair scows were hauled out last fall. One of them received a thorough going over and is now as good as new. The other, however, is not worth repairing and will be broken up. The timber to build a new one is now sawn and will be prepared during spare time.

### BUILDINGS, FENCES, &c.

The fences surrounding the different weirs, and on the line of the old canal, in front of the town of Lachine, have been repaired and pointed throughout. The dwelling houses furnished to some of the employés have received ordinary repairs from time to time. Some of these houses are in a poor condition, but as the ground on which they stand will soon be required for additional basins, it was not considered advisable to expend much money on them. The building containing the store house, carpenter's shop, and storeman and messenger's dwelling received such repairs as were necessary, and it is in fair order.

As it was found difficult and expensive to get the necessary iron work for the canal done when required, owing to the great pressure of business in the different iron working shops, a cheap wooden building was erected in the yard in rear of the carpenter's shop and fitted up with a blacksmith's forge, a small turning lathe, a drilling machine, vices, &c. Nearly all the iron work required is now being done in this building by day's work in a cheaper and more satisfactory manner than heretofore.

### OLD WING DAM AT LACHINE.

A considerable amount of repair was done to this structure last fall. The masonry of this dam is old and is easily displaced by passing vessels, rafts, &c., and requires a good deal of attention.

### GATES FOR THE NEW LOCKS.

This contract embraces the construction of thirteen pairs of gates. Ten pairs of these were to be placed in the new locks, and three pairs to be held in reserve as spare gates. The Government supplied the timber, and the contractors Messrs. O'Brien, Gordon and Bergin, dressed, framed and put it together, and furnished all the cast iron, wrought iron, and brass work required.

The gates for the two lower locks are 31 feet 7 inches in height, and for the other three locks they are 23 feet 4 inches, 23 feet 2 inches, and 21 feet 1 inch respectively. They are built on the solid timber plan; each of the gates for Locks Nos. 1 and 2 having two wrought iron girders, and those for the other three locks, one each.

During the month of July, 1881, the gates of Locks Nos. 1 and 2 were launched and stepped in their places.

On August 1st, those of Lock No. 1 were closed and worked to allow the steamship "Campana" to pass up into Basin No. 1, and on the next day those of Lock No. 2 were similarly closed and worked, and this steamship passed up to Tate's Graving Dock, through Basin No. 2. This was the first vessel which used any of the new locks.

On November 23rd and 24th the gates for Lock No. 3 were launched, but winter setting in suddenly immediately after, they were allowed to remain in Wellington Basin until May last, when they were towed to St. Gabriel Lock, and shortly after stepped and closed. During the months of May and June the gates for Locks 4 and 5 were launched, towed to their respective locks and stepped.

At the close of the fiscal year the three pairs of spare gates were nearly completed, and the gate hangings and top fixtures of those in position were being mounted.

At this date (October 26th) the work under this contract may be considered as practically finished.

## NEW WORKS OF ENLARGEMENT—MONTREAL DIVISION.

This division extending upwards from Montreal harbor to Côte St. Paul, includes Sections Nos. 1, 2, 3, 4, 5, 6 and 7 and is  $4\frac{86}{100}$  miles in length.

The works on these sections had all been completed at date of my last Report, and the contractors finally settled with, except for Sections 6 and 7. During the fiscal year a settlement was made with Messrs. Wm. Davis and Sons, who had the contract for these two sections.

Everything in connection with these contracts having thus been closed, the resident Assistant Engineer and such of his staff as had been still retained were paid off on 1st of May last.

## LACHINE DIVISION.

This division is under the charge of H. H. Killaly, Esq., as Resident Assistant Engineer. It extends from Côte St. Paul to Lachine, a distance of four miles, and comprised Sections Nos. 8, 9, 10 and 11.

*Sections Nos. 8, 9 and 10.*

As stated in my Report for last year, work upon these three sections had been completed, and the final estimates prepared, but no settlement has yet been made with the contractors.

*Section No. 11.*

The work consists in the construction of a new entrance channel and harbor at Lachine on the south-east side of the present entrance. This harbor is separated from the river by a pier 6,200 feet in length. For about half its length from the shore this pier is formed of a double range of crib-work, the space between which is lined with sheet piling and filled with puddle. The outside of the old entrance pier is faced with a single row of cribs with sheet piling and puddle. Cross dams being built from one pier to the other, two water-tight basins are formed.

To repair the leaks which occurred in the dam of the double cribbing, and which stopped the work on 15th November, 1880, it was found necessary to place temporary cribs to act as buttresses at those points where the dam showed signs of weakness, and to drive eight-inch piling in the centre of the puddle chamber.

These repairs were commenced 28th July, 1881, and completed 25th of the following month. Excavation in the bottom was begun 30th August, and was carried on without interruption until October 22nd, when all work in the prism of the lower basin was completed. The temporary cribs and pumps were then removed and the basin allowed to fill up.

Before the close of the season of 1881 the walls on pier above Station 416, as well as that on crib-work alongside of old pier, were completed, and the space between the latter and the old pier partly filled up and graded.

A quantity of stone was placed at foot of cribs of upper basin and a small coffer dam formed, inside of which the foundation for pump was laid, well hole completed, and bed plates set. A portion of the double crib-work was also uncovered, and cross ties placed connecting the two rows of cribs.

During the winter months, and until April 28th of the present year, no work was done upon this section.

It having been determined to adopt means, similar to those already successfully used in the lower basin, for strengthening and making sound the remaining upper portion of the section, the contractors were instructed to drive 8-inch sheet piles throughout a considerable portion of the puddle chamber of the new pier.

The present season up to 30th June has been occupied in so doing, as well as in raising the puddle in the different dams to the full height, placing stone at foot of cribbing, completing cross dam at Station 416, moving derricks, repairing and altering pumps and making preparations generally for commencing excavation as the upper section shall have been pumped out.

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EXTENSION OF LANDING PIER G. T. R. R. DEPOT, LACHINE.

This pier forms the landing place for several lines of mail and other steam boats running on the Upper St. Lawrence and Ottawa Rivers, and for the railway steam Ferry from Lachine to Caughnawaga. It was built where it is, at Leishman's Point, because, owing to the rapidity of the current, ice never formed there, and the wharf could be used in winter as well as in summer. However, since the construction of the long pier on Section 11, which extends upwards to a point opposite to, and distant 830 feet from the railway wharf, ice forms from one to the other, and destroys the usefulness of the railway wharf for winter ferry purposes. Petitions having been made to the Government for the extension of this wharf up stream for a short distance to a point where it was asserted ice would not form, and it having been found from observations made during several winters that this was the case, Government decided to extend the wharf as requested. Tenders were, therefore, called for its construction, and the contract was awarded to Messrs. D. W. Gaherty and Co. on the 16th of March, 1882.

This work consists of the extension of the existing railway pier, up stream on its present alignment, for a distance of 320 feet. The pier will be formed by placing cribs 30 feet square at intervals of 20 feet. Adjoining the last of these, one of 70 x 40 will be placed, upon which will be built a sloping ice breaker sheeted with oak timber 6 inches thick.

During the months of May and June, timber sufficient for the construction of the cribwork and superstructure of cribwork, together with a quantity of iron, was delivered, and work was commenced on the 27th of June.

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BEAUHARNOIS CANAL.

This canal was closed on the 28th of November, 1881, and reopened on the 25th April, 1882. No interruption to the navigation occurred during the fiscal year, and the works have been maintained in a very efficient state. The principal repairs done may be enumerated as follows:—

LOCKS AND LOCK GATES.

Some slight repairs were made to the gates of Locks Nos. 6, 7 and 8. The upper gates of Lock No. 9 and the lower gates of Lock No 12 were raised and adjusted, and binding straps renewed on the latter. Small repairs were also done to the gates of Locks Nos. 13 and 14. The bumping posts were repaired at Locks Nos. 6, 7, 8, 9, 10 and 11, and two new ones were placed at Locks Nos. 6 and 10.

One pair of gates were hauled out of the canal and taken to pieces; such of the material as is suitable will be used again. Two pairs of new gates have been commenced to be built in the workshops.

Two crabs and ten working chains have been renewed at different locks; and a new chain roller and frame put in at Lock No. 9.

WEIRS.

The supply weir at the upper entrance is situated between the guard lock and the main street of Valleyfield. The head race has had a covering of timber and plank over it for many years. From its position it must be either covered or enclosed in some manner. The above mentioned wooden covering having become so much decayed that it required to be entirely renewed, it was thought better instead of doing so to surround it with a permanent fence. The old wooden covering was therefore removed, the side walls rebuilt above the water line, and a plain iron railing formed of cast iron posts and gas tubes placed on the coping of the side walls. This makes

a superior job and has cost but little more than the renewal of the wooden covering would have done.

#### BRIDGES.

The old single track swing bridge over Lock No 14, at Valleyfield, having to be renewed, has been replaced by a new double track bridge. A large quantity of new masonry had to be built and new turning table and track laid for the latter; swing bridge at Lock No 8 was raised and received a new pivot, new track, one cross beam, new floor, &c. A new end post was placed, and part of the floor renewed on the swing bridge over Lock No 7. Ordinary repairs were done to the bridges over Locks Nos. 9, 10 and 12. The bridge over Lock No 11 received extensive repairs, and must be renewed before long. St. Timothy Bridge required some small repairs and had the track partially renewed. This bridge and also those over Locks Nos 7, 8, 9, 10, 12 and 13 received two coats of paint.

New stationary bridges were built over the waste weir at Lock No. 9, and over the head race just above the lock at Valleyfield, on south side of canal. All the other fixed bridges over weirs, raceways, back ditches, &c., were kept in good order, and received such repairs as were required.

The ferry scows and the scow kept for canal repairs, were overhauled, and are in good condition.

#### BUILDINGS, FENCES, &c.

A new dwelling house has been built for the keeper of ferry No. 1. It is a frame building, 24 feet square, with stone foundation, and is well finished and painted.

The double stone house for the men of Lock No. 14, at Valleyfield, has been reconstructed; the walls raised, a French roof put on, and two back kitchens built. A double shed was also built in rear, and the grounds properly fenced.

The Lockmaster's house, at Lock No. 11, was almost rebuilt. The floors, ceilings, partitions, doors, windows, &c, were renewed and well painted inside and outside.

The Superintendent's house and outbuildings received necessary repairs. This is a boulder stone house, and is about one hundred years old. It is cold, damp and unhealthy, the walls actually crumbling away. It would be cheaper in the end to build a new house for the Superintendent, than to continue repairing the present one. It would also be impossible to re-construct it, as the walls are in such a dilapidated condition that they would be useless for that purpose.

All the other Government buildings were kept in good repair.

A new workshop was built over the waste weir at Lock No. 9. It is a frame building 48 by 80 feet, strongly built, and fitted with sawing, planing and other machinery, operated by water-power obtained from the weir underneath. As all the work for the future will be done under cover and by the aid of this machinery, the result will be, in addition to the comfort of the workmen, a great saving in time and material for the Government.

#### BANKS, TOWING PATHS, ROADS, &c.

The canal banks have been kept in good repair. The slope wall lining was raised for about one and a-half miles in length. The north bank of the canal above lock No. 7, for a length of 3,100 feet, was raised with good gravel, for a width of 15 feet, and a depth of 12 inches in the centre, and 6 inches at the sides. The slope walls above Lock No. 8, and those of the raceway of the weir at lock No. 9, were rebuilt; and all the other slope walls were repaired where required.

Forty new snubbing posts were placed on the banks and many others taken up and reset.

All the side ditches and discharges, about 14 miles in length, were cleaned. The discharges of the side ditches passing through Valleyfield, about two miles in length, were deepened from 15 to 24 inches, to facilitate the drainage of that town. Part of this excavation was in rock, and had to be blasted. Two small culverts were

placed across the banks to carry off surface water. One of these is on the south side above Lock No. 11, and the other a little above Lock No. 14, on the same side.

The dyke at Hungry Bay, the lower dam at Valleyfield, and that leading to Clarke's Island, received necessary repairs.

Public roads, where they pass on the canal banks, dykes or dams, have been kept in good order. These roads are about 27 miles in length.

Thistles and other weeds were cut on all the canal lands at the proper season, according to law.

#### PIERS.

Two mooring piers were built on the south side of the lower entrance of the canal. They are 50 x 21 feet each and 15 and 16 feet high, well filled with stone. A small pier has also been placed on the north side, on the lower end of the crib work under water of the old pier, the superstructure of which was carried away by the ice five years ago. This will mark the spot and fend vessels off the submerged portion.

#### CHAMBLY CANAL.

This canal was closed by ice on the 28th November, 1881, and re-opened on 2nd May, 1882. There was no interruption to the trade during the season of navigation. A large amount of work done, chargeable to income, is reported on under that head.

#### REPAIRS.

The ordinary repairs executed by the Superintendent during the fiscal year, may be summarized as follows:—

##### *Locks.*

The banks were trimmed and covered with gravel on both sides of all the locks from No. 2 to No. 9 inclusive.

##### *Lock No. 2.*

New balance beams and foot bridges were supplied.

##### *Lock No. 3.*

Upper gates were repaired and new foot bridge mounted. The lower mitre sill also received repairs.

##### *Lock No. 4.*

The foot bridges were renewed and a new balance beam supplied.

##### *Lock No. 5.*

A new fender was placed on the south side, and the valve working gear renewed.

##### *Lock No. 6.*

Lower mitre sill repaired.

##### *Lock No. 8.*

The lower gates were repaired and received two new mitre posts, and one new top bar.

*Lock No. 9.*

Two new balance beams were placed on gates.

*Bridges.*

The old swing bridge, No. 4, was replaced by a new one, the material of which was prepared during the winter. A new pivot pier was built, and the abutment on south side repaired. New fenders with iron bands were placed at bridges Nos. 3, 5 and 7. Two road bridges, on the highway along west side of canal, between Lock No. 1 and bridge No. 1, were renewed. The streams, over which they are placed, discharge into the canal. Twelve small bridges on Ste. Thérèse Island were also repaired.

*Scows.*

Five scows were hauled out and repaired. On one of these a shanty was built as a lodging for the laborers when working in isolated places. A new deck was placed on the canal repairing scow.

A floating derrick and three punts were also built. Twenty dumping boxes were repaired, and four new ones made for use of the steam dredge, also four dozen wheel-barrows were repaired and three dozen new ones made.

*Wharves, Roads, Banks, &c.*

The wharf at Chambly, just above lock No. 7, was replanked, about 300 by 50 feet, and 12 new floor stringers were supplied at the same time.

The macadamized road at Ste. Thérèse was repaired, and at Iroquois Creek the road was raised for a length of 200 feet approaching the new bridge. The fences between St. John's and bridge No. 3, a distance of  $7\frac{1}{2}$  miles, were repaired. About three miles of new side ditches were made between bridge No. 3 and Lock No. 7. A new out-let ditch leading to the river was also made between bridges 4 and 5. It is through solid rock, 500 feet long, and from three to four feet deep. The old ditches were cleaned throughout, also the culverts and ofttake drains.

The side walls were repaired generally. In many places they were raised and about 1,500 lineal feet of new wall built between Locks Nos. 6 and 7. Several miles of bank and towing path were raised and widened, but as this was done with material excavated by dredging and is chargeable to income, it is reported under that head.

A bad slide in the prism of canal was removed between Locks Nos. 4 and 5. A large number of snubbing posts were placed and renewed on the banks of canal; and on the south shore of Chambly Basin, Richelieu River, twelve mooring posts were placed, for use of rafts waiting to enter the canal. Seventy-five new posts were made and placed in reserve.

*Buildings.*

A new frame house 24 by 22 with kitchen 12 by 12 and out-buildings were built for the keeper of bridge No. 4. New extension kitchens were also added to the houses of the master of Lock No. 2, keeper of bridge No. 8, and ferryman at Ste. Thérèse Island. All the dwelling houses, canal office, &c., received the usual annual repairs, and double doors and windows were furnished to those which were not already provided with them.

*Works of Improvement executed on the Chambly Canal, during the fiscal year 1881 and 1882.*

These works are under the immediate charge of L. G. Papineau, Esq., as Resident Assistant Engineer.

The Steam Dredge worked until the 22nd of November



From the 1st July until the month of August it had been employed at the north end of the canal between bridges No. 4 and No. 3, after that below bridge No. 1, giving a cut of 20 feet wide with a draught of 8 feet on the west side of the canal. From the 22nd of August until the month of November, it worked at St. John's, cleaning the bottom between the wharves and the pier which separates the canal from the rapids of the Richelieu River, and lowering the bottom between Jones' Bridge and Lock No. 1. The total length of the cuts made in this vicinity amount to about 6,600 feet.

The excavated material was used to raise and widen the towing path between bridges Nos. 4 and 3 below the waste weir at Ste. Thérèse, near bridge No. 1, and also for the various works done at St. John's.

#### WORKS AT ST. JOHN'S.

At the upper end of the long pier a pier head with an ice breaker has been constructed, 61 feet in length, by 16 feet in width and 9 feet in height, to make it easier for vessels to enter the canal and hinder them from being drawn into the rapids, and in addition the towing path has been continued from Jones' Bridge to this pier head. For this purpose a wooden platform was built three feet in height, 15 feet wide, and 58 feet long, to connect Jones Bridge with the pier which existed there already; the latter was repaired, raised on one side and filled with stone. In fact, with the help of the earth furnished by the dredge, a dry stone road with mooring posts has been constructed on the breakwater.

On the west side of the canal, wharf No 1 has been repaired and the grounds improved by filling up a pond, or shoal water, which occupied a considerable space.

The adjoining wharf, No. 2, was also raised and levelled.

#### Lock No. 1.

The upper wing walls or south end of this lock have been protected and extended by two wharves covered with plank.

Besides these works a retaining wall has been constructed along Richelieu street. This wall is 735 feet long, 4 feet thick and 7 feet high. It will prevent the slides of which the Corporation and proprietors of the town of St. John's have complained.

The sides of Jones' Bridge have been furnished with platforms to facilitate the passage of teams towing vessels.

These different works had not been included in the estimate of 1881, but it appeared urgent that they should be executed during the season, and further they permitted the advantageous use of the earth excavated by the dredge.

#### Locks.

Locks Nos. 2, 3, 4 and 6 have been repaired and partly rebuilt during the winter and spring of 1882, the work of demolition having been commenced in the month of December, 1881.

The walls of these locks were forced inwards to such an extent by the pressure of the earth as to render navigation difficult. The walls were taken down to the foundation; the lower courses to the level of the canal water, were replaced by timber on which the remainder of the walls were rebuilt in masonry. The walls were also protected by cribs filled with stone placed below the wings.

#### Lock No. 2.

The lower wing wall on the east side was taken down and rebuilt as far as the mitre sill.

*Lock No. 3.*

The lower wing wall on the west side as far as the gate, and the walls of the upper wing, recess and part of the chamber were taken down and rebuilt. This lock received a pair of new gates at the lower or north end.

*Lock No. 4.*

The lower wing wall on the west side has been rebuilt as far as the gate.

*Lock No. 6.*

The lower wing wall on the west side has been rebuilt up to the gate.

To unwater the foundations of the different locks, while working at them, it was necessary to make a drain in the bottom of the canal from lock No. 3 to the waste weir below Lock No. 6. This increased the cost of these works, which has a little exceeded the amount asked for in the estimate.

It is well to remark here that the winter of 1882 was very mild and that the rains and thaws, which were almost continuous, rendered this unforeseen item necessary.

In addition to the work at the different locks, two bridges were built, one to replace the old bridge No. 4, and the other a new draw bridge, at Lock No. 2, for the service of the proprietors on the west side of the canal.

Besides the above a large number of ordinary repairs are detailed in the report of work done by the Superintendent.

## STEAM DREDGE, SPRING OF 1882.

Dredge No. 1, having been brought down to Chambly in the month of November, 1881, to undergo important repairs, has resumed work at that place, above Lock No. 7, near the Government wharf, and has finished a length of 1,640 feet. The excavated materials have been used to raise and widen the west bank of the canal, which was very narrow and irregular in that vicinity.

From there it went to deepen at the wharf of the South Eastern Railway, where it worked till the 16th June. On that date it was sent to St. John's, and has commenced to deepen from Lock No. 1 downwards. On the 30th June it had got as far down as about 600 feet below the locks.

The works executed during the fiscal year have considerably improved the condition of the lower part of the canal, that is to say, from the entrance at Chambly to bridge No. 3, a distance of three and a-half miles.

Vessels have no longer any difficulty to pass through the locks, and in the portion of the canal which has been deepened they meet and pass each other easily.

The same system will be followed in the upper part of the canal, from St. John's downwards, which still presents many difficulties to the navigation.

## ST. OURS LOCK AND DAM.

The navigation closed at this Lock on the 25th November, 1881, and re-opened on 13th April, 1882.

The only interruption to traffic was one for an hour and a-half, while repairing a valve, on 15th October, 1882.

A leak was discovered last fall in the upper recess of the lock. It was stopped as well as possible, at the time, by puddling and re-planking the bottom, with the aid of a diver. To make a permanent job it may be necessary to unwater the lock next fall, after the close of navigation.

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Other repairs were of the ordinary kind. The segments of upper gates were renewed, and two working chains were supplied for the lower gates. Three pulleys were placed on the lock walls to assist the towage of vessels. Three mooring posts were renewed and lamp posts and ladders repaired. Piers at both ends of lock were repaired and the landing stage at upper pier was removed in the fall and replaced in June. The ice was cut away from the gates and dam, as usual, before the spring freshets. A few missing plank were replaced in the covering of dam, and 15½ toises of large boulder stones were used as rip-rap at and near the abutments. The two scows were hauled out and thoroughly repaired.

The Superintendent's dwelling-house and out-buildings received extensive repairs.

Two pairs of spare gates are being built for this lock at the workshop of the Beauharnois Canal, there being no convenience for doing such work at St. Ours.

It was not necessary to impose any fines or collect any damages during the past fiscal year, owing to the good conduct and carefulness of the navigators.

I have the honor to be, Sir,  
Your most obedient servant,

E. H. PARENT,  
*Superintending Engineer.*

## LACHINE CANAL.

STATEMENT showing the depth of river water on the mitre sills of Lock No. 1, at lower entrance, and Lock No. 5, at upper entrance, during the Fiscal Year ended 30th June, 1882. (From Lockmaster's Returns.)

Months.	Lock No. 1—Lower Sill.		Lock No. 5—Upper Sill.	
	Highest.	Lowest.	Highest.	Lowest.
1881.	Ft. in.	Ft. in.	Ft. in.	Ft. in.
July .....	18 2	17 5	11 3	10 9
August .....	17 5	16 3	10 9	10 1
September .....	16 6	15 8	10 3	9 6
October .....	15 11	15 5	9 9	9 4
November .....	16 4	15 7	10 1	9 8
December .....	16 6	16 0	10 8	9 8
1882.				
January .....	33 9	16 9	12 5	10 2
February .....	32 6	28 1	12 0	10 6
March .....	31 3	27 1	12 2	10 8
April .....	31 0	19 4	12 10	11 4
May .....	22 9	20 2	14 2	12 6
June .....	23 6	21 8	14 8	13 8

## BEAUHARNOIS CANAL.

STATEMENT showing the depth of river water on the mitre sills of Lock No. 6, at lower entrance, and Lock No. 14, upper entrance, during the Fiscal Year ended 30th June, 1882. (From Lockmaster's Returns.)

Months.	Lock No. 6—Lower Sill.		Lock No. 14—Upper Sill.	
	Highest.	Lowest.	Highest.	Lowest.
1881.	Ft. in.	Ft. in.	Ft. in.	Ft. in.
July .....	10 10	10 4	12 0	11 10
August .....	10 4	10 0	12 0	11 5
September .....	9 10	9 5	11 7	11 0
October .....	9 4	9 2	11 5	11 0
November .....	9 6	9 4	11 7	11 1
December .....	9 9	9 6	11 10	11 0
1882.				
January .....	14 6	9 11	11 11	11 3
February .....	16 6	12 0	11 9	11 0
March .....	14 6	13 6	12 9	11 11
April .....	13 6	11 6	12 11	12 2
May .....	13 7	12 3	12 11	12 0
June .....	14 0	13 3	13 0	12 7

## CHAMBLY CANAL.

STATEMENT showing the depth of river water on the mitre sills of Lock No. 9, at lower entrance, and Lock No. 1, at upper entrance, during the Fiscal Year ended 30th June, 1882. (From Lockmaster's Returns.)

Months.	Lock No. 9—Lower Sill.		Lock No. 1—Upper Sill.	
	Highest.	Lowest.	Highest.	Lowest.
1881.	Ft. in.	Ft. in.	Ft. in.	Ft. in.
July .....	11 0	9 8	8 7	7 9
August .....	9 9	9 0	8 4	7 6
September .....	9 4	8 8	8 3	7 0
October .....	9 0	8 4	7 10	6 10
November .....	10 0	8 7	8 6	7 2
December .....	12 6	8 7	8 6	7 7
1882.				
January .....	13 7	9 11	9 0	8 6
February .....	13 7	12 6	8 9	8 5
March .....	16 6	13 4	10 6	9 7
April .....	14 9	12 6	10 4	9 4
May .....	12 6	12 0	9 8	9 2
June .....	13 10	12 3	10 6	9 3

## ST. OUR'S LOCK.

STATEMENT showing the depth of river water on the mitre sills of St. Our's Lock during the Fiscal Year ended 30th June, 1882. (From Superintendent's Returns.)

Months.	Lowest Sill.		Upper Sill.	
	Highest.	Lowest.	Highest.	Lowest.
1881.	Ft. in.	Ft. in.	Ft. in.	Ft. in.
July .....	9 6	8 6	10 2	9 2
August .....	8 10	7 10	9 3	8 10
September .....	8 4	7 0	9 2	8 7
October .....	7 6	6 5	9 0	8 4
November .....	7 10	6 10	9 9	8 8
December .....	10 2	7 5	10 11	8 11
1882.				
January .....	13 0	8 5	10 8½	9 2
February .....	12 8	11 3	11 0	9 7
March .....	16 10	12 2	13 10	11 0
April .....	14 7	11 3½	12 0	11 0½
May .....	14 3	11 9	11 2	10 5
June .....	15 5	12 10	12 2	10 9

LACHINE CANAL.

STATEMENT of Fines and Damages collected during the Fiscal Year ended 30th June, 1882.

Date.	Name of Vessel.	Name of Owner.	Fines.	Damages.	Total.
1881.			\$ cts.	cts.	\$ cts.
July 7	Barge Nile .....	Cantin & Sons .....	4 00	.....	
do 7	Barge Arno .....	do .....	4 00	.....	
Sept. 5	Barge Martin .....	Kingham .....	.....	39 22	
do 28	Tug N. A. Smith .....	V. Paradis .....	4 00	10 00	
Nov. 14	Barge Arthur .....	McGillis .....	.....	35 00	
1882.					
May 25	Barge N.-W. Star .....	F. Mallette .....	2 00	.....	
do 27	Barge R. W. Owens .....	Owens & Co .....	4 00	.....	
do 27	do do .....	do .....	4 00	.....	
June 17	Steamer Manitoba .....	Kelly .....	4 00	.....	
		Total .....	26 00	84 22	110 22

M. CONWAY,  
Superintendent.

LACHINE CANAL OFFICE,  
MONTREAL, July, 1882.

LACHINE CANAL.

STATEMENT of amounts collected for Wood, Rent and Wintering Vessels during the Fiscal Year ended 30th June, 1882.

Date.	Items.	Number.	Rate.	Amounts.
1881-82.			\$ cts.	\$ cts.
	Firewood .....	.....	.....	1,268 62
	Wintering Vessels .....	.....	.....	217 48
	Total .....	.....	.....	1,486 10

JOHN O'NEIL,  
Collector.

COLLECTOR'S OFFICE,  
MONTREAL, July, 1882.

## LACHINE CANAL.

STATEMENT of Basin, Firewood, Fines and Bank Dues collected during the  
Fiscal Year ended 30th June, 1882.

Date.	Items.	Amount.
1881-82.		\$ cts.
	Basin dues .....	246 73
	Firewood dues.....	52 08
	Bank dues .....	39 00
	Fines.....	9 00
	Total.....	346 81

## OTTAWA RIVER CANALS.

SUPERINTENDING ENGINEER'S OFFICE,  
OTTAWA, 17th August, 1882.

SIR,—I have the honor herewith to hand you a Report for the fiscal year ending 30th June, 1882, upon the "management and maintenance," and of the "works of construction" on the various canals under my charge.

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

D. STARK,  
*Superintending Engineer O. R. C.*

A. P. BRADLEY, Esq.,  
Secretary Department Railways and Canals.

## MAINTENANCE.

## ST. ANNE'S CANAL.

The navigation closed on this canal on the 20th November, 1881, and was re-opened on the 11th April, 1882. It has since then been prosecuted regularly and without interruption.

The usual repairs have been made to gates, ice-breakers, wharves, &c., and a somewhat heavy amount of pointing had to be done to the lock masonry. It was found necessary to place a two-ply boom alongside the lower cribwork of the new channel across the shoals below the canal of about 800 feet in length, to prevent vessels being damaged by the jutting rock upon which it stands at low water.

Day guide signals have been placed at the upper entrance and a pier put in above and between the entrances of the two locks to facilitate the passage of vessels to the old one.

No other repairs worth mentioning have been made here.

## CARILLON AND GRENVILLE CANALS.

These canals were closed on the 26th November, 1881, and reopened, the Carillon on the 28th April, and the Grenville on the 1st May, 1882.

Two interruptions to the traffic occurred during the year, one on the 12th September, 1881, when a loaded barge grounded on the Chute à Blondeau rapids, and obstructed the passage of vessels for three days; and the second by the falling in of a portion of the upper north wing wall of Lock No. 3 of the old canal. This last, however, only caused a detention of a few hours.

The Superintendent had on several occasions to complain of the overloading of barges during the months of low water. This was persisted in through these months to the inconvenience of the trade generally by the delays it occasioned to the navigation of the canals. Some owners would apparently insist upon so overloading their barges, notwithstanding the knowledge they must have possessed of the draught of water in the canals, and this at the risk of having to lighten them, and to the endangering in some places of the old canal embankments.

It is hoped that a perfect completion of the new canal will soon avoid a repetition of this difficulty, but at present forwarders fear taking full advantage of it, especially during the season of high water, owing to the proximity of the dam to the head of the guide pier marking the upper entrance. The current at this point during that season was certainly strong enough to render such fears well founded, in view of accident of any kind, and certain remedial measures have been submitted for the consideration of the Department which need not be treated of here.

Everything that can be should be done without delay to close the old Carillon canal entirely, unless a very considerable outlay in connection with its locks is decided upon being undertaken. These structures may be said to be, without exception, now virtually useless, and they can only again be rendered really serviceable by an amount of labor and expense which would be found to fall little short of an entire renewal.

A considerable amount of repair was found necessary this year to the North River feeder and dams.

#### CHUTE-A-BLONDEAU.

The lock at this point it was found necessary to keep in use during high water and until some improvements in the shape of the removal of shoals are made in the rapids, it will continue to be needed.

The removal of these shoals, by its having the effect of equalizing the rate of current between Greece's Point and the dam, will at least enable the latter to yield the utmost it ever can yield to the facility of navigation in this section of the river, and do away, it is hoped, with further necessity for using the lock.

A considerable amount of repairs had to be made to this lock during the year, and if it should be found necessary to continue its use (which next year at least it certainly will be) steps in the interests of the navigation should be taken to increase by several feet the present depth of water on its sills. During last seasons low water the full depth recorded here was not more than 3 feet 3 inches.

#### GRENVILLE CANAL.

Here the old canal is still in use from the lower entrance to Lock No. 8, pending the completion of the new works at Greece's Point.

Locks Nos. 5, 6, 7 and 8 are in such a state as to be a constant source of expense and anxiety, particularly the combined ones, Nos. 7 and 8, which have called for an extensive amount of repair to their gates, sluices, &c. These two, however, will, I am glad to say, be undoubtedly abandoned at the close of navigation this year.

The other two, Nos. 5 and 6, will still have to be used for a short time next season, but I am in hopes that the month of June will see them deserted also, and fortunately their present condition is a more satisfactory one.

Locks Nos. 9, 10 and 11 have called for no repairs of importance, but the swing bridge across Lock No. 11 will soon require reconstruction, and I should recommend the supply of a new one before the close of the present fiscal year.



The embankments, towing path, farmers roads, and fences, have demanded and received the usual amount of attention and repair. The retaining walls which were put up to protect the canal banks have caused some trouble by their having given way in various places, and tumbled into the canal. These will ere long have to undergo remodelling at many points and be converted, from the perpendicular walls they are, into riprap or slope walls, with a view to rendering them both more serviceable and more permanent.

#### CULBUTE CANAL.

Nothing but the ordinary repairs have been needed here. There may be said to have been no traffic through it since my last annual report.

D. STARK,  
*Superintendent Engineer, O. R. C.*

### CONSTRUCTION.

#### STE. ANNE DE BELLEVUE.

At the close of the fiscal year 1881, these works, which consist of the construction of a new lock and an enclosed slack water basin below it, together with the deepening and widening out of the river channel immediately above it, stand as follows:

The basin had been scarcely more than surrounded by a cofferdam, the lock pit had been got ready for the foundations, and excavation by dredging in the upper entrance had just been begun.

Since then the excavation of the lower basin has been completed, and the retaining wall on the north side built. The lock masonry has been carried up throughout to a height of 14 feet above the foundation, and will be finished towards the end of August. The dredging of both the upper and lower entrances has been entirely done, with the exception of what still remains under coffer-dams, and nothing by the end of August will remain to finish the contract but the completion of the wall on the south side of the basin, and probably also the one along the north side of the upper entrance. The placing of the lock gates will then render the new works available for traffic.

All the work in connection with the Grand Trunk Railway bridge rendered necessary by the location of the new lock has been done, excepting some finishing to the copings on the tops of the piers.

#### CARILLON CANAL.

The works executed here during the year are as follows:—

The upper guide pier has been completed and the upper entrance freed from all obstructions.

The bankment forming the protection to the canal between the two locks has been made

The lower lock pit at the end of the last fiscal year had just been pumped out. The masonry was begun on the 1st July, the greater portion of the foundation having been laid the previous fall.

This was carried on until it was stopped by frost in the fall of 1881, when it was within about two thirds of completion. It was again begun as soon as the season permitted in the spring of 1882, and completed towards the end of the month of May of that year.

The putting in place of the gates of both the locks which had been framed during the winter, by the Department, under the superintendence of Mr. David Macadam,

and which was done immediately on the lower lock being got ready, rendered the canal ready for traffic, and it was opened for this on the 27th day of May.

Range lights for the guidance of vessels were then placed at the head of the new canal and at Chute-à-Blondeau.

#### CHUTE-A-BLONDEAU.

A large mass of rock here, which stood directly in the way of navigation, was blown out during the winter, but notwithstanding this, further obstructions still render the current during the season of high water considerably more rapid than was contemplated when the scheme of the dam at Carillon was inception.

This can be greatly helped by the blasting out of a ledge of rock across the current, still existing, and which is in reality the crest of the old rapids.

The removal of this (and it can be easily got rid of) would so equalize the current, with the whole flow of the river between Greece's Point and the dam, as to at once afford the maximum amount of benefit the latter can bestow. In the interests of the navigation this ledge should, if possible, be got rid of during the ensuing winter.

#### CARILLON DAM AND SLIDE.

These works were finished in the fall of 1881 and have since been performing their duty satisfactorily. Some improvements to the slide entrance are now in progress, such as extending the guide booms farther up the river and altering the position of others which had been placed at too square a direction to that of the current.

These changes once made I have every reason to feel assured that all the benefits anticipated from the construction of these works will be realized.

#### GREECE'S POINT WORKS.

The works at this point, which comprise two new locks and the deepening and widening of the canal from about 600 feet above the upper one to deep water in the river below the lower, were, up to the 9th November, 1881, in the hands of a firm of contractors known as Heney, Stewart & Co., at which time, in consequence of the inability of this firm to proceed, they were suspended, and on the 7th February, 1882, relet to Messrs. Brecken & Co., another firm who began operations immediately, and have since been prosecuting them satisfactorily.

The amount of work done by the first contractors consisted of a partial grading of the reach between the locks, and that above the upper one, the excavation of both lock pits, the laying of the timber in the bottom of the upper lock, and some of its masonry also, to the extent of the levelling course, and a course and a half, of ashlar above it. The lock pit was then filled with water for the winter. Early in the spring it was pumped out again by the new firm of contractors and masonry recommenced; by the 30th June about two-thirds of the whole of this was laid.

Some excavations between the locks has also been taken out by the new firm, but effective work upon this must await the close of navigation, when a strong force will be employed to remove everything in the shape of earth prior to the setting in of severe frost, what there may remain of rock being removed during the winter. On the 30th June the laying of the timber in the bottom of the lower lock was commenced. This is now completed.

#### GRENVILLE CANAL.

##### *Section No. 1,—From Upper Entrance Downwards.*

On this section, work has been confined to the widening of the reach between the river and the guard lock, to admit of increased accommodation to the trade, rafts and barges frequently arriving in such bulk as to cause, in the old state of things, serious detention and inconvenience.

The building of a new wharf, and the construction, out of the way of the canal altogether of a basin for the accommodation of the Ottawa River Navigation Co.'s steamers, have also been executed.

The excavation of the enlargement was begun on the 1st September, 1881, and in the beginning of October the contractor put in his coffer-dam for the steamboat basin, and commenced that work and the wharf at the same time. This wharf is composed of crib-work and stands 30 feet above the canal bottom. It is founded on piles driven through from ten to twenty feet of shifting sand down to hard pan, and partly, where the depth of sand diminished, on the hard pan itself. It was in its main features got ready for the opening of navigation, but its entire completion had to await the falling of the water in the river, which has been this year an extremely slow process, and something in consequence still remains to be done to it.

Towards the end of November, 1881, the contractor was enabled, by throwing a coffer-dam across the canal entrance, to begin his winter work on the widening of that, with a force of from 400 to 500 men.

The excavation was largely composed of a clay slate rock, which was not only unfit for anything in itself, but presented no foundation on which to found the retaining walls, and the cut had therefore to be taken out to a width extending from rear to rear of these walls, making a serious increase to both the quantities of excavation and masonry. In consequence of the impossibility, the difficulty and expense, of getting stone fit for such masonry near the place, and the difficulty and expense of transporting it from any distance during the winter season, it was decided to form the foundations of these walls of crib work, brought to within a foot of the surface of lowest water and filled with stone from the excavation. In no other way could a timely completion of them have been made.

#### *Section No. 2.*

Only a little widening was done on this section, chiefly with a view to obtaining stone fit for the entrance walls, but the attempt failed.

None of the rock through which the Grenville Canal is cut affords stone fit for building purposes.

#### *Section No. 3.*

Nothing done.

#### CULBUTE WORKS.

These are now reduced to the completion of the Rocher Fendu dam, a consummation which the loss of a closing crib towards the end of last season then prevented.

D. STARK,  
*Superintending Engineer O. R. C.*

#### CORNWALL CANAL.

CORNWALL, 22nd July, 1882.

SIR,—I have the honor to submit the following Annual Report on the works under my charge for the fiscal year ended on June 30th, 1882:—

The Cornwall Canal has been maintained in an efficient state, and no accident occurred during the year.

The canal was closed by ice on December 10th, 1881, and opened again for traffic on April 25th, 1882.

The works in progress during the past year will come under the head of repairs and construction.

Rebuilding one pair of lower gates and general repairs to all lock gates, making eight new sheaves and a new scow (fifty-five feet long, fourteen feet wide and three and a-half feet deep) for general use in making repairs. Repairing lock-houses. The supply weirs at Locks No 18 and 19 were in a leaky condition. A leak had found its way around the wing wall. The plank floor above the breast wall was taken up, and the spaces between the timbers well filled with puddle and concrete. A double floor of two-inch plank was then laid down, the embankment excavated from top to bottom and refilled with good puddle. Putting in twelve pieces of new segments. Pointing lock walls. Raising embankment, cleaning side drains and culverts, &c., &c.

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

D. A. McDONELL,  
*Superintendent.*

STATEMENT showing the depth of river water on the mitre sills of Lock No. 15 at lower entrance, and Lock No. 21 at upper entrance, during the fiscal year ended 30th June, 1882 :

	Lock No. 15, Lower Sill.		Lock No. 21, Lower Sill.	
	Highest.	Lowest.	Highest.	Lowest.
1881—July.....	10·7	10·4	10·6	10·2
August.....	10·5	9·11	10·4	9·8
September.....	10·3	9·6	10·2	8·11
October.....	9·9	9·0	9·9	8·8
November.....	9·9	9·1	9·10	8·11
December.....	9·9	9·3	10·10	9·0
1882—January.....	23·9	9·10	10·4	9·1
February.....	26·3	13·4	9·11	8·9
March.....	16·4	10·9	10·10	9·7
April.....	11·8	10·8	11·1	10·2
May.....	11·2	10·8	11·5	10·2
June.....	11·7	10·11	11·7	11·0

D. A. McDONELL,  
*Superintendent.*

#### WILLIAMSBURGH CANAL.

MORRISBURG, July, 1882.

SIR,—I have the honor to submit my Report on the working and condition of the Williamsburgh Canals (embracing Farren's Point, Rapide du Plat, Iroquois Junction and Gallops Canals) for the year ending the 30th June, 1882.

These canals, closing for the winter season on the 10th December, 1881, and re-opening for traffic on the 24th April, 1882, have been kept in good repair, and no interruption or delay from any accident has occurred during the season of navigation.

## FARRAN'S POINT CANAL.

Repairs were made to lock gates, two new sheaves were placed in chain holes, and chains to lock gates renewed; lock gates, bumping and snubbing posts were re-painted, three hundred and twenty feet of the pier or dock at the lower entrance was rebuilt, an additional portion of this pier, as well as a portion of the ice-breaker at the lower entrance is to be rebuilt during the current year; the banks are well stoned and in good repair.

## RAPIDE DU PLAT CANAL.

The upper gates of Lock No. 23 were taken out and rebuilt; new rollers were placed in the upper gate of Lock No. 24; lock gates, bumping and snubbing posts at Locks Nos. 23 and 24 were re-painted; new fences were erected on the premises occupied by lock laborers; the inside dock at the foot, and the piers and ice-breaker at the head of this canal were repaired, and some repairs by stoning were done to the banks.

This canal requires dredging in several places, and dredging the slip on the inside of the dock or wharf at the lower entrance, so that boats could load and unload at the dock on the inside of this slip, would be of much advantage, both to shippers and vesselmen.

## POINT IROQUOIS JUNCTION AND GALLOPS CANAL.

The gates of Locks Nos. 25, 26 and 27 were raised and adjusted, new rollers were placed in the lower gate of Lock No. 27; lock gates, bumping and snubbing posts at the several locks were re-painted, repairs were done to the swing bridges, and a portion of the track of bridge over Lock No. 26 was renewed; timber for rebuilding these bridges in case of accident to them has been procured and placed under safe covering; the banks are well protected with stone, and the booms in Point Iroquois Canal were properly repaired this spring. The buoys under my charge between Dickinson's Landing and Johnstown were replaced.

From the low water in the river St. Lawrence during last fall, and consequently in the canal, some detention of vessels occurred, viz. :—

In September, 1881—	Lock 23,	Rapide du Plat,	one vessel detained	5 hours.
“	“	“	“	“ 3 “
“	Lock 24	“	“	“ 9 “
“	“	“	“	“ 7 “
“	“	“	“	“ 6 “
“	“	“	“	“ 3 “
In October, 1881—	“	“	“	“ 2 “
“	“	“	“	“ 7 “
“	“	“	“	“ 4 “

Since the opening of the navigation this spring the water has been high in the river, and a full depth in the canal.

I annex a statement showing the extreme depth of water on the sills of the locks for the year ending the 30th June, 1882.

All of which is respectfully submitted.

I have the honor to be, Sir,  
Your most obedient servant,

A. G. MACDONELL,  
*Superintendent Williamsburgh Canals.*

A. P. BRADLEY, Esq.,  
Secretary, Department of Railways and Canals,  
Ottawa.

## WILLIAMSBURGH CANALS.

STATEMENT showing extreme depth of water on the mitre sills of the several locks during the year ending 30th June, 1882 :

## FARRAN'S POINT CANAL.

Months.	Lower Sill, Lock No. 22.		Months.	Lower Sill, Lock No. 22.	
	Highest.	Lowest		Highest.	Lowest.
	Ft. In.	Ft. In.		Ft. In.	Ft. In.
1881—July.....	9 6	9 0	1882—January.....	8 2	7 6
August.....	3 10	8 9	February.....	7 8	7 5
September.....	8 10	8 4	March.....	9 3	7 8
October.....	8 9	8 0	April.....	10 0	9 2
November.....	8 8	7 6	May.....	9 10	8 9
December.....	8 6	8 0	June.....	11 0	10 0

## RAPIDE DU PLAT CANAL.

Months.	Lock No. 23, Lower Sill. Foot.		Lock No. 24, Upper Sill. Head.	
	Highest.	Lowest.	Highest.	Lowest.
	Ft. In.	Ft. In.	Ft. In.	Ft. In.
1881—July.....	9 7	9 4	9 9	9 4
August.....	9 7	8 9	9 9	8 9
September.....	9 3	8 3	9 0	7 9
October.....	8 7	7 7	8 6	7 0
November.....	8 10	7 0	8 9	7 0
December.....	9 6	7 0	9 3	7 3
1882—January.....	9 6	8 0	9 0	7 9
February.....	9 6	8 0	9 3	8 0
March.....	10 3	9 3	10 0	8 0
April.....	10 4	9 4	10 6	8 9
May.....	10 9	9 0	10 9	9 4
June.....	11 3	10 9	11 3	10 3

## POINT IROQUOIS JUNCTION AND GALLOPS CANAL.

Months.	Point Iroquois Lock No. 25, Lower Sill, Foot of Canal.		Gallops Lock No. 27, Upper Sill, Head of Canal.	
	Highest.	Lowest.	Highest.	Lowest.
	Ft. In.	Ft. In.	Ft. In.	Ft. In.
1881—July.....	12 5	11 9	10 4	9 8
August.....	12 6	11 4	10 3	9 3
September.....	11 8	10 8	9 10	8 10
October.....	11 0	9 10	9 3	8 4
November.....	11 6	9 2	9 9	8 0
December.....	12 8	9 0	10 2	7 10
1882—January.....	12 8	10 8	10 3	8 5
February.....	11 10	10 5	9 3	7 8
March.....	13 8	11 0	10 10	8 11
April.....	13 8	11 10	11 5	9 6
May.....	14 0	12 8	11 8	9 9
June.....	14 2	13 0	11 7	10 0

A. G. MACDONELL,  
*Superintendent Williamsburgh Canals.*

Morrisburgh, 13th July, 1882.

ST. CATHARINES, 22nd September, 1882.

SIR,—Accompanying this you will receive my Annual Reports of the works done under my charge on the Welland and Burlington Bay Canals for the year ending 30th June last.

Your obedient servant,

WILLIAM ELLIS,  
*Superintendent.*

A. P. BRADLEY, Esq.,  
 Secretary, Department of Railways and Canals.  
 Ottawa.

## BURLINGTON BAY CANAL.

SUPERINTENDENT'S OFFICE,  
 ST. CATHARINES, 22nd September, 1882.

SIR,—I have the honor to submit my report on the working and condition of the Burlington Bay Canal for the year ending 30th June, 1882.

The canal was closed on the 19th December last and opened on the 20th April.

No serious interruption to the passage of vessels has occurred during the season.

The rebuilding of the piers has been at a stand-still since the contractors ceased work last fall, and a considerable stretch of the lake end of the east side pier was left by them partially taken down, planking stripped, &c. The storms have since washed

out some of the stone filling from the old cribs into the canal, reducing the draft of water alongside in those places to about eight feet only at low water. This portion of the pier is now in an insecure state from violent storms.

The repairs have been very light.

Your obedient servant,

WILLIAM ELLIS,  
*Superintendent.*

A. P. BRADLEY, Esq.,  
Secretary, Department of Railways and Canals  
Ottawa.

## WELLAND CANAL.

SUPERINTENDENT'S OFFICE,  
St. Catharines, 22nd September, 1882.

SIR,—I have the honor to submit my Report on the condition and working of the two canals—the Old and the New—for the year ending 30th June, 1882.

### THE NEW CANAL.

This canal was put in my charge on the opening of navigation, April 20th, 1882 since which date no serious detention to navigation through it has occurred, except in one instance, at Lock No. 6, when a stoppage of four days was unavoidable to enable us to unship the foot gates, lower the track, &c., which would not admit of the gates being opened, and while this was being done, I sent all the vessels through the old canal—that were not drawing over 10 feet—so the inconvenience was very slight, and should detentions in future occur, the old canal would be found available for a similar purpose.

The canal has been operated with great satisfaction to all that have used it. The banks have proved so far quite up to their requirements. Considerable subsidence of course took place after they had been well saturated, and a strong force of men and teams has been employed to bring them up to their proper height again. This I hope to have completed by the end of this season.

Some of the slope wing walls at the ends of some of the locks are already settling to some extent. These may have to be rebuilt and strengthened when the water is drawn off during the winter and spring.

The lock gates and valves work well throughout, except where subsidence gives us trouble. When this ceases no difficulty will be experienced. The Giant water wheels open gate valves very quickly and satisfactorily. The copper cables used to open the gates proved too soft, and I am substituting, as found necessary, soft steel cables in lieu, which work very well and are much cheaper.

The rest of the structures throughout being most substantial, answer their purpose admirably and give no trouble.

The St. Catharines and Welland Canal Gas Light Company have nearly completed the laying of the gas pipes between the harbor of Port Dalhousie and the guard lock at Thorold, as required by their contract, and have all the lamps in position, four at each lock, which have been lighted up temporarily by large coal oil burners since the 12th day of June last, and a large flood of light is afforded, satisfactory to vessel men, and all concerned.

The Company promise to make the gas connections in a very short time, when the lights of course will be even more brilliant, each gas burner being of 40 candle power.



The amount of business done through the canal has been fair up to this date, and some very large propellers have passed through, notably the "I. C. Gault" from Toledo, carrying 43,000 bushels, 15,000 of which had, in each case to be lighted or elevated at the Port Colborne Elevator and taken down by the Welland Railway Company and put into the vessel again by their elevator at Port Dalhousie. The Railway Company's charges for that service, although very moderate, proved too much to admit of the "Gault" successfully continuing the business through our canal and competing with low rates to Buffalo and through the Erie Canal.

Submarine blasting has been carried on at the lime kiln crossing, Lake Erie, for some years, and the work is so far completed that now vessels drawing 16 feet can pass between Chicago and Buffalo, and as our new canal will only admit of vessels drawing 12 feet, we are and always shall be behind in the race for the enormous business that the West and North-West will ever hereafter furnish, unless greater facilities for elevating are supplied at Port Colborne and Dalhousie, so as to lighten vessels of greater draft, and give quicker despatch to same through the canals, and I recommend the charge for that service should be included in the toll rates; were that arrangement made our business through the canal would be soon doubled.

I recommend that all the banks should be sown with suitable grass seed next spring, if not they will soon be covered with thistles, involving a heavy and perpetual annual expenditure to cut down.

I also recommend that trees be planted along the banks where vessels are much exposed to the wind storms.

The protection stone lining along the banks of the canal, and also around the basins between Port Dalhousie and the Guard Lock above Thorold, is well advanced to completion, and will soon be entirely finished.

The continuation of that work to Humberstone, the Chief Engineer informs me is to be done by contract.

#### *Allanburg Guard Lock to Port Colborne.*

Built tool house and cabin for the men working on Deep Cut tow path.

Formed tow path anew throughout Deep Cut. Built and laid 31 box culverts under tow path Deep Cut.

Built float bridge across canal for winter use, made out of old floats.

Built one new bridge Quaker road, 25 feet long.

Removed floats and took them to winter quarters and replaced them in spring on sections No. 34 and No. 35 where required.

New protection floats built from Lock to end of section No. 35 where necessary; repaired other portions of the floats from time to time throughout the season.

Building approaches for Air Line ferry, moving scow and fitting her up for ferry purposes. Building bridges across back ditch rear of Lock-master's house, and Air Line ferry. Built new store house and shop 28 x 20 x 14 feet, and fitted up and painted complete. Cleaned out back ditches throughout both sides of canal.

Drove cluster of protection piles at ends of rest piers G. W. Railway and Canada Southern bridges, and chained them, &c. Cleaned out Lyons Creek culvert, painted snubbing posts along harbor. Port Colborne ferry boat caulked and painted, also timbers of lifting scow; made and put down snubbing posts along New Lock. Facing worst portions of banks (where most washed out), with stone. Filled in with massive blocks of stone portions of the decayed breakwater, Port Colborne harbor.

#### OLD CANAL.

The Old canal reaches from Port Dalhousie to its junction with the New at Allanburg.

#### *From Port Dalhousie to Allanburg.*

This canal was closed on the 15th day of December last, and opened the 20th day of April, 1882.

The water was drawn off for repairs on the 10th day of April, and let in again three days afterwards.

Notice was given in my last Report that a very large amount of work was required to be done to insure the safety of the canal weirs, bridges, raceways, &c., in various places. Owing to the worn out and dilapidated, and insecure condition of many of the structures, these have been nearly all renewed, the remainder requiring attention will be similarly treated when the water is drawn off next spring, after which the canal throughout will be in a fair condition. Navigation has been interrupted twice by accidents during the year, viz:—Lock No. 1, November 24th, 1881, when the four gates were carried out owing to the propeller "Europe" running into the head gates, and at Lock No. 17, June 6th, 1882, when the barge "Oriental" also ran into the head gates, and the four gates were carried away; in each case navigation was stopped for three days only.

The Government scows have been fully employed in hauling stone and gravel to face up and raise the banks throughout, where requisite.

An unusual number of new gates have been hung during the year to replace those in a worn out and unsafe condition.

The old rotten hydraulic race aqueduct has been entirely removed and a permanent structure put up in its place, consisting of six stone piers and two abutments, which carry a light but strong wrought iron rivetted lattice superstructure of seven 50 foot spans, over which a very strong and enlarged tongued and grooved flume is carried, which will admit double the quantity of water passing through, that has heretofore passed through the old flume, should it ever become necessary.

We have a limited supply of new gates left on hand and are finishing up a few more, when I propose to stop any further manufacture of gates.

The canal has worked very satisfactorily throughout, and now it is fed entirely from Lake Erie. The manufacturers all along have a never failing supply of pure water. Only one man has been left in charge of each lock and bridge since navigation opened, the rest having been transferred to the new canal, and I recommend a further reduction in the number on the opening of navigation next spring, leaving say one man only in charge of two or three contiguous locks.

The repairs and renewals made during the year may be generally stated as follows:—

*Harbor, Port Dalhousie.*

Built two ferry landings each side harbor; 250 feet decayed pier on west side taken down and rebuilt, also renewed sidewalks, new snubbing posts put down, new large W.C. built for use of tug and vessel hands; rebuilt bridge over sluiceway; sheet piled berth for ferry boat and made passenger landing.

*Lock No. 1, and Bridge and Level.*

325 feet heavy oak railing to floats rebuilt, and 780 feet repaired. Replanked swing bridge; drove 420 feet oak piles inside floats; built new approach to upper end of floats; repaired floats sundry times.

*Lock No. 2, and Bridge and Level.*

Drove 11 protection piles at upper weir, capped same and put on fender streaks; raised swing bridge twice and put in roller; repaired bridge, Shickluna's dock; planked flume, 26x12 feet; new balance box on bridge, and planking; made patterns for ratchet roller and put on; made and put in box drain 16 feet long.

*St. Paul Street Bridge.*

Repaired damage to bridge by schooner "Mary;" drove protection piles each side and capped same; rebuilt cribs; renewed planking several times, and put new stanchions under bridges.

*Lock No. 3 and Level.*

Put new lifting rod on gate and new balance beam, and repaired plates.

*Lock No. 4 and Bridge and Level.*

Raised bridge several times and repaired pivot beams, &c.; hung 2 new gates, removed old ones to gate yard, and stripped and cut up; drove 10 protection piles in front of weir, and capped same and put on fender streak; repaired shutes from race way, and put one new bulk head to shute; put up 325 feet barb wire fence around lot; drove 19 piles to sustain heel path floats, and fendered and capped, repaired floats; made and laid box drain 20 feet long.

*Lock No. 5 and Bridge and Level.*

Built bridge, tow path side, 18 x 20 feet; new timbers under crab, and rest same; made and put on new foot boards to gates; made and put on storm door and steps.

*Lock No. 6 and Level.*

Repaired culvert and bridge; new balance beam on head gates.

*Hydraulic Race and Aqueduct.*

Several new bents and braces put in at various times to sustain old aqueducts, and others spliced; made and put in box drains; built temporary sheds and W.C. for workmen; made levels, plumb rules, templates, and mixing boxes for masons; raised bridge over race, near hospital, 25x12 feet, and put railing on same; kept ice clear all winter; puddled and sheet piled old overflow weir shute; widened end of bridge; took down old aqueduct in spring; excavated foundations and concreted same, and built 6 stone piers and 2 abutments afterwards; erected wrought iron rivetted lattice superstructure, consisting of seven 50 foot spans, and enlarged, substantial wooden flume across same; painted the whole 3 coats; built wing walls and bulkheads each end; put in sheet piling and timbers each end and faced up wall with puddle, dry walling, &c.; levelled all underneath and cleared away.

*Gate Yard, Merriton, and Shop at Thorold.*

Finished and laid away four low lift gates, built enclosure fence, made eight gate foot-boards, made numerous snubbing posts, and put caps on same, framed six new balance beams, made four ladders for new canal bridge, caulked and repaired crane scow, partly built new gates for Lock No. 1; put new leader ladders and braces to floating pile driver, repaired the hull, put in two stiffening arches, and built cabin on deck; repaired gravel scows, built small punt for gravel scow, made and put new frame to horse-power of derrick, and new mast; commenced work on three new low-lift gates, built two pigeon hole desks for office. eased doors and windows, repaired desks, &c., at canal office, made new monkey and strip for pile driver.

*Lock No. 7 and Bridge and Level.*

Raised swing bridge, and repaired floor; put on new balance box, &c.; rebuilt heel approach.

*Lock No. 8 and Level.*

Repaired floats; drove 13 guide piles foot of lock, and capped same; put timber backing behind piles, to receive stone facing, &c., 125 feet over all; built one new lock house, in place of one burnt.

*Lock No. 9 and Level.*

Built new bridge, 70 ft. x 12 ft. across race, with hand-rails; hung new lock gate; drove 35 protection piles at weir and fendered them; put float bridge across head of lock for winter travel.

*Lock No. 10 and Level.*

Repaired heel path bridge; put new bands on balance beam; repaired house door; removed two old gates, and replaced with two new ones; and one new balance beam.

*Lock No. 11 and Level.*

Built bridge over race, 40 ft. x 12 ft.; hung one new gate, and put on new balance beam; made and hung two gates in fence; coped cellar entrances, and hung new door.

*Lock No. 12 and Level.*

Put on new balance beam, and reset crab; repaired floats; put new door on house.

*Lock No. 13 and Level.*

Removed decayed lock gate, and hung new one in place; repaired lock house.

*Lock No. 14 and Level.*

Waste weir walls taken down and rebuilt, new puddling put in, banks raised, &c., pointed all other weir masonry.

*Lock 15 and Bridge and Level.*

Finished coping of lock walls; put new timbers head of lock.

Waste weir walls taken down and rebuilt, new puddling put in, adjoining banks raised, pointed all other weir masonry; 325 lineal yards of embankment raised and faced with stone; built new gate with back gear and screw attachments to waste weir put on two new balance beams.

*Lock No. 16 and Level.*

Finished coping on lock walls; raised tow path 175 lineal yards in length.

*Lock No. 17 and Level.*

Finished coping on lock walls; waste weir walls taken down and rebuilt and Quarried a large amount of stone, and teamed to canal bank for scows, also gravel extended; new puddling put in; banks raised, &c., &c.; removed four old gates, and other debris, and hung four new gates, after accident by barge "Oriental," and repaired float bridge.

*Lock No. 18 and Level.*

Framed and put on new balance beam; removed injured coping and ashlar work and rebuilt with new.

*Lock No. 19 and Level.*

Damaged coping removed and replaced with new; 290 yards of dry stone slope wall foot of lock, and tow path widened and raised. and stripping.

*Lock No. 20 and Level and Quarry.*

Quarried a large amount of stone and teamed same to Canal bank for scows, also gravel and stripping.

Put four new collar hole covers and crab block, caps and sheaves.

Made one new float, 14 x 4; one long rake, four new foot boards to head and foot gates; put on four hollow quoin stop blocks; put new frame protection fender to lamp post; put two new valve screws in head and foot gates.

*Lock No. 21 and Level.*

Put in four iron collar hole covers and crab blocks, caps and sheaves, renewed plank-walk; put on new foot boards to gates; put on hollow quoin blocks; two new valve screws in foot gates.

Put iron hold back fastening to foot gates, drove 180 feet protection piles each side of lock at foot, put waling streaks on same; put old timbers behind piles for footing for stone filling; put mud sills in bank, each side; framed and put tie timbers across; opened 200 feet ditches, tow path side; raised 300 feet lineal tow path, and 90 feet heel path; built cement walls and bridge over raceway; faced up slope at west side of lower entrance to lock with dry wall.

*Lock No. 22 and Level.*

Put on two crab block caps and sheaves, four hollow quoin blocks and one new footboard on foot gate, reshingled storehouse, raised and shingled part of lock-master's house.

Loaded up spare store-house for new air line ferry on raft.

Drove 320 lineal feet piling west side Keefer bridge, dug trenches, formed sills in bank; built new west side approach 180 feet long; faced behind piles with timber and stone, filled up gravel and macadamized road-bed on to bridge; rebuilt wall under towpath bridge across mill race.

Raised 500 feet lineal of tow path; built new bridge, bulkhead and head gates and cement walls on tow path, &c.; sheet piled same; sixty feet oak capping on head of bumping cribs, head of lock.

*Lock No. 23 and Level.*

Finished platform; one new float 14ft. by 4ft.; one new long rake; put new footboards to gates; four water stop blocks to gates.

Drove 250 feet protection piling across waste weir.

Opened 200 feet ditching; one iron regulating gate put in waste weir with screw attachments.

*Lock No. 24 and Bridge and Level.*

Put on four new collar hole covers and crab block caps and sheaves; new footboards to gates; renewed platform; four water-stop blocks put on, one crab block, &c.

*Lock No. 25 and Three-Mile Level.*

Put on new anchor to head gate, two new footboards to gate, four collar hole covers, one crab block cap and sheave; 46 feet oak coping to bumping cribs, four water stop blocks put on, one float 14ft. by 4ft., 14 feet new iron track plate under Hurt's Bridge, and put 35 feet waling, south-west side; put four new struts to hold up masonry head of Beaver Dam and Davis Culvert; rebuilt 14 feet culvert ice rack; took down and rebuilt west approach to Allanburg bridge, drove 12 guide piles Marlatt's Pond.

*Allanburg Lift Lock.*

Took out old sill for gauging vessels and took off one course of masonry from breast wall.

*Allanburg Guard Lock.*

Cleaned out bottom of guard lock, put new steps and brasses under gates and relaid part of track; put new double suspension or adjusting bars to gates, with cross head and nuts to hold up toes of same.

*Welland Lock and Weir.*

Removed breast timbers from head of lock to give increased water way, drove 450 feet lineal protection piles front of weir, put double oak walings to same, removed the old waste weir bridge and built a new one in line, 12 feet wide, 79 feet long; put up dressed railing on one side and 12 by 12 fender along the other; rebuilt 20 feet of waggon track over aqueducts and reset valve screws.

*Feeder Junction to Dunnville and Port Maitland.*

This division extends from Dunnville to Port Maitland and to the junction with the main canal at Welland, a distance of 22½ miles, consisting of four stone waste weirs, one dam, one toll bridge, with 26 flood gates for wasting water over and through dam, one toll-keeper's house, 14 stationary bridges, of an aggregate length of 2,400 feet, 6 swing bridges, 3 locks, 2 lock-tenders' houses, 3 shanties, 2 sluiceways, 8 culverts, 1 fish-ladder, 2 piers and breakwater at Port Maitland, 1 lighthouse and a harbor 500 feet in width, admitting a vessel drawing 18 feet of water, also 600 feet of boom timber to protect waste weirs from ice jams during the spring freshets.

All gates on waste weirs and dam have been put in good working order.

All bridges have been put in good repair throughout.

A new and efficient swing bridge with two new approaches has been completed to carry roadway across canal in front of Canal street, Dunnville, and has proved to be a great convenience to the public.

The mitre sills of Dunnville Guard Lock, as well as those of Port Maitland Lock, have been cleaned out.

The old top timbers on Marshville and Cranberry Creek culverts have been cut down to water line and built up with new timbers five courses above said water line, and covered over with new timber.

The east pier at Port Maitland, under contract to R. F. Lattimore, has been rebuilt from low water line in a substantial and workmanlike manner.

The repair scow has been caulked and painted as well as a number of the bridges.

The rut holes on towpath and berm banks have been filled, and the banks widened and strengthened in many places; sunken logs and other debris have been removed out of bottom of canal, and the culverts cleaned out.

About 200 feet of the embankment across Grand River has been covered over with lake gravel approaching the Fall Bridge.

All the thistles and obnoxious weeds on the Government lands have been cut and all brush and rubbish that accumulated in drains have been cleaned out.

Up to the present date of the season there has been no scarcity in the supply of water for navigation and manufacturing and milling purposes, and the water in Grand River stands 4 inches below the level of 1842.

Owing to the mildness of last winter, coupled with the great scarcity of snow, the supply of wood brought out to the canal this season has been greatly diminished and consequently the traffic on the Feeder up to the present date has been much less than that of the corresponding period of last season.

*Generally.*

Scows removing earth and stone for raising and widening banks throughout; drains cleaned out and deepened; repaired barrows and scows, made several ladders, repaired and renewed chains, valves, wrist pins, brasses and screws in locks throughout; made 25 pike poles.

Put down snubbing posts throughout where necessary.

Renewed slash boards and face and fender planking to lock gates throughout.  
Examined and repaired valve pins and gearing to all gates, cut up and stripped  
sundry old gates.

Thistles cut on all Government lands throughout.

Blocked all bridges for winter and took all out again in spring.

#### FINES, DAMAGES, &C.

I have collected during the year from masters and owners of vessels the sum of \$1,711.44 in fines for violation of canal regulations, and for damages to works, which amount I have handed H. H. Collier, Esq., collector for this port, and I append a statement of the above marked A. I also append a statement marked B, showing the greatest and least depth of water on the mitre sills at Port Dalhousie and Port Colborne locks in each month during the year, also a comparative statement of the average depth for the months of June, 1881 and 1882, which shows the water has been higher by 5 inches at Port Dalhousie, and 1 foot higher at Port Colborne than for the same month in the year 1881.

#### A.

STATEMENT of Fines and Damages collected from Vessels contravening Canal Regulations, for fiscal year ended 30th June, 1882.

Date.	Name of Vessel.	Fine.	Damages.	Total.
1881.		\$ cts.	\$ cts.	\$ cts.
May 20...	Schooner "Edward Blake".....	20 00	.....	20 00
Sept. 12...	do "Albatross".....	.....	11 44	11 44
Oct. 7...	do "Guelph".....	.....	10 00	10 00
1882.				
May 2	do "St. Louis" (*new Canal).....	.....	150 00	150 00
do 5	do do do.....	.....	20 00	20 00
June 7	Barge "Oriental".....	.....	1,500 00	1,500 00
				1,711 44

\* Handed to W. H. Collier, Esq., Collector, St. Catharines.

#### B.

STATEMENT showing the Depth of Water on the Lower Sill of Lock No. 1, Welland Canal, Port Dalhousie, for fiscal year ended 30th June, 1882.

Months.	Lower Sill.		Months.	Lower Sill.	
	Highest.	Lowest.		Highest.	Lowest.
1881.	Ft. in.	Ft. in.	1882.	Ft. in.	Ft. in.
July.....	13 3	12 8	January.....	12 7	11 10
August.....	12 11	12 5	February.....	13 0	11 11
September.....	12 8	11 10	March.....	13 8	12 5
October.....	12 1	11 8	April.....	13 11	13 2
November.....	12 4	11 9	May.....	14 8	13 5
December.....	12 2	11 10	June.....	14 8	13 11

Average depth, June, 1881.....	Ft. in.	13 9
do do 1882.....		14 2

STATEMENT showing the Depth of Water on the Upper Sill of Lock No. 27, Welland Canal, Port Colborne, for fiscal year ended 30th June, 1882.

Months.	Upper Sill.		Months.	Upper Sill.	
	Highest.	Lowest.		Highest.	Lowest.
1881.	Ft. in.	Ft. in.	1882.	Ft. in.	Ft. in.
July.....	13 3	12 4	January.....	15 3	11 5
August.....	13 3	11 9	February.....	14 7	11 2
September.....	12 6	11 4	March.....	14 4	12 4
October.....	13 2	11 5	April.....	13 11	11 11
November.....	13 7	11 4	May.....	13 11	11 11
December.....	14 4	11 4	June.....	14 4	13 2

		Ft. in.
Average depth, June, 1881.....		12 7
do do 1882.....		13 7

### RIDEAU CANAL.

RIDEAU CANAL OFFICE,

OTTAWA, 25th September, 1882.

SIR,—I have the honor to submit the Annual Report on the state of the works under my charge for the fiscal year ending the 30th June, 1882.

Navigation closed at Kingston Mills and Ottawa on November 30th and 23rd, respectively, and opened on 1st May, 1882, at Ottawa and Kingston Mills.

The season of 1881 opening with a good supply of water on all the reaches, the levels were fairly maintained until the close of navigation. The descending level to Kingston only fell 6 inches below navigation, and the summit level Little Rideau Lake kept its level to a few inches all through the season.

On the long reach between Burritt's and Long Island the water fell nearly a foot, and we had in consequence to close down the Mills at Manotick; an attempt will be made this fall to stop the leakage of water at the Long Island Locks and the bulk-heads.

Considerable expenditure was incurred in putting a dam across the head of the locks at Kingston Mills, in order to make repairs to sill and sluice ways to stop a heavy leakage.

The wing walls and sills were thoroughly overhauled, and the waste of water which at this point is entirely lost to the canal was prevented.

The Narrows Station will also require heavy repairs as soon as there is low water again in the Rideau Lake.

The season of 1882 opened with high water on all the reaches, and so far the levels are all fully up to navigable height.

A good many complaints are made by the owners of low lands adjoining the canal that reaches are maintained too high, but it is necessary if navigation is to be maintained that the spring height of the water should be kept up as long as possible; as evaporation during the summer months rapidly pulls them down.

A preliminary survey for the Tay Canal to connect Perth with the Rideau navigation was made last fall, a more detailed one is now in progress.

The principal repairs to the works were as follows:—

#### *Kingston Mills.*

New swing bridge, coffer dam at head of lock, repairs to masonry work. New bottom in recess, new stone house, and two long coping blocks.



*Chaffey's.*

Repairs to lower gates, and four chain blocks.

*Narrows.*

New storehouse.

*Smith's Falls.*

Blasted rock in basin to stop leakage.

*Edmonds.*

Lockmaster's house shingled.

*Merrickville.*

Pair of new gates framed and put in, and two approaches to basin.

*Burritt's Rapids.*

Repairs to lock gates, 15 yards of gravel on them, new pier at bulkhead to keep gravel on dam.

*Black Rapids.*

Renewed Bulkhead on west side, and furnished stone to build wing wall.

*Ottawa.*

Pair of new gates framed and put in, eight new ladders for stations on line, one sluice box for station, pointing locks, &c.

*Canal Basin.*

Raising and replanking wharves.

The works are in good working order, and the traffic both in passengers and freight is showing a material increase.

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

FREDERICK A. WISE,  
*Superintending Engineer.*

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TRENT CANAL.

ENGINEER'S OFFICE,  
PETERBOROUGH, 8th November, 1882.

SIR,—I have the honor to submit my Annual Report on the works under my charge for the fiscal year ended 30th June, 1882.

The water on the several navigable stretches composing this inland navigation from July 1st to close of navigation, could not be maintained at its standard level, viz. 5 feet on the lock sills, owing in a great measure to the irregular manner in which the supply on the main feeder was regulated. The reservoir dams which are of too limited dimensions of these feeders were erected partly by the lumberers of the district and partly by the Ontario Government, and are therefore chiefly used to

facilitate the descent of timber, and consequently the water is run off the reservoirs at a period not in accord with the requirements of the demand on the main line of navigation. This I venture to bring to the notice of the Hon. the Minister, especially at this time, when the improvements of this inland navigation are being prosecuted.

Navigation closed on November 25th and opened March 15th.

The traffic through the locks was carried on unceasingly. The total number of lockages was 1,819, the greatest at a single lock being 1,427.

#### *Lindsay.*

The works at this station, which is situated on the River Scugog, a branch of the main line of navigation, consists of a dam 280 feet long, 30 feet base and 9 feet high; a composite lock 134 feet between the gates, 33 feet wide with 5 feet water on lower mitre sill when water is level with apex of Bobcaygeon Dam.

No repairs to these works have been executed by the Department during the past year. The dam requires to be kept tight so as to retain the water at a navigable height on the stretch to Port Perry, at head of Lake Scugog, on which a considerable business is done, in towing saw-logs to the mills.

#### *Scugog River.*

The removal of the snags and sunken logs that remained in the river after the date of my last annual report, was completed, and has benefitted the navigation of the river very materially.

#### *Bobcaygeon.*

The works at this station consist of a lock 134 x 33 feet, built of ashlar masonry, with 5 feet water on lower mitre sill.

A canal 973 feet in length.

A dam 1,262 feet in length, 12 feet base and 6 feet high, 794 feet of which is crib work, the remainder being truss work and 13 feet wide.

The lock received new upper gates during the past year. The dam was temporarily repaired, a glance constructed below the lock, and a breach that occurred in north bank of canal built up.

A new dam is absolutely necessary as it is impossible to hold up the level of Sturgeon Lake with present old one. The canal and lock require new flooring the leakage being very great, so much so that the current in the canal impedes to a great extent the passage of "Tows."

The lock requires new lower gates. The traffic through this canal for the past year has exceeded that of any year since its erection.

#### *Buckhorn.*

The works at this station consist of a dam 387 feet long in the clear, 28 feet base and 5 feet 3 inches high.

A slide 85 feet long, 33 feet wide, 2 feet draught with guide booms, piers, &c.

The slide and booms are under the control of the Department of Public Works.

The repairs executed here during the past year, consisted in rebuilding the dam from big sluice to sluice, a length of 186 feet from west pier of sluice to east pier of large slide, a continuous line of crib work was constructed on down stream side of dam 186 x 5 feet. The portion of dam between west pier of slide and east pier of little sluice rebuilt, size 23 x 12 feet, and the portion of dam between the west pier of little sluice, and the portion of main dam, constructed of stone work, was also rebuilt and 700 yards of gravel laid on dam.

The slide, booms, &c., are undergoing extensive repairs under the Department of Public Works, and when those are completed the works at this station will present a very creditable appearance, and will compare favorably with any of their kind in the country.

*Burleigh.*

The works at this station, consisting of dam, slide and waste way, were erected exclusively for the descent of timber, and in the interest of the lumber trade are not under the control of this Department, but the contemplated improvements to the navigation at this point, consisting in the construction of locks and dams for which the contract has been awarded, will come under its control.

*Young's Point.*

The works here consist of a lock 134 x 33 and 5 feet water on lower mitre sill, a dam, slide, and guide booms. The lock was erected by the Government of the Province, and the dam &c., by private enterprise. As this is a station on the main line of navigation, and one at which the water level can be controlled to no small extent, I would respectfully suggest the advisability of the Department assuming control thereof, so that there may be no division of jurisdiction as at present. It will be impossible to manage the water levels satisfactorily on the reach between here and Burleigh, when the improvements at Burleigh are completed, unless they are under one controlling power.

*Lakefield.*

The dam here is the property of private individuals, it retains the water in Ketchiwannoe Lake at a navigable height up to Young's Point Lock, a distance of about 6 miles, on which there are two steamboats constantly employed in towing lumber, grain, &c. The navigation of this stretch is entirely dependent on the dam, and the owners having control thereof, they can at any time lower the water level and stop navigation, it is therefore advisable, in the public interest, that this dam should become the property of the Department.

*Peterborough.*

The banks of sawdust and slabs that accumulated in the river and formed obstructions to the steamboat navigation are being raked into deeper water. This work is being carried out under the direction of the Department of Public Works for which an appropriation was granted last session of Parliament.

*Little Lake.*

The piers and booms at this station, being exclusively for the benefit of the lumber trade, are under the control of the Department of Public Works.

*Whitlaw's Rapids.*

The works at this station consist of a lock 134 x 33.

Wing dam 323 feet 6 inches long, 12 feet 6 inches high. Cross dam 160 feet long 9 feet high, with slide, waste ways, and guide booms. The repairs executed consisted in extending the approach to lock from below a distance of 50 feet, and completing repairs to mitre sill.

Enlarging sluice area in gates to double their former capacity, this enables a lockage to be made in four minutes, and clearing lock chamber.

*Hastings.*

The works at this station consist of a lock 134 x 33 feet, 5 feet water at lowest stage and 6 feet 9 inches lift.

A dam 253 feet long 7 feet 6 inches high.

A slide 95 feet long 33 feet wide.

A swing bridge across lock chamber 68 feet long 13 feet wide.

The lower mitre sill of lock which leaked badly was repaired, this necessitated the employment of a diver. The guide booms and slide are under the control of the Department of Public Works. The swing bridge received new braces and the turning gear refixed. The tail gates of lock worked hard and were repaired.

The guard leading to the lock in the upper level is in a decayed condition, and requires entire renewal.

The approaches to the swing in the railway bridge across the river are being carried out by the Company, all the piers required on the south side are placed in position and the fenders are about being erected.

#### *Heeley's Falls.*

The works consist of a dam 488 feet long, 33 base and 8 feet high, slide 300 feet in length 33 feet wide, with guide booms &c. This dam maintains the navigation up to Hastings, a distance of 12 miles. The slide and guide booms are under the control of the Department of Public Works.

#### *Middle Falls.*

The works here consisting of two dams, slides, booms, &c., being entirely for the benefit of the lumber trade, are under the control of the Department of Public Works. In the year 1855 they were transferred to a committee of lumbermen who were authorized to collect tolls on timber logs &c., descending the river, and make annual statements to Government of the amounts collected and expended on repairs to the works; these conditions were carried out until the year 1871, when they failed to comply with the terms of the transfer, and since then they have made no returns whatever, in fact the committee has ceased to exist, and whatever repairs have been executed on these works have been done by the Government.

#### *Campbellford.*

The piers and guide booms here are under the control of the Department of Public Works.

#### *Chisholm's Rapids.*

The works erected here consist of a canal, one-half mile long, 60 feet wide. Lock 134 ft. x 33 ft., 4 ft. 8 in. water, on lower mitre sill at lowest stage of water. A dam 715 feet long, 6 feet high, slide 50 feet wide, with guide booms. The slide and booms are under the control of the Department of Public Works. The new lock gates are being stepped and gearing erected for working them.

The lower mitre sill is being repaired, and also the flooring of lock; to do this effectually, it will be necessary to employ a diver. A new steam barge has been placed on this navigable stretch, viz.: from Chisholm's to Myersburg, and Frankford; and, I am informed, is constantly engaged in towing.

The Central Ontario Railway has applied to the Department of Public Works, and obtained permission, to erect a bridge across the river at this point. This railway has also to cross the canal; it will, therefore, be necessary for the Company to make application to this Department for authority to do so, and submit plans of bridge for approval.

I would here remark before concluding, that new life and energy has sprung up all along the line of the waters, business has increased on all the stretches, with, perhaps, one exception, and the contemplated improvement in extending the navigation

has imbued the boat owners with a certain confidence, that did not exist before. The total number of lockages made this year, being 1,819, against 1,420 last year.

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

THOMAS D. BELCHER,  
*Superintending Engineer.*

A. P. BRADLEY, Esq.,  
Secretary Department of Railways and Canals,  
Ottawa.

CORNWALL, 15th November, 1882.

A. P. BRADLEY, Esq.,  
Secretary Department Railways and Canals,  
Ottawa.

SIB,— have the honor to report upon the canal works and surveys under my charge for the fiscal year 1881-82, and up to this date.

#### MURRAY CANAL.

This work is situated in the County of East Northumberland, about 75 miles west of Kingston, and is designed, by opening a navigable channel through the Isthmus of Murray, to connect the head waters of the Bay of Quinté with Presqu'île Bay on the north shore of Lake Ontario, to which point it will in effect prolong the navigation of the River St. Lawrence, by affording means of avoiding the circuitous and dangerous route south of the Peninsula of Prince Edward.

The construction of the canal was authorized by Parliament in the session of 1881, and location surveys, commenced in June following, were completed early in the present year, *vide* my report to the Chief Engineer appended hereto, in which all the routes examined or located are fully described and that having its westerly entrance in Presqu'île Harbor recommended for construction.

Further surveys were afterwards made (March, 1882) to test the alleged advantages of certain short lines near the carrying place between Weller's Bay and the Bay of Quinté, these surveys resulting in the report previously submitted being confirmed.

The Presqu'île route, as located, was adopted by Order in Council in May last, and tenders for a canal 80 feet wide on bottom were received by the Department to the 22nd June, the work being subsequently (24th August) awarded to Messrs. Silcox & Co., contractors, of Welland, Ont., and Syracuse, N. Y., to be completed on the 1st July, 1885. Valuators were also appointed on the 24th August, and the greater portion of the lands required for the canal have since been expropriated. Excavation was commenced on the 1st September, and has since been vigorously prosecuted.

#### TRENT VALLEY CANAL.

This work, as originally projected in 1835, extends from the Bay of Quinté on Lake Ontario to the Georgian Bay, Lake Huron; and in its course of over 200 miles skirts or intersects portions of the Counties of Hastings, Northumberland, Peterborough, Victoria, Ontario, Simcoe and Muskoka.

A preliminary survey, and examination of the rivers and lakes lying along the main line of water communication as recommended by Mr. N. H. Baird, C. E., in 1833-35, was commenced last year, under the appropriation voted by Parliament in the session of 1881, and definite information obtained as to the alleged advantages

which the new lines from time to time suggested would present over the original scheme of Mr. Baird, *vide* my Progress Report to the Honorable the Minister, which I beg to append hereto.

Location surveys were commenced in the month of August last at Lakefield, and they are now being continued south towards Percy Landing *via* Hastings, and location surveys were at the same time commenced at Balsam Lake, the summit, and continued north by the valley of the Talbot River to Lake Simcoe, and from thence *via* Lake Couchiching a survey is now in progress to Matchidas Bay on the overland route examined in 1881. An exploratory survey of the northern lakes and tributaries, as connected with the question of future water supply, has been commenced.

#### TRENT NAVIGATION.

During the last session of Parliament it was decided by the Government that, pending the completion of the surveys, an early commencement of the work of construction would be desirable; and, inasmuch as the information obtained during the preliminary examinations of last season was considered sufficiently comprehensive and accurate to warrant the opinion that the main line of water communication recommended by Mr. Baird was the most practicable, an appropriation was accordingly voted during the session towards the construction of the Burleigh, the Buckhorn, and the Fenelon Falls Canals, all which works are situated on the main line above mentioned, and are also links in the chain of lakes (known as the Back Lakes) and necessary to render their navigation continuous. The preliminary surveys at these points were only commenced in May last, and although rapidly completed the various works were with much difficulty located by the 10th August, the time named in the advertisement for exhibiting the plans, &c.

The tenders were received by the Department up to the 24th August, and the contracts were subsequently awarded as under, *viz*:—

Burleigh Canal—George Goodwin, Contractor, of Grenville, P.Q., 27th September, 1882; to be completed 1st July, 1885.

Buckhorn Canal—George Goodwin, Contractor, of Grenville, P.Q., 27th September, 1882; to be completed 1st September, 1884.

Fenelon Falls Canal—A. F. Manning & Co., Contractors, Toronto, 14th October, 1882; to be completed 1st July, 1885.

The Land Valuers were appointed 7th October, and have since fully entered upon their duties.

Work was commenced at Fenelon Falls on the 16th October.

In connection with the canalization of the Back Lakes the Department has taken preliminary steps to expropriate the Lakefield Dam, situated at the head of the Otonabee River, and by means of which the level of Lake Katchewanoe, or the reach next below Youngs' Point Lock, is regulated and the navigation to Lakefield maintained.

The works of construction (on the Back Lakes) now under contract may be thus briefly described.

#### BURLEIGH CANAL.

This canal, the first in the new series, is situated in the County of Peterborough, on the southern limits of the Laurentian formation, and in a comparatively unsettled part of the country. The works extend over a distance of about two and a-quarter miles, *i.e.*, from Deer Bay to Stony Lake, including the Burleigh River and Lovesick Lake and Rapids, and are designed by means of locks and dams to create slack water between those points, and thereby complete the navigation downwards *via* the existing lock at Young's Point to the village of Lakefield, and upwards through Deer Bay Lake to Buckhorn Rapids, the site of the next works in ascending order.

## BUCKHORN CANAL.

As at Burleigh, these works are also situated in the County of Peterborough, on the southern limits of the Laurentian formation, and on the north side of Buckhorn Rapids, in the settlement known as Hall's Mills, and extend over a distance of about a quarter of a mile, connecting Deer Bay with the waters of Buckhorn, Pigeon and Mud Lakes, and by means of the locks at Bobcaygeon and Lindsay with Sturgeon and Scugog Lakes, and the proposed works at Fenelon Falls, the last in ascending order.

## FENELON FALLS CANAL.

This canal, the last in the new series, is located on the north side of the Fenelon River, near the centre of the village of Fenelon Falls, in the County of Victoria, and extends over a distance of about one-third of a mile, connecting Sturgeon Lake with Cameron's Lake, and by means of the existing lock at Rosedale with Balsam Lake and the Village of Coboconk, on Gull River.

The works consist of the excavation of the lock pits and canal, chiefly through stratified line stone rock, the masonry and foundations of two locks, the formation of approaches thereto, the construction of landing piers at the lower, and of a rock wing dam at the upper, entrances; widening and strengthening the existing mill dams with rock from the excavation, and building the requisite piers, &c., for swing bridges at the central span of the Victoria Railway Bridge, and also at the upper lock on line of Colborne Street.

The general dimensions of the new lock are: length between hollow quoins, 134 feet; width between chamber walls on floor, 33 feet; depth on mitre sills—lowest water, 5 feet.

The existing structures to be utilized hereafter in completing the Back Lake navigation, comprise:—

1. The Lakefield dam,
2. A Lock and Dam at Young's Point,
3. The Buckhorn Dam,
4. A Lock and two Dams at Bobcaygeon,
5. A Lock and Dam at Lindsay,
6. The Fenelon Falls Dam,
7. A Lock and Dam at Rosedale (Balsam River).

The general dimensions of the locks approximate closely to those adopted for the new works.

The locks at Young's Point, Lindsay and Rosedale, were constructed by, and are under the control of, the Provincial Government.

## UPPER ST. LAWRENCE.

## GALOPS RAPID IMPROVEMENTS.

This work is situated near the head of the Galops Canal, about seven miles east of Prescott, and consists in the formation by submarine excavation of a straight channel 3,300 feet long, and 200 feet wide, through the rapid, and adapting it to a 14 foot navigation. To accomplish this, certain shoals are crossed which are principally of limestone rock, and are of the aggregate width, in line of channel, of 1,800 feet.

These shoals are required to be reduced to such an extent as will afford at low water, the respective depths of 16 and 17 feet.

The following description of the proposed new channel is taken from my Report to the Chief Engineer, 26th December, 1876.

Commencing in the deep water below Flat Rock, and proceeding downwards, the first obstruction encountered is a ledge of rock called the Upper Bar, which extends across the main channel, from the pier-head of the canal to the foot of Adam's Island. The current over it is about seven miles an hour.

Its general level is six feet below the sill of lock 27, *i. e.*, there is, in low water, a depth of 15 feet on it, but in mid-channel and at other points, the ledge is elevated from three to four feet above its general level, which would have to be removed.

The operations with the chain vessel at this point, and also at the North Shoal, next below, would be subject to frequent interruptions by the passage of vessels. This is also the only practicable route for rafts, which, when passing (unless towed by steamers) nearly block up the channel.

The "North" Shoal lies about 1,300 feet below the Upper Bar, and abreast of the guard lock; it is of rock, and extends across the main channel from the canal bank, facing the upper bar and is the cause of the current, which sweeps the north shore of Adam's Island, dividing and setting strongly south to Capstan Point, and north towards the Chute.

The point of this shoal seems to be the limit of the eddy below Adam's Island.

The least depth of water on it is 10 feet 3 inches, or relatively 1 foot 3 inches below the sill.

It is feared that drilling operations here will be very difficult, owing to the strong eddy and opposing current.

Next in order is the South or Caledonia Shoal, lying 150 feet south of the point of North Shoal. Its northern edge merely skirts the southern limits of the proposed channel.

South Shoal lies in front of the "Gut" Channel, and, together with the North Shoal, is doubtless the cause of the strong eddy below the Island. A dam across the Gut would destroy this eddy, and greatly facilitate the operations of the chain vessel.

The "Island" Shoal is 600 feet below North Shoal, and overlaps the deep water between it and South Shoal. A strong current, both from the "Main" and Gut Channels, sets south over it.

Like the other shoals it is of solid rock. A sounding of 9 feet 9 inches was obtained at one point on it, but its general surface has a depth of 12 feet over it, and is 3 feet below the sill of lock 27. Owing to the steady current across this shoal, drilling operations will be not difficult.

The "Lower Bar," 750 feet below the Island Shoal, is a ledge of rock extending from the canal bank to Capstan Point.

Here the current in the pitch exceeds 10 miles per hour.

The edge of the north channel is distinctly marked by a large breaker, called the "Chute," on the rock immediately above which the depth of water is only 6 feet, and north of it, in the channel, 10 feet.

In the southern channel, or that near Capstan Point, the deep water is marked on the north side by a succession of smooth, heavy swells, the first of which is known as the "Cave" on the northern edge of which a depth of 7 feet 6 inches was found, whilst south, between it and Capstan Point, the least depth was 11 feet 6 inches.

The space between the "Chute" and the "Cave" is shallow, varying from 7 feet to 9 feet, below which the bar is covered here and there with boulders.

On the bar the water is turbulent in low stages of the river, and although drilling operations with the chain vessel have succeeded here, they are attended with much difficulty and danger, owing to the swiftness of the current both above and below the pitch, particularly above.

In connection with this work a chain tug was constructed in the spring of 1876, with a view to test the practicability of a system of submerged chain towing in the rapids, and also for the purpose of examining and sounding, and of subsequently being utilized in drilling or dredging operations in the rapids of the St. Lawrence. The chain tug arrived at the Galops on the 23rd August, 1876, and was engaged in experimental operations until the close of the season, when she was towed to winter quarters at Prescott.

1879.

The work of improvement of the channel through the Galops Rapid was let to



Messrs. William Davis & Sons, of Ottawa, 5th August, to be completed 1st June, 1881, and on the 7th November following, in accordance with the conditions of their contract, the chain tug was delivered to them, to be taken to Montreal, for alterations and repairs.

A caretaker appointed by the Department accompanied the vessel, and has remained on board ever since.

1880.

A great part of this season was occupied by the contractors in making the necessary alterations and repairs to the chain vessel.

Drilling and blasting operations were, however, commenced on 28th September, on the Island Shoal, and the dredging machinery tested at intervals until the season closed, when the chain vessel and plant were laid up in the Galops Canal, 23rd November.

1881.

At the commencement of the season the chain vessel was again taken to Montreal for alterations and additions to her machinery, work therefore was not commenced until 22nd June; satisfactory progress was made during the remainder of the season. The vessel and plant were laid up for the winter in the eddy at the foot of Adam's Island, 28th November.

1882.

Operations were commenced this season at an earlier date (April 26th), owing to the chain vessel having been wintered on the work.

On the 30th June with the sanction of the Government, Messrs. Davis & Sons transferred the contract for the Galops works to Messrs. E. E. Gilbert & Sons of Montreal. The Messrs. Gilbert had initiated and conducted the sub-marine blasting and all other operations for the contractor from the inception of the work.

They also designed and constructed the chain tug for the Department. In August the torpedo boat (or drill scow) was added to the plant employed, and further improvements made in the machinery of the chain vessel, specially adapting her for dredging, for which purpose she is now chiefly employed.

The contractors force is now well organized, and after many and great difficulties have been overcome by them, it may here be stated that they have the work in perfect control. A cutting or gullet through the "Island Shoal," 100 feet wide and of the full depth specified, will be completed this season, representing a total quantity of say 6,500 cubic yards of rock blasted and dredged since the work was commenced in 1880.

It may safely be assumed, therefore, that the practicability of the undertaking has been satisfactorily established.

#### WILLIAMSBURGH CANALS.

In consequence of an increased supply of water to the Rapide Plat Canal having become necessary, as well for purposes of navigation as to maintain or augment the existing water-power at the Village of Morrisburg, an examination and survey having this object in view was ordered by the Department, and subsequently a report, together with an estimate based thereon, was submitted by me in March, 1880.

An appropriation for the construction of new weirs, &c., was voted at the last session of Parliament in connection with the above.

The work has not yet been commenced.

#### CORNWALL CANAL.

The contract for Section No. 1 of the enlargement was let August 23rd, 1876, to Messrs. Gordon, Woodward & Chamberlin, of Sherbrooke, P.Q., to be completed 25th

April, 1879. This work was fully reported upon November 30th, 1879, at which date the works remaining to be done to complete the contract consisted of:

Raising the walls of Lock No. 17 and the adjoining supply weir, and the banks of the head race to the mills;

Raising the north bank and the towing path of the old canal;

Removing the old culvert or tunnel, and the waste weir, and that portion of the old towing-path included in the upper basin, and connecting the new and old parts of the sewer under the canal. Also of the undermentioned unfinished work on the enlargement, viz.:

The coping of both locks; superstructure of south pier of entrance channel; extensions of wings of both locks, slope wall and culvert north side of basin, and rip rap walls in discharge race. Also excavation in north slope of basin and towing-path in cuttings, discharge race from weir, levelling north side of lower entrance, the removal of coffer-dam and old spoil bank in upper basin.

The building of five cribs of various lengths at lower entrance, and the towing path and foot bridges connected with regulating weirs; also sluice gates and fixtures for weir, and the mooring posts for locks, basin and lower entrance.

The whole of the above mentioned work has been completed with the exception of the following items ordered to be left in abeyance, viz:—

Raising the walls of Lock No. 17; stone for the purpose has been delivered and dressed.

Removing the old culvert or tunnel; this has only been partially effected.

Removing the old towing path in upper basin—a portion lying to the east of old culvert has not been removed.

Raising the banks of the head race to the mills; these banks are to be raised by the mill owners interested. The gates and fixtures for the enlarged locks, (the subject of a separate contract) have been hung, and one pair of spare gates built and moored in the upper basin.

The enlarged canal was first used October 20th, whilst Lock No. 15, the old entrance lock, was disabled, the steamers "Corsican" upward, and "Passport" downward bound were locked through.

The work on Section No. 1, of the enlargement may now be considered as completed. The construction of a sewer extending from Marlborough Street (originally the eastern limits of the Town of Cornwall) westerly along the canal limits to the old culvert, was authorized at the last Session of Parliament. This work will, it is said, be commenced and carried on during the ensuing winter. Water-power from the canal has recently been granted by the Department to the Toronto Paper Manufacturing Company for their new works situated on the north side of the canal opposite Lock No. 18, and outside the limits of land required for the proposed enlargement.

The water will be taken from the reach above the lock, and returned into that below (the Cornwall Reach) through the existing By-wash.

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

TOM S. RUBIDGE,  
*Engineer-in-charge.*

## APPENDIX No. 6.

## RIDEAU CANAL OFFICE,

OTTAWA, 10th November, 1882.

SIR,—As requested by your letter No. 29,277, I have the honor to report upon the progress of the Tay Canal survey up to the end of the fiscal year ending June 30th, 1882.

By letter No. 55,811, May 31st, 1881, I was authorized to have a survey made with a view to the construction of a branch canal from the Town of Perth to the Rideau Canal.

The Town of Perth in 1834 was connected with the Rideau Lake by a canal constructed on the line of the River Tay, which flows from Perth and empties into the east end of the Rideau Lake, a distance of about ten miles.

This Canal was built by the "Tay Navigation Company," who were incorporated by the Legislature of Upper Canada in 1831, Sec. 1, Wm. IV., Chap. II, Local and Private Acts of U. C.

The works consisted of five separate locks, lifting in all 28 feet, the levels of the different reaches being maintained on the same principle as on the Rideau Canal, by flat dams built across the river at different points, causing the flooding of a considerable amount of low lands.

The total length of the canal proper from Perth to Port Elmsley, where the level of the Rideau Lake is reached, being  $8\frac{1}{2}$  miles.

The locks were constructed of rubble masonry faced with stone, 100 feet between quoins and 20 feet in width, with 4 feet water on their sills; amount expended being about \$17,000, I understand.

The canal has long since been abandoned for any boat traffic, and hardly a vestige of the locks remain; the dams, however, with the exception of one, are still serving the purpose of keeping up sufficient water to run logs down.

There are at present, at the Port Elmsley end of the canal, a cloth factory, grist mill and two saw mills worked by water power.

On commencing operations, no plans of the original canal could be found, neither could I obtain any reliable plan of the river. It was, therefore, necessary to go over the whole ground, and make a survey from Perth to Port Elmsley.

By reason of the tortuous character of the river, the dense swamps (formerly drowned lands), coming down on either side to the edge of the river, and extending back for more than a mile in places, involved a large amount of labor in cutting out the lines, before any plan of the river and the locality of the different works could be ascertained.

From the survey the following information as regards the original canal was obtained:

Taking zero as the level of low water in the Rideau Canal, the levels of the several reaches ascending from Port Elmsley towards Perth were as follows:—

	LIFT. Ft. In
Lock No. 1, Port Elmsley .....	6 0
“ “ 2, Gemmel's .....	8 0
“ “ 3, Weatherhead's.....	9 0
“ “ 4, McTavish's .....	3 0
“ “ 5, Tebbs' Cut .....	2 0
Total Lift.....	28 0

The distances on the line of canal and river were :

	Miles.
From the Rideau Lake to Port Elmsley .....	1½
“ No. 1 to No. 2 Lock.....	1½
“ “ 2 “ “ 3 “ .....	1½
“ “ 3 “ “ 4 “ .....	1½
“ “ 4 “ “ 5 “ .....	3½
“ “ 5 “ Perth.....	3½
	10

Giving 10 miles of river and canal navigation with five locks, lifting 28 feet.

From Lock No. 1 to Lock No. 4, the banks of the river being rock and comparatively high, no difficulty would be met in reconstructing on the old line of the canal, so as to give 5 feet water on the sills of the new locks.

The mills at Locks 1, 2 and 3, drawing their water direct from such short and narrow reaches, would not be admissible on a new canal, they would, therefore, require to be bought out, if they have any rights to a constant supply.

Between Locks Nos. 4 and 5 a large quantity of low land occurs. This land was permanently drowned by the old dams at No. 4 Lock (now down).

These low lands were, at the time of the construction of the canal, mostly owned by absentees who never made any claim on the Company for compensation

The patents for most of the lots along the canal being issued twenty years before the charter was given, the deeds were given after the land was flooded by the canal.

It is, therefore, a legal question whether the Company, having thus enjoyed the easement and privileges of overflowing these lands for so many years they could now be sustained in the right to do so again.

These lands, even now the dam is down, are so low that they have not been improved, and are worthless, being in the spring impassable.

There can, therefore, be no serious objection in holding the same water on this reach as formerly, and re-drowning these lands, thus reducing the work to a minimum to get the required depth.

Between Lock No. 5 and Perth the level of this reach was kept up by a dam at Tebb's Creek to the level of 28 feet above Port Elmsley.

This level could not now be maintained, as it would, in spring floods, overflow a large amount of lands adjacent to and in the Town of Perth, which, from the improvements now made on them would be out of the question.

It is, therefore, proposed to lower the bed of the river where necessary, to obtain the required depth.

This will involve a considerable amount of rock excavation. It is, however, of a shaly character, and easily quarried. To restore the canal on the former line of the Tay, suitable to navigate boats which now run on the Rideau navigation, would involve the following works :

1. Rebuilding four stone locks of increased dimensions, not less than 126 feet in length between quoins 26 feet wide, and with 5 feet water on their sills.
2. The rebuilding of four dams and weirs.
3. Excavating a channel in rock between Locks Nos. 3 and 4.
4. Excavating a channel in rock and clay between Lock No. 4 and Perth.
5. The purchase of the rights of the mill-owners at Locks Nos. 1, 2 and 3.
6. The purchase of any legitimate claims for re-drowning the lands.

My attention, on the other hand, was drawn to an alternative route by leaving the river about a mile and a-quarter above the fourth lock, and making an artificial canal of about a mile in length to Beveridge's Bay on the Rideau Lake.

This shortens the route very considerably, and the elevation is overcome by two lift locks of 13 feet each, within half a mile of one another.

A survey was made with results that shows the route is perfectly feasible, not more costly, and, as far as navigation is concerned, unquestionably the best.

The works required on the deviation will be as follows:—

1. Dredging an entrance from the Bay to Lock No. 1 (new route), and building entrance piers.
2. The construction of two locks of 13 feet lift each, with 5 feet water on the sills.
3. The excavation of a channel 30 feet wide at bottom, with slopes of  $2\frac{1}{2}$  to 1, about 6 feet deep, for a distance of 1,400 feet to Lock No. 2 part clay and rock.
4. The excavation of a channel, average depth of 5 feet of clay and rock to the Tay River, a distance of over 4,000 feet.
5. The construction of a dam on flat rock a short distance below where the proposed deviation leaves the river, in order to raise the level to the same height as formerly.
6. From the Tay River to Perth the deepening of the channel is common to both routes.

The length of the canal and river navigation by this route will be about seven miles from Perth to the Rideau Lake, a further reduction as regards distance of nearly two miles can be made by making cuts across the worst bends in the river.

The surplus water not required for navigation will be discharged over the flat dam and furnish the power to drive the present mills below it.

The supply of water coming down the "Tay" to meet the losses from evaporation, waste and lockage has not been questioned.

The source of the Tay rises in lakes some thirty miles west of Perth, and the total area drained by the Tay is over 200 square miles.

There are, however, several private mills, one at Perth and five or six above, which have dams across the river, their mill ponds not being large. I do not think their shutting down at night or for repairs would affect the level of the canal. Nevertheless, it would be expedient that the Government should have command of the whole river, controlling, as they do now, the outlet of some of the larger lakes the Tay is fed from.

So much time being taken up in making the survey of the river, running the necessary line of levels, and getting the approximate extent of the drowned land, the work of cross-sectioning the river and other necessary details had to be postponed until this year.

The estimate must necessarily, be an approximate one, but I do not anticipate it will exceed \$150,000.

The Town of Perth is the centre of a very large mineral country, which is just commencing to be developed, and it is urged that the construction of this canal will be a great benefit to that industry, bringing back as return freight from Kingston, coal and other heavy freight, which can be brought cheaper by water than rail. A freight and passenger boat will also be put on the route when completed.

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

FRED. A. WISE,  
*Superintending Engineer.*

A. P. BRADLEY, Esq.,  
Secretary, Railways and Canals,  
Ottawa.

OTTAWA, 17th October, 1882.

SIR,—Traffic through the St. Peter's Canal for the season of 1881, terminated on the 31st December, and that of the season of 1882 commenced on the 5th May.

The following is a statement of the number and tonnage of vessels which passed through the canal during the fiscal year ended 30th June, 1882:—

Month.	No. of Vessels bound North.	Tonnage.	Amount collected for Tolls.	No. of Vessels bound South.	Tonnage.	Amount collected for Tolls.
1881.						
			\$ cts.			\$ cts.
July .....	66	3,262	75 30	52	2,861	74 29
August .....	63	2,224	74 15	43	3,212	47 25
September .....	71	2,914	44 00	59	3,220	83 00
October .....	95	2,122	65 15	78	4,231	56 25
November .....	55	2,641	61 12	48	1,840	60 13
December .....	38	2,027	35 42	21	1,841	43 55
1882.						
May .....	18	1,090	26 00	15	874	17 00
June .....	72	2,812	43 30	54	1,841	42 30
Totals .....	478	19,092	424 44	370	19,920	423 71

*Recapitulation.*

Total number of vessels.....	848
Total tonnage.....	39,012
Total collected.....	\$848 21

I have to report that the canal has been in good working order during the year. To facilitate the passage of vessels during the night, lights have been placed at the entrances and at points on the canal where most required. Mooring buoys have been placed in St. Peter's Bay and the Bras d'Or for the convenience of vessels entering or leaving the canal during rough weather. A small expenditure has been made in making a road from the lock to the haul over road.

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

HENRY F. PERLEY,  
*Engineer in charge.*

A. P. BRADLEY, Esq.,  
Secretary Department of Railways and Canals.

APPENDIX No. 7

STATEMENT of Contracts entered into between 1st July, 1881, and 30th June, 1882.

Railways and Canals.	No. of Contract.	Deed, Letter or otherwise under which contract was made.	Name of Contractor.	Date of Contract.	General Description.
Canadian Pacific Railway	89	Deed No. 6,639	John Patterson	Aug. 22, 1881	To construct station houses and freight buildings on line from Emory's Bar to Savona's Ferry, British Columbia.
do	90	do 6,472	Ferris, Paul & Milwarg	May 17, 1880	For freight of Engineers' supplies from end of track on Section 15 to Contract 42.
do	92	do 6,623	Andrew Onderdonk & Co	Feb. 22, 1882	To construct road from Emory's Bar to Port Moody.
do	93	do 6,635	do	do	To supply and erect iron bridge over the Fraser at Lytton, B.C.
Intercolonial Railway		do 6,584	James Crossen	Nov. 21, 1881	To construct and deliver at Chaudière Junction 3 first class passenger cars.
do		do 6,585	Dubs & Co	do	To construct and deliver on the track at Halifax 10 locomotive engines.
do		do 6,602	James Harris & Co	Dec. 16, 1881	do 100 gondola cars and 50 box freight cars.
do		do 6,608	Barrows & Co	Jan. 9, 1882	do do of 40,000 lbs. capacity.
do		do 6,645	Ontario Car Co	March 4, 1882	do 3 second class passenger cars.
do		do 6,657	Carrier, Laine & Co	Jan. 16, 1882	do 100 box freight cars, 33 ft. long, and 50 box freight cars, 29 ft. long.
do		do 6,808	Charles Powell	May 23, 1882	To convey freight by Packet between Point du Chêne, Shediac, and Richibucto, N.B.
do		do 6,809	Henry O'Leary	do	do do
do		do 6,859	George Fleming & Son	June 26, 1882	To construct and deliver at St. John, N.B., 3 four wheel coupled locomotive engines to burn bituminous coal.
Prince Edward Island Railway		do 6,671	Canadian Locomotive and Engine Co. (Limited)	April 21, 1882	To construct 2 locomotives.
do		do 6,810	Chignecto Marine Transport Railway Co		To construct a ship railway across the Isthmus of Chignecto to connect Baie Verte with Bay of Fundy.
Lachine Canal		do 6,637	D. & W. Caherty & Co	March 16, 1882	For extension of the Grand Trunk Railway pier, Lachine.
		do 6,567	H. J. Beemer	Nov. 3, 1881	To complete work remaining to be done on Section 27.

STATEMENT of Contracts entered into between 1st July, 1881, and 30th June, 1882.—Continued.

Railways and Canals.	Deed, Letter or otherwise under which contract was made.	Name of Contractor.	Date of Contract.	General Description.
Ottawa River Works.....	Deed No. 6,485.....	Poupoire & Charlton.....	Aug. 3, 1881	To construct submerged Dams at Grand Calumet Reef, Flat Rapids and Roucher Fenids, and to excavate Shoals, &c., on the Upper Ottawa River between Grand Calumet Falls and Oulbute Locks.
Cornwall Canal.....	do 6,488.....	James A. Gordon.....	do 10.....	To construct 5 sets of gates for the new locks at the lower end of the canal.
Grenville Canal.....	Letter 56,184.....	James Goodwin.....	do 1.....	To widen the upper entrance of the Grenville Canal.
do.....	do 92,214.....	do.....	do 2.....	(Extension of contract No. 4,612.)
do.....	do 6,629.....	Brecken & Co.....	Feb. 7, 1882	To complete works at Greece's Point and to enlarge lower entrance of Grenville Canal.
Rideau Canal.....	do 6,491.....	Z. E. Askwith.....	Aug. 8, 1881	To dredge channel through sawdust bank at foot of the locks, Ottawa.
General.....	Under 28,658, O. C. 28,851.....	St. Lawrence Steamboat Navigation Co.....	April 8 and May 9.....	To provide steamboat service in connection with the Baie des Chaleurs.



## APPENDIX No. 8.

DEPARTMENT OF RAILWAYS AND CANALS,

OTTAWA, 28th October, 1882.

SIR,—I beg to transmit herewith a statement of the claims referred to and arbitrated or reported upon, by the Official Arbitrators in connection with the Department of Railways and Canals, during the fiscal year ended 30th June, 1882:

I am, Sir,

Your obedient servant,

CHS. THIBAUT,

*Sec. to the Official Arbitrators*

A. P. BRADLEY, Esq.,  
Secretary of Railways and Canals,  
Ottawa.

STATEMENT of claims referred to and arbitrated or reported upon by the Official Arbitrators in connection with the Department of Railways and Canals, during the Fiscal Year ended 30th June, 1882.

Claimant.	Nature of Claim.	When referred.	To whom referred.	Whether for Award or Report.	Amount claimed.	Amount awarded or recommended.	Date of Award or Report.	Remarks.
William Fraser .....	Intercolonial R'y—Damages by fire from Engine.....	1881	One arbitrator.	Report.	\$ 106 00	\$ 22 56	July 12, '82	Referred <i>de novo</i>
John Gunn .....	do do .....	Aug. 11... do 11...	do do	do ...	63 25			
M. J. Anderson.....	Cornwall Canal—Land expropriated for.....	do 22...	Full Board.....	Award..	1,600 00	1,095 00	June 1, '82	
Tullys or Darbys Wharf .....	Intercolonial Railway—Land expropriated for.....	do 26...	do .....	do ...			Withdrawn.	Case settled amicably.
John Hoschke .....	Welland Canal—Damage to potatoes by flooding.....	Sept. 1...	One arbitrator.	Report..	577 50	Nil.	July 19, '82	
Rev. Matthew Smith.....	Intercolonial Railway—Destruction of a mill privilege.....	do 1...	do do	do ...	400 00	do	Sept. 5, '81	
Thomas Nixon.....	Welland Canal—Damage caused by hydraulic race .....	Oct. 22...	do do	do ...	Not stated...	100 00	Nov. 9, '81	
St. Catharines Thorold and Macadamizing Co.	Welland Canal—Damage by cutting of their property thereby lessening receipts of tolls.....	do 22...	do do	do ...		1,000 00	Aug. 7, '82	
Robert Pugsley .....	Eastern & N. A. R'y—Land taken for and damage by water.....	do 22...	do do	do ...	Not stated...	Nil.	Oct.	
Chas. D. Fillmore.....	Intercolonial Railway—Two horses killed .....	Dec. 13...	do do	do ...	200 00	200 00	July 21, '82	
Indians, Certain No. of.....	Welland Canal—Damage to land flooded by Dunnville Dam.....	do 23...	do do	do ...		8,433 14 with 40 yr's interest	Aug. 5, '82	Amounting in all to \$28,672.57.
T. T. Landry .....	Intercolonial R'y—Damage by flooding through a culvert.....	1882.	Full Board.....	do ...	384 00	150 00	May 9, '82	
David Pescod .....	Cornwall Canal—Damage by cutting his land .....	do 17...	One arbitrator.	do ...	Not stated...	Nil.	June 20, '82	
Mrs. Helena Amsden.....	Grand River W. C.—Damage to land by raising level.....	Feb. 6...	do do	do ...	do	do		

Name	Description	Date	Particulars	Amount	Balance	Remarks	Date
John Jessemer	Cornwall Canal—Damages for personal injuries and horse killed	Mar. 18	do	do	Nil.		June 22, '82
Chas. Bertrand	Intercolonial R'y—Damage to grain crop by fire	do 23	do	357 00	209 40		Aug. 2, '82
Martin Dooling	Intercolonial R'y—Damage to hay crops by flooding by the breaking of the Dyke at Moncton	do 23	do	Not stated	500 00		Mar. 30, '82
J. B. Foster	Intercolonial R'y—Value of a cask of molasses destroyed	April 13	do	352 32	79 85		May 1, '82
Thos. Giles	Intercolonial R'y—Value of two oxen killed	do 19	do	80 00	80 00		June 17, '82
John White	Carillon Canal—Damage by flooding through raising of the Dam on North River	do 21	do	480 00	300 00		Aug. 2, '82
John Morrau, alias Morin	do	do 21	do	Not stated	50 00		do 2, '82
Patrick Farrell	do	do 21	do	150 00	150 00		do
John Veitch	do	do 21	do	250 00	250 00		do
David Gauthier	do	do 21	do	Not stated	200 00		do
James N. Cogswell	Intercolonial R'y—Damage for land expropriated	do 22	do	300 00	225 00		July 7, '82
D. C. Hyslop	do Damage to land by water	May 4	do				
John E. Baldwin	do Damage by delay cargo of potatoes	do 4	do	488 83	Nil.		Aug. 5, '82
Walter Lang	do Damage for wood burned by sparks	do 4	do	31 60			
J. B. Fraser	do do	do 4	do	12 50			
Thos. Garney	C. P. R., Pemb. Br.—Land taken for	do 12	Full Board	23,950 00	65 60*	Referred back.	Oct. 14, '82
W. N. Fairbanks	do do	do 12	do	Not stated	75 60*	*With interest.	do
Robt. Morrison	do do	do 12	Report	do	3 50	Absent.	do
Geo. Merrin	do do	do 12	do	do	1 33	do	do
Jno. W. Nelson	do do	do 12	do	do	4 00	do	do
Geo. B. Spencer	do do	do 12	Award	do	800 00	do	do
Fred. T. Bradley	do do and damages	do 12	do	5,568 00	1,246 66	do	do
Duncan Campbell	do do	do 12	Report	Not stated	41 40	do	do
Saml. Sullivan	do do	do 12	Award	do		Settled.	do
Thos. B. Whitley	do do	do 12	Report	Not stated	0 86	Withdrawn.	Oct. 14, '82
Hugh Carmichael	do do	do 12	do	do	4 76	Absent.	do
Rev. G. Young and J. H. Ashdown	do do	do 12	Award	do		Settled.	do
J. B. Legimonière	do do	do 12	do	do		do	do
E. L. Drewry for Major Brown	do do	do 12	do	do		do	do
Christopher Mackintosh	do do	do 12	do	do		do	do
Duncan Arthur et al as Exrs. Est. of Dr. Bird	do do	do 12	do	do		do	do
do do	do do	do 12	Report	do	15 00	do	do
M. H. Bird (Mrs. Gunn)	do do	do 12	do	do	15 00	do	Oct. 14, '82

STATEMENT of claims referred to and arbitrated or reported upon by the Official Arbitrators, &c.—Concluded.

Claimant.	Nature of Claim.	When referred.	To whom referred.	Whether for Award or Report.	Amount claimed.	Amount awarded or recommended.	Date of Award or Report.	Remarks.
John Gunn .....	C.P. R., Pemb Br.—Land taken for.	May 12...	Full Board.....	Award.	\$ 617 60	\$ cts. 41 40	Oct. 14, '82	
W. R. Sutherland.....	do do .....	do 12...	do .....	do .....	.....	4 00	do	
E. Metcalfe.....	do do .....	do 12...	do .....	do .....	.....	3 20	do	Absent.
Napoléon Rioux.....	Intercolonial R'y—Damage by flooding and cow killed.....	do 30...	One arbitrator.	do ..	267 20	Nil.	Aug. 2, '82	
Hugh McDonald .....	Cornwall Canal—Over flowing of land.....	June 3...	do	do ..	.....	do	June 23, '82	
Fred. Hardy.....	Intercolonial R'y—Damage for two horses killed by.	July 8...	do	do ..	220 00	do	July 31, '82	
J. R. White .....	do do .....	do 10...	do	do ..	.....	.....	.....	
W. M. Richardson .....	do do .....	do 10...	do	do ..	.....	.....	.....	
Jos. Black.....	do do .....	do 11...	do	do ..	.....	.....	.....	
Thos. R. Schurman.....	P. E. I. Railway—Damage for two steers killed.....	do 11...	do	do ..	Not stated...	40 00	Aug. 3, '82	
William Matheson.....	Intercolonial R'y—Damage for horse killed.....	do 11...	do	do ..	do ...	Nil.	do	
		do 11...	do	do ..	do ...	.....	.....	

CHAS. THIBAUT,  
Secretary to the Official Arbitrators.

OTTAWA, 27th October, 1882.

## APPENDIX No. 9

## GENERAL STATEMENT SHEWING.

- 1st. Water Power and other Public Property leased on Canals and Railways, during the Fiscal Year ending 30th June, 1882.
- 2nd. Property purchased by the Department of Railways and Canals, for the Dominion Railways and Canals, and Property sold by the same Department, as not being required for said Railway and Canals during the Fiscal Year ending 30th June, 1882.

**GENERAL STATE**

**1st. Water Power and other Public Property leased on Canals**

Date of Signature.	Term of Lease.	Lessees.	Property Leased.	For what purpose used.
<i>Beauharnois Canal.</i>				
July 6, 1881	21 years, (renewable.)	Jas. McDonald.....	Cadastral lot 830. above Guard Lock, at Valleyfield.	Grist Mill.....
Jan. 11, 1882	Dur. pleasure of Government	Isidore Larocque.....	N. part of S.W. 1/4 lot No. 21, 1st Concession, Catherinestown.	Farming.....
May 23, 1882	do	Robt. Steel.....	Lot at Valleyfield, in river basin, above dam and above lock.	Coal Shed.....
do	do	Wm. Hood.....	Cadastral lot 98A Ste. Cécile, at east end of dam, on Grande Isle.	Farming.....
<i>Canadian Pacific Railway.</i>				
Dec. 23, 1881	do	Portage, Westbourne and North Western Railway Co.	The locomotive "Countess of Dufferin" and 20 platform cars.	.....
<i>Fort Frances Canal.</i>				
Aug. 1, 1881	do	S. H. Fowler.....	Land at Alberton, District of Lac La Pluie, and right to build a dam at head of canal, and a bridge across the lock.	Lumber yard.....
<i>Intercolonial Railway.</i>				
July 1, 1881	10 years.....	John Miller <i>et al.</i> .....	Lot along Railway and S. bank of Richibucto River, Kent Co., N.B.	Factory for bark extract.
Dec. 12, 1881	2 years & 2 yrs. extension.	Archd. Nelson, (to Government.)	Front shop of International Hotel, Halifax, N.S.	Ticket Office.....
July 19, 1882	On 30 days notice.	Wm. Cunard, (to Government.)	Lot at Richmond, N.S., on which signal post stands.	Signal posts, &c ...
<i>Lachine Canal.</i>				
Sept. 3, 1881	Dur. pleasure of Government	John Costigan.....	Lot on west side of St. Gabriel basins, Montreal.	Coal yard.....
do 2, 1881	do	G. H. Grier.....	do do	Lumber yard.....
do 8, 1881	do	D. H. Henderson.....	do do	do .....
Aug. 31, 1881	21 years, (renewable.)	Merchants Manufacturing Co.	Water through a 10 in. pipe to their mill, town of St. Henry.	Cotton Mill and Bleachery.
Nov. 18, 1881	Dur. pleasure of Government	Dominion Abattoir & Stock Yard Co.	Water through a 6 in. pipe to their abattoir, &c., town of St. Henry.	Abattoir, &c.....
Feb. 3, 1882	do	Vital Paradis.....	Wharf lot at inner end of St. Gabriel basin No. 2, Montreal.	Elevators and Bins for coal.
May 18, 1882	do	do .....	Wharf lot at entrance to St. Gabriel basin No. 2, Montreal.	do .....
Aug. 22, 1882	do	City of Montreal .....	Site of a floating bath in canal, N. W. side, between Wellington Street bridge and Grand Trunk Railway bridge.	Floating Bath.....
<i>Rideau Canal.</i>				
Sept. 8, 1881	21 years, (renewable.)	Geo. Merrick.....	Water lots on Nos. 21 & 22 Junction Gore of Gloucester, Hogsback.	Cotton Factory.....
Nov. 28, 1881	Pleasure of Government	Francis Abbott.....	Part of lot 40 in 1st Concession of Nepean, near Dow's swamp.	Farming.....

**MENT SHOWING :**

and Railways, during the Fiscal Year ended 30th June, 1882.

Amount of water power leased.	Area of Property leased.	Date from which lease is reckoned.	Annual rental.	Terms of Payment.			Remarks.
				Amount of each instalment.	When payable each year.	When first instalment was payable.	
			\$ cts.	\$ cts.			
4 runs...	15,800 ft.	July 1, 1881	20 00	10 00	Jan. 1 & July 1	Jan. 1, 1882	On road to Grand Isle.
.....	9 93 acres.	Aug. 20, 1881	10 00	10 00	Sept. 1.....	On delivery of lease.	Above the canal.
.....	150x30 ft.	May 1, 1882	40 00	40 00	May 1.....	do	
.....	2 acres.	April 1, 1882	4 00	4 00	April 1.....	do	
.....			{ 5 00				Per day <sup>f</sup> or locomotive do for the cars.
.....			{ 0 50				
.....	{ 120x150 } { 40x350 }	May 1, 1881	20 00	20 00	May 1.....	On delivery of lease.	
.....	3.55 acres.	July 1, 1881	3 55	3 55	July 1.....	July 1, 1881	At \$1 per acre per year.
.....		Dec 12, 1881	275 00	68 75	Quarterly.....		
.....			1 00		July 1.....		
.....	3.00 acres.	Date of lease	170 00	170 00	May 1.....	May 1, 1881	} These leases cancel No. 2,468.—Notices to quit given 19th May, 1882.
.....	6½ do	do	230 00	230 00	do .....	do	
.....	5 do	do	200 00	200 00	Jan. 1.....	do	
10 in. pipe.		Aug. 6, 1881	200 00	100 00	Jan. 1 & July 1	Jan. 1, 1883	
6 in. pipe		Sept. 7, 1881	25 00	25 00	July 1.....	July 1, 1882	
.....		Jan. 1, 1882	180 00	180 00	Jan. 1.....	Jan. 1, 1883	Cancelled by following lease; site changed.
.....	300x36 ft.	do	180 00	180 00	do .....	do	
.....	120x25 ft.	July 1, 1882	1 00	1 00	July 1.....	On delivery of lease.	
All the surplus water.	4 acres.	Aug. 13, 1881	50 00	25 00	Jan. 1 & July 1	Jan. 1, 1881	4 months more to build factory by O. C. of 7th March, 1882.
.....	1 do	Nov. 1, 1881	3 00	3 00	Nov. 1.....	Nov. 1, 1881	This cancels lease 5,435 granted to J. Burgess.

## GENERAL STATEMENT showing: 1st. Water Power and other

Date of Signature.	Term of Lease.	Lessees.	Property leased.	For what purpose used.
May 17, 1882	21 years, (renewable.)	H. J. B. Williams.....	<i>Trent River.</i> Water power for his mill on lot No. 27, in 18th Con. township of Smith, at Buckhorn Rapids, near Hall's bridge.	Grist Mill.... ..
Sept 21, 1881	1 year.....	John Thompson (to Government.)	<i>Welland Canal.</i> Buildings on lot 29 in 2nd Con. Humberstone, near section 34, and land.	Storing dualine....
Aug. 8, 1881	21 years, (renewable.)	James Wilson.....	Surplus water through flume to be built by lessee, from level 16 to level 15, Merritton.	Foundry and Machine shop.
July 1, 1881	do	Gordon & Mackay....	Surplus water near locks 12, 13, 14, Merritton, and part of lot 12 in 9th Concession, Grantham.	Cotton Factory. ..
Dec. 28, 1881	Dur. pleasure of Government	Geo. Wallace.....	Lot south of Canal Street, east, near Tamarack St., Dunnville.	Tannery.....
July 11, 1882	21 years, (renewable.)	King & Dolan (or Merritton Cotton Mills.)	Lots 11, 12, in 10th Con., Grantham, Merritton.	Cotton Mills, &c...
May 27, 1882	Dur. pleasure of Government	F. O. White.....	Part of lot 247, township of Thorold, in town of Welland, east of canal.	Pasturage.....
June 5, 1882	do	John F. Rees. ....	Part of lot 11, in 7th Concession, Grantham.	do .....



Public Property leased on Canals and Railways, etc.—*Concluded.*

Amount of water power leased.	Area of Property leased.	Date from which lease is reckoned.	Annual rental.	Terms of Payment.			Remarks.
				Amount of each instalment.	When payable each year.	When first instalment was payable.	
3 runs or 30 horse power.		Oct. 1, 1880	\$ cts. 120 00	60 00	Jan. 1 & July 1	July 1, 1882	
.....	2 acres.	May 1, 1881	75 00	75 00	May 1.....	May 1, 1881	
25 horse power.	.....	July 12, 1881	{ 60 00 5 00	For first 10 h.p each further h.p.	} Jan. 1 & Jul. 1	Jan. 1, 1882	
All the surplus water. To be run by steam. 200 horse power.	7 acres.	do 1, 1881	240 00				120 00
.....	.....	Oct. 25, 1881	20 00	20 00	Nov. 1.....	Nov. 1, 1881	
.....	3 acres.	April 1, 1882	400 00	200 00	Jan. 1 & July 1	July 1, 1882	Cancels lease 2,499 of 27th Dec., 1853, to J. Brown.
.....	4 do	Mar. 6, 1881	20 00	20 00	April 1.....	April 1, 1882	
.....	16½ do	do 1, 1881	50 25	50 25	March 1.....	Mar. 1, 1882	

2nd. PROPERTY purchased by the Department of Railways and Canals, and Property sold by the same Department as not being required for the Railways and Canals, during the fiscal year ending 30th June, 1882.

Date of signature.	Vendors.	Purchasers.	Property Purchased or Sold.	For what purpose used.	Area of land.	Price of sale.	Remarks.
Oct. 17, 1881	Hugh McDonald.....	Her Majesty.	Lot No. 5, in Town of Cornwall, on Potash Point	Cornwall Canal.....	A. R. P.	\$ cts.	
Oct. 27, 1881	D. W. Macdonell <i>et al.</i>	do	do 3 and 4, do	do	4 1 15	1,954 68	
Dec. 16, 1881	Matthew Orr.....	do	Rule absolute of Court of Queen's Bench, to pay him for lot 2, on Potash Point.....	do	11 2 18	7,736 88	
do	Executors of Wm. Mattice.....	do	Rule absolute of Court of Queen's Bench, to pay him for lot 7, on Potash Point.....	do	6 3 11	491 63	
Dec. 19, 1881	E. H. Parent.....	do	<i>Carillon and Grenville Canals.</i>		1 1 36	103 00	
Mar. 21, 1879	James Weldon.....	do	A brick house built by him on Government land, lot 8, 1st range, Grenville.....	Grenville Canal.....	26x36 feet.	4,000 00	
Nov. 27, 1878	T. & W. Owens <i>et al.</i>	do	A lot of land in Township of Grenville.....	do	0-3614 acre.	350 00	
June 17, 1878	do	do	do at Stonefield.....	do	2-403 do	240 30	
do	do	do	do do Lockhouse lot given in exchange for this one.....	do	2-439 do	243 90	
Mar. 4, 1882	Allan Cameron <i>et al.</i>	do	Lot No. 9 in 1st Concession, Chatham.....	do	3-633 do	300 00	
do	D. McMillan <i>et al.</i> .....	do	do 6 and 7, do	do	0-0463 do	4 63	
Nov. 19, 1881	J. C. Pierce & Son.....	do	<i>Chambly Canal.</i>	Chambly Canal.....	.....	1,000 00	
July 25, 1883	Joseph Malo.....	do	A building near Partition St., St. John's, P. Q., on Canal land.....	do	.....	1,450 00	For Lock Master.
Jan. 4, 1882	Her Majesty.....	John Smith.	House and official lot 130, St. Joseph de Chambly.....	do	3,780 feet fr.		
			<i>Intercolonial Railway.</i>				
			Lot on corner of Albion and Clarence Streets, St. John, N. B.....	Intercolonial R'y.....			Not required for
							Free.

Date	Parties	Her Majesty	Description of Land	Area	Value	Notes
Feb. 12, 1881	Wm. Morice & Sir Albert J. Smith	Her Majesty	Land at Sackville, for siding from Intercolonial Railway, from J. D. Dixon's lot to a private wharf on Tantamr River	0.82 acre	302 00	Railway. This is granted free, as compensation for earth taken from a bill on his land, for ballast, &c.
April 28, 1882	Government of Nova Scotia	Government of Canada	Water lots in Halifax Harbour, N.S., in front of new deep water terminus to project wharves	16 1/2 acres	Free.	
June 23, 1881	Estate of Louis Bernier	Her Majesty	<i>Lachine Canal.</i> Cadastral lot 3719, Côte St. Paul	14,106 feet	1,410 00	
Dec. 17, 1878	City of Montreal	do	{ 2287, Town St. Henry, 2512, Village St. Gabriel }	3,246 do	313 96	
Feb. 14, 1877	Montreal Transportation Co.	do	do	do	1,768 12	
Feb. 26, 1877	do	do	2444, Town St. Henry	do	5,890 50	
April 11, 1877	J. L. Thompson et ux.	do	Improvements on lot 2509, Town of St. Henry	do	25,260 00	Lease No. 3277, surrendered.
do	F. Bleguiet dit Jarry et ux.	do	Cadastral lots 3716 and 3717, Village of Côte St. Paul	do	4,500 00	
Jan. 9, 1877	Mrs. J. B. Auger	do	Cadastral lot 1009, Parish of Lachine	do	524 80	
Jan. 20, 1877	Auger Shipping Co.	do	do	do	632 08	
Dec. 6, 1877	O. W. Stanton	do	2443, Town of St. Henry	do	11,645 10	
Nov. 27, 1877	Mosely & Ricker	do	Ratifying deed of 2443, Town of St. Henry	do	100 00	Interest.
Feb. 19, 1877	Montreal Rolling Mills Co.	do	Cadastral lot 2308, Town of St. Henry	do	10,468 50	
Jan. 5, 1877	W. B. Davidson et ux.	do	do	do	1,363 50	
Jan. 2, 1877	H. Hadley, tutor to D. J. Hadley	do	2444, do 3609, Village of Côte St. Paul	do	1,889 50	
Feb. 27, 1877	P. Vallière et ux.	do	do	do	9,744 10	
April 18, 1877	P. Donovan et ux.	do	1012, Parish of Lachine	do	1,744 29	
Feb. 13, 1877	H. Brownrig et ux.	do	do	do	724 76	
Feb. 17, 1877	P. Ryan et ux.	do	1413, St. Ann's Ward, Montreal	do	2,212 10	
Feb. 21, 1877	J. H. Joseph	do	2513, sub-lot 4, Village St. Gabriel	do	1,435 85	
Jan. 23, 1877	H. Hogan	do	2513, do 2 and 3	do	2,449 20	
Aug. 30, 1877	Wm. Brennan et ux.	do	1411, St. Ann's Ward, Montreal	do	5,808 50	
Dec. 7, 1876	J. Lemieux, tutor to M. A. Lemieux	do	2443, Town St. Henry	do	2,101 28	
Oct. 15, 1877	J. S. Evans	do	1412, St. Ann's Ward, Montreal	do	9,607 40	
Jan. 12, 1877	T. Gariépy and his children	do	A lot in Parish of Lachine	do	3,500 00	
June 18, 1877	B. Furniss & Jetté et al.	do	do	do	1,822 50	
Dec. 5, 1876	Thos. Henriéhon	do	do	do	16,410 00	Interest.
		do	Cadastral lot 3413, sub-lots 3, 4, 5, 6, Town of St. Henry	do	35,170 00	
		do	3615, Village Côte St. Paul	do	7,296 00	

2nd. PROPERTY purchased or sold by the Department of Railways and Canals, &c.—Continued.

Date of Signature.	Vendors.	Purchasers.	Property Purchased or Sold.	For what purpose used.	Area of land.	Price of sale.	Remarks.
<i>Lachine Canal—Continued.</i>							
Mar. 26, 1877	John Jackson.	Her Majesty.	Cadastral lot 1003, Parish of Lachine.....	Lachine Canal.....	37,395 <sup>100</sup> sq	2,983 97	
Oct. 5, 1877	C. McArthur <i>et ux.</i>	do	1006, do	do	39,649 do	1,239 47	Interest.
April 26, 1878	P. A. Fauteux <i>et al.</i>	do	3928A, Village Côte St. Paul.....	do	1,600 do	240 00	
Jan. 5, 1877	A. Aubertin.....	do	3614, do	do	7,899 do	632 94	
April 26, 1878	L. Fauteux <i>et ux.</i>	do	3928A, do	do	{ 26,238 do	5,000 00	Interest.
					{ 4,025 do	550 00	
Dec. 6, 1877	Seminary of Montreal	do	3410, 3411, do	do	62,883 do	9,500 00	Interest.
June 11, 1878	Wm. Evans <i>et ux., et al.</i>	do	3607, do	do	118,194 do	3,767 00	Deed of land.
June 7, 1877	Executors of late Wm. Dow	do	1022, Parish of Lachine.....	do	48,430 do	1,883 50	Receipt from R. & T. W. Evans. Damages.
April 12, 1877	V. Jarry <i>dit</i> Henri- chon <i>et al.</i>	do	1010 do	do	22,684 do	100 00	Deed of land.
Mar. 11, 1878	Meisic Iron Co., per Wm. Rhind.....	do	2511, 2512, Village St. Gabriel...	do	11,039 do	2,322 00	Deed of land.
Dec. 31, 1877	C. Gareau <i>et ux.</i>	do	3720, 3721, Village Côte St. Paul	do	608 do	90 00	Receipt for tenant.
Feb. 11, 1878	L. Dupuy, assignee of J. McNaughton <i>et al.</i>	do	968, Parish of Lachine.....	do	53,556 do	100 00	Arbitration costs.
Mar. 7, 1878	M. & A. Latour, per D. Belanger, curator.	do	1021, do	do	{ 37,576 } { 24,246 }	1,834 52	Land.
Jan. 9, 1877	C. S. Watson, execu- tors of the wife of.	do	2176, 2177, Town of St. Henry.....	do	3,517 ft.	7 00	Receipt for fencing.
Feb. 2, 1878	M. Thery & ux.	do	1017, 1020, Parish of Lachine.....	do	76,467	50 00	Land.
Mar. 24, 1877	J. B. Désève & al.	do	3912, 3601, Village Côte St. Paul	do	{ 23,845 }	3,913 45	Land.
do 20, 1877	H. Pigeon & ux.	do	1007, Parish of Lachine.....	do	37,094	60 80	Fences.
						4,040 18	
						3,359 00	
						1,336 46	
						4,629 00	
						4,055 00	
						1,258 32	For land.
						50 00	To remove a well.

Sept. 17, 1876	John McDougall	Buildings and fixtures on lots 1067, 1069, St. Ann's Ward, Montreal.	do	do	14,825	24,387 37	For buildings and fixtures.
Feb. 15, 1878	D. & L. Turcot & mother	Cadastral lot 1016, Parish of Lachine.	do	do	35,240	2,000 00	Deducted for materials retained by him.—Part of lease 1976 is cancelled.
Mar. 20, 1877	Sir A. T. Galt	do 3913, 3914, 3915, 3916, a Street, 3927, 3928, Village Côte St. Paul	do	do	32,100	3,062 70	Land.
April 17, 1877	R. Allen & al.	do 2885, 2886, Town of St. Henry	do	do	6,255	276 24	Interest receipts—closed.
Aug. 17, 1876	Morland, Watson & Co., and Montreal Saw Works	do 1068, St. Joseph Suburbs, Montreal	do	do	6,400	21,993 15	With buildings, wharfage, Rume, &c.—Part of lease 1976 is cancelled.
Feb. 8, 1877	The Mechanics Bank.	do subdv. 15 & 16 of 2513, Village St. Gabriel	do	do	10,099	3,282 17	
Dec. 17, 1877	Heirs J. Frothingham	do 3409, Village Côte St. Paul	do	do	39,894	5,385 69	
Feb. 7, 1877	Rooney & Dolan	do subdv. 1, 8, 9, 10, 11, 12, 13, 14, 17, 18, 19, of 2513, Village St. Gabriel	do	do	3,026 38,066 9,732 4,747	18,179 26	
do 17, 1877	J. B. Vincent & al.	do 1010, Parish of Lachine.	do	do	19,810	646 30	
Sept. 27, 1876	P. Kennedy	do 1197, St. Ann's Ward, Montreal	do	do	6,170	5,018 80	
Nov. 29, 1876	Mrs. A. Bissett	A lot in Town of Lachine.	do	do	23,820	7,750 00	Land.
Aug 16, 1876	Ant. Danis & vz.	Cadastral lot 1196, St. Ann's Ward, Montreal.	do	do	2,916	266 67	Rent of buildings.
May 7, 1877	C. Esplin & vz.	do A lot in Parish of Lachine.	do	do	78,376	5,000 00	
Mar. 19, 1877	Miss U. C. Cameron	do Subdv. 5, 6, 7, of 2513, Village St. Gabriel.	do	do	14,830	2,234 00	
Sept. 2, 1876	Alfred Trudel & vz.	do Part of lot 1194, St. Ann's Ward, Montreal	do	do	2,804	4,852 25	Ratification of this deed, April 11, 77.
Oct. 26, 1876	Mrs. John Connors	do A lot in Town of Lachine	do	do	8,760	4,500 00	
do 19, 1876	T. McLaughlin & vz.	do do	do	do	2,722	5,440 00	
Mar. 29, 1877	J. Chalifoux & al.	do Off lot No. 1193, St. Ann's Ward, Montreal	do	do	14,900	694 00	
Jan. 14, 1878	J. K. Ward & vz.	do 2287, 2287A, 2307, Town of St. Henry	do	do	54,533	4,140 00	
Nov. 16, 1876	A. Robertson	do 2171, 2170, 2167, 2166, 2163, 2162, 2189, 2158, 2155, 2154, Town of St. Henry	do	do	805 303	26,135 00	
Feb. 18, 1878	D. J. Cuvig, assignee of insolvent estate of Wm. M. Molson.	do 2443, Town of St. Henry.	do	do	19,618	387 80	
Dec. 20, 1877	E. Hudon, fils.	do 2 streets in Village of Côte St. Paul.	do	do	2,725 1,995	10,789 00	
Sept. 8, 1876	F. L. Bêque & al.	do Subdv. 4, 5, 6, 7 of 3413 in Town of St. Henry	do	do	45,438	432 00	Enclosed, Judgment of Court.
Oct. 12, 1876	E. Z. Paradis & al.	do do 10 to 22 of 3413	do	do	137,684	6,815 17	Enclosed, Evans' discharge.
do			do	do		20,652 60	

2nd. PROPERTY purchased or sold by Department of Railways and Canals, &c.—Continued.

Date of signature.	Vendors.	Purchasers	Property Purchased or Sold.	For what purpose used.	Area of land.	Price of sale.	Remarks.
Sept. 6, 1876	Desmarreau & Béique & al.....	Her Majesty.	<i>Lachine Canal—Continued.</i> Subdiv. 1 to 7 of 3415, in Town of St. Henry { 1 to 6 of 1913 } { 9 & 10 of 3412 } { 1, 2, 7, of 3413 }	Lachine Canal.....	53,821 { 28,368 } { 19,746 } { 20,720 } 10,890	\$ 8,073 15	
Oct. 14, 1876	V. Hudson & al.....	do	do	do		16,033 44	Two discharges enclosed.
Nov. 27, 1876	P. Carreau & al.....	do	do	do		2,178 00	One discharge enclosed.
May 16, 1877	E. Z. Paradis et al.....	do	Sub-div. { 13 of 1913 } Town of St. Henry..... { 2 of 3412 }	do	11,186	2,572 78	
Dec. 30, 1876	L. A. Jetté et al. ....	do	do { 3 of 3412 } do	do		2,325 99	
April 11, 1877	do	do	do { 7 to 12 of 1913 } do	do	54,360	12,502 80	
Nov. 24, 1877	Montreal Land Co. et al.....	do	do 8 of 3413 do	do	10,825	{ 2,165 00 } 384 58	Land. Interest.
do	do	do	do 9 of 3413 do	do	10,875	{ 2,175 00 }	
Dec. 27, 1876	F. L. Beique et al.....	do	Buildings and fences on sub-div. 1 to 7 of 3415, Town of St. Henry.....	do		1,828 78	Described in deed of 6th Sept., 1876, from Desmarreau & Beique.
Feb. 7, 1881	Ed. Wilgress and his children.....	do	Cadastral lot 736, at Town of Lachine.....	do	80,300	{ 8,180 00 } 2,298 58	
Feb. 8, 1881	F. Bléguier dit Jarry et ux.....	do	do 3616, Village Côte St. Paul.....	do	16,772	{ 2,981 76 } .....	Land. Interest.
Feb. 10, 1881	Peter Jackson et al....	do	do 3617, do	do	27,289	{ 3,710 80 } .....	In all.
						{ 2,320 33 } 4,035 10	Land. Interest.
						6,922 75	In all.

Date	Party	Description	Location	Area	Remarks	Value
Nov. 19, 1880	Rev. D. F. McDonald	Part of lot or township 45, on Souris River Road	Souris Extension ...	0.33 ac.	200 56	Sale.
do	A. Paquet et al.	do	do	do	1 00	Release of dower.
Nov. 27, 1881	M. Paquet et ux.	do	do	1.16 ac.	984 49	Sale.
do	Gardians of estate of Wm. Dettrick.	do	do	do	1 00	Release of judgm't.
Feb. 8, 1881	Flora McDonald et al	do	do	0.35 ac.	388 08	Sale.
Mar. 8, 1880	John Branigan et ux.	Quarry lot No. 35 in 4th C. Kingston.	Rideau Canal. ....	1.00 ac.	300 00	
April 3, 1882	Order in Council.	Retransfers them, lands at Rideauville, South of Canal.	do	do	do	Not required for Canal.
<i>Canadian Pacific Railway.</i>						
Mar. 5, 1881	J. E. Cooper.	NE 1/4 sect. 32, Tp. 1 R 3 E, County of Provencher	Pembina Branch ...	1.41 ac.	1 41	
April 25, 1881	John Schultz et ux.	Lot 91, St. Paul, County of Selkirk.	do	1.02	50 20	
April 15, 1881	J. H. Gunn.	117, 116, do	do	{ 1.51 } { 1.53 }	12 16	
Mar. 31, 1881	Bishop of Rupert's Land.	104, do	do	0.75	3 00	
do	do	90, do	do	1.00	40 00	
Mar. 14, 1881	Jacob McNab.	47, St. John, do	do	0.80	4 00	
Mar. 26, 1881	A. G. B. Bannatyne.	(Park) O. and N. St. Clement, County of Lisgar	do	{ 0.78 } { 0.76 }	{ 10 02 } { 20 20 }	
Mar. 11, 1881	Donald Gunn.	58, Kildonan, County of Selkirk.	do	2.06	26 46	
May 1881	Robt. McBeth.	84, St. Paul, do	do	5 feet	25 70	For off-take drain.
Jan. 7, 1882	Alex. Logan.	65 & 64, St. Boniface, do	do	{ 0.82 } ac.	8 20	
Mar. 8, 1882	B. W. Hughes.	6, Block 54, Emerson, in Ste. Agathe, County of Manchester	do	do	50 00	
Feb. 20, 1882	E. B. Tatchell & A. R. Irwin.	44, Ste. Agathe, do	do	do	39 45	
<i>St. Ann's Canal.</i>						
May 6, 1881	D. Lebeau.	Mortgage and transfer by him to the "Credit Foncier Franco-Canadien," Montreal, of \$5,000 due him by the Government for part of lot 112, at St. Ann, taken for canal by the Government and signification thereof to Her Majesty	Ste. Anne Canal.	do	do	

2nd. PROPERTY purchased or sold by Department of Railways and Canals, &c.—Continued.

Date of signature.	Vendors.	Purchasers.	Property Purchased or Sold.	For what purpose used.	Area of land.	Price of Sale.	Remarks.
			<i>Ste. Ann's Canal</i> —Continued.			\$ cts.	
Jan. 19, 1882	T. Raymond.....	Her Majesty.	Receipt, damages as tenant of a Shoemaker's house, on lot 105.....	Ste. Ann's Canal...		75 00	
do	P. or H. Dunbarry...	do	Receipt damages as tenant of a Butcher's shop, on lot 106.....	do		6 37	
Jan. 24, 1882	M. Guérard.....	do	Receipt damages as tenant of a Blacksmith's shop, on lot 104.....	do		75 00	
Oct. 26, 1881	Rev. G. L. Chevrefils & <i>al.</i> .....	do	Deed of lot No. 109, official plan, Ste. Anne du Bout de l'Isle.	do		100 00	
						6 75	
						1,000 00	Principal.
						75 00	Interest.
						75 00	Excavation, &c.
Nov. 16, 1881	J. O. Chevrefils.....	do	do 110 do do	do		1,000 00	
July 22, 1881	L. Pelchat & <i>uz.</i> .....	do	do 111 do do	do		75 00	
June 9, 1882	J. O. Chevrefils. ....	do	do 104 do do	do		6,500 00	
do	G. C. Tunstall & <i>uz.</i>	do	do 113 to 120 do do	do		385 34	
June 27, 1882	A. St. Denis, jun. & <i>uz.</i>	do	do 145 do do	do		4,063 00	
July 7, 1882	do	do	do 146 do do	do		375 05	
June 27, 1882	Curatrix to her husband P. Lamarche.	do	do 146a do do	do		4,350 00	
July 7, 1882	T. de Repentigny & <i>uz.</i>	do	do 147 do do	do		453 13	
May 17, 1882	J. Tremblay & <i>uz.</i> ....	do	do 148 do do	do		250 00	
July 8, 1882	do	do	Hypothecary Guarantee on lot No. 148, official plan, Ste. Anne du Bout de l'Isle.....	do		27 50	
						1,000 00	
						110 00	
						75 00	
						8 25	Right of way.
						1,250 00	
						140 50	
						5,000 00	
						570 38	
							Against claims of J. E. Petit dit Lamarche.



Date	Parties	Description	Galops or Ironquois	Acres	Value	Remarks
do 20, 1881	Wm. H. Brouse	Williamsburg Canals. Release, damages by flood to lot 29, 1st Con. Matilda	do	3.00	75 00	Taken for canal. Flooded.
do 2, 1881	N. A. Tenbroeck & ux	Welland Canal.	Welland Canal	4.00	2,360 00	Mortgage of 1st May, 1865. Taken for canal. Flooded.
do 2, 1881	do	Lots 22 and 23 in 3rd Concession, Grantham	do	0.07	40 00	Taken for canal. Flooded.
June 30, 1881	Trust & Loan Co. of Canada	Release, damages to do	do	4.22	2,500 00	Taken for canal. Damages.
July 2, 1881	Geo. May & ux	Release of Mortgage \$800, on do	do	0.29	1,800 00	To change line of Welland Railway.
do 2, 1881	do	Lot 22 in 2nd Concession, Grantham	do	2.61	30 00	
Sept 9, 1881	Geo. Walker & ux	Release, damages to do	do	0.84	25 00	
do 21, 1881	Wm. Mellanly	Lot 15, Township of Thorold	do	1.86	791 00	
do 21, 1881	do	Lot 27, in 2nd Concession, Humberstone	do	0.24		
do 9, 1881	Estate Wm. H. Merritt	Release, damages to do	do	0.04		
do 9, 1881	do	Lot 119, Thorold (Allanburg Village lots 256 to 265, and 267 to 274, and 276 to 285)	do	0.92		
Nov. 3, 1881	Wm. Wilson & ux	Lot 15, Thorold	do	0.83		
Dec. 6, 1881	Jos. Simpson & ux	Lot 21, in 3rd Con., Waiafleet	do			
Feb. 21, 1882	T. & P. Nihan & wives	Lot 17, in 4th do Grantham	do			
Mar. 8, 1882	Mary R. McIcrae, administratrix of Estate John McIcrae	Lot B, east of canal, Port Colborne, part of 27 in 2nd Con., Humberstone	do	0.03	5,364 61	
May 2, 1882	Geo. M. Clarke & al.	Lot at Petersburgh, part of 28, 2nd Con., Humberstone	do	5.00	3,990 00	
April 19, 1882	Eliz. Hannaford	Quit claim deed, &c. do	do		50 00	Right of way.
Mar. 17, 1882	John Simes & ux	do do do	do		5 00	do
Feb. 21, 1882	John Landgraf & ux	do do do	do		25 00	do
Aug. 7, 1882	E. McArdle	Lots 23 in 2nd Con. and 23 in 3rd Con., Grantham, and 1 & 2 in 1st Con., and broken front of Louth	do	3.00	2,575 00	
do 7, 1882	do	Release, damages do	do			
May 16, 1882	Joseph Upper	Order of Court of Chancery, re-lot 96, Thorold	do	1.44	2,000 00	Principal.
					60 00	Interest.

H. A. FISSIAULT.

OTTAWA, 4th November, 1882.

## APPENDIX No. 10.

LIST of Contracts entered into in connection with the Canadian Pacific Railway.

No. of contract.	Names of Contractors.	No. of contract.	Names of Contractors.
1	Sifton, Glass & Co.	23	Sifton & Ward.
2	Richard Fuller.	24	Oliver, Davidson & Co.
3	F. J. Barnard.	25	Purcell & Ryan.
4	Oliver, Davidson & Co.	26	James Isbester.
5	Joseph Whitehead.	27	Merchants Lake and River Steamship Co.
5a	Joseph Whitehead.	28	Red River Transportation Co.
6	Guest & Co.	29	Cooper, Fairman & Co.
7	Ebbw Vale Steel, Iron and Coal Co.	30	Robb & Co.
8	Mersey Steel and Iron Co.	31	Patent Bolt and Nut Co.
9	West Cumberland Iron and Steel Co.	32	Cooper, Fairman & Co.
10	West Cumberland Iron and Steel Co.	32a	LeMay & Blair.
11	Naylor, Benzon & Co.	33	Kavanagh, Murphy & Upper.
12	Hon. A. B. Foster.	34	North West Transportation Co.
13	{ Sifton & Ward.	35	Cooper, Fairman & Co.
	{ Purcell & Ryan.	36	William Robinson.
14	{ Sifton & Ward.	37	Henev, Charlebois & Flood.
	{ Jos. Whitehead (completing contract No. 14).	38	Edmond Ingalls.
15	Joseph Whitehead.	39	John Irving.
16	Canada Central Railway Co.	40	Gouin, Murphy & Upper.
17	Anderson, Anderson & Co.	41	Purcell & Co.
18	Red River Transportation Co.	42	Manning, Macdonald, McLaren & Co.
19	Moses Chevette.	43	Joseph Upper & Co.
20	Merchants Lake and River Steamship Co.	44	West Cumberland Iron and Steel Co.
21	Patrick Kenny.	45	Barrow Hematite Steel Co.
22	Holcomb & Stewart.	46	Ebbw Vale Steel, Iron and Coal Co.

LIST of Contracts, &c.—*Continued.*

No. of contract.	Names of Contractors.	No. of contract.	Names of Contractors.
47	Patent Bolt and Nut Co.	71	Toronto Bridge Co.
48	John Ryan.	72	Ontario Car Co.
49	Richard Dickson.	73	Toronto Bridge Co.
50	Miller Brothers & Mitchell.	74	Wm. Gooderham, Jr.
51	Dominion Bolt Co.	75	Pillow, Hersey & Co.
52	North-West Transportation Co.	76	Cooper, Fairman & Co.
53	Barrow Hematite Steel Co.	77	Stubbs & Co.
54	Guest & Co.	78	Skead & Haycock.
55	West Cumberland Iron and Steel Co.	79	The Truro Patent Frog Co.
56	The Kellogg Bridge Co.	80	James Crossen.
57	The Truro Patent Frog Co.	81	Dunlop & Rannie.
58	W. Hazelhurst.	82	Ontario Car Co.
59	Whitehead, Ruttan & Ryan.	83	James Crossen.
60	D. O. Mills.	84	Ontario Car Co.
61	D. O. Mills.	85	Nobles & Follis.
62	D. O. Mills.	86	Fairbanks, Morse & Co.
63	D. O. Mills.	87	James Crossen.
64	Ryan, Whitehead & Ruttan.	88	Walter Oliver.
65	James Crossen.	89	J. Patterson.
66	Bowie & McNaughton.	90	Ferris, Paul & Milwar.
67	Moncton Car Co.	91	Canadian Pacific Railway Company.
68	Ontario Car Co.	92	Andrew Onderdonk.
69	North-West Transportation Co.	93	Andrew Onderdonk.
70	North-West Transportation Co.		

APPENDIX No. II.

TABLE of distances of stations between the Cities of Ottawa and Kingston:—

No. of station.	Name of Station.	Distances from Ottawa.	Locks.		Dams.			Length of Artificial Canal at each Station, in miles.	
			No.	Lift at Low Water.	No.	Length.	Height.		
									Miles.
1	Ottawa .....	0	8	82	0	3	230 1,320 1,616	18 33 14	4.00
2	Hartwell's .....	4½	2	22	0	.....	100	28	
3	Hogsback.....	5½	2	13	6	1	320	60	
4	Black Rapids.....	9½	1	10	0	1	300	12	0.13
5	Long Island.....	14¾	3	27	0	3	850	68	0.13
6	Burritt's.....	40¾	1	10	6	1	240	14	1.50
7	Nicholson.....	43¾	2	15	2	1	500	9	0.50
8	Clowes.....	44½	1	10	6	1	481	16	0.05
9	Merrickville.....	46¾	3	25	0	1	150	6	0.33
10	Maitland.....	55	1	4	9	1	270	8	0.13
11	Edmunds.....	59½	1	10	10	1	343	8	0.06
12	Old Slys.....	60½	2	15	6	1	250	20	0.25
13	Smith's Falls.....	61½	4	33	9	2	600	24	0.13
14	First Rapids or Poonamalie.....	64	1	7	9	1	260	5	1.25
15	Narrows.....	83½	1	4	0	1	600	9	0.06
	Total rise at low water.....			292	3				
				Fall.					
16	Isthmus.....	87½	1	4	0	.....	.....	.....	1.25
17	Chaffey's.....	92	1	12	6	.....	.....	.....	0.13
18	Davis.....	94¼	1	9	0	1	300	15	0.06
19	Jones' Falls.....	97½	4	60	0	1	300	60	0.25
20	Brewer's Upper Mills.....	108½	2	19	0	1	200	20	1.75
21	do Lower Mills.....	110	1	14	2	1	200	12	4.25
22	Kingston Mills.....	120¼	4	46	8	1	6,042	14	0.25
23	Kingston.....	126¼	.....	.....	.....	.....	.....	.....	.....
	Total fall at low water.....			165	4				
	Total.....		47	.....	.....	24	15,472	.....	16.46

## APPENDIX No. 12

TABLE showing the dates of the closing of the Canals in the Autumn of 1881 and of the opening in the Spring of 1882.

Canals.	Closing.	Opening.
Lachine Canal .....	December 1, 1881.	April 25, 1882.
Beauharnois Canal.....	November 28,	do 25,
Cornwall Canal .....	December 10,	do 25,
Williamsburg Canals.....	do 10,	do 24,
Welland Canal—		
New Canal.....		do 20,
Old Canal.....	December 15,	do 20,
Burlington Bay Canal.....	do 19,	do 20,
St. Anne's Lock and Dam.....	November 20,	do 11,
Carillon Canal.....	do 26,	do 28,
Grenville Canal.....	do 26,	May 1,
Culbute Lock and Dam .....		
Chute à Blondeau.....	November 26,	May 1,
Rideau { Kingston Mills .....	do 30,	do 1,
{ Ottawa.....	do 23,	do 1,
St. Ours' Lock.....	do 25,	April 13,
Chambly Canal.....	do 28,	May 2,
Erie Canal (New York).....	December 8,	April 11,
St. Peter's Canal (Cape Breton) .....	do 31,	May 5,
Trent Canal Works.....	November 25,	March 15,

## APPENDIX No. 13.

## ST. LAWRENCE NAVIGATION.—TABLE OF DISTANCES.—A.

FROM STRAITS OF BELLE-ILE TO DULUTH, AT HEAD OF LAKE SUPERIOR, BY WATER.

From	To	Sections of Navigation.	Statute Miles.	
			Inter-mediate.	Total to Straits of Belle-Ile.
Straits of Belle-Ile.....	Cape Whittle.....	Gulf of St. Lawrence.....	240	240
Cape Whittle.....	West Light, Anticosti.....	do do.....	201	441
West Light, Anticosti.....	Father Point.....	River St. Lawrence.....	202	643
Father Point.....	Rimouski.....	do.....	6	649
Rimouski.....	Bic.....	do.....	12	661
Bic.....	Isle Verte.....	do.....	39	700
Isle Verte (opp. Saguenay).....	Quebec.....	do.....	126	826
Quebec.....	Three Rivers.....	do to Tide water.....	74	900
Three Rivers.....	Montreal.....	do.....	86	986
Montreal.....	Lachine.....	Lachine Canal.....	8½	994½
Lachine.....	Beauharnois.....	Lake St. Louis.....	15½	1,009½
Beauharnois.....	Ste. Cécile.....	Beauharnois Canal.....	11½	1,021
Ste. Cécile.....	Cornwall.....	Lake St. Francis.....	32½	1,053½
Cornwall.....	Dickinson's Landing.....	Cornwall Canal.....	11½	1,065½
Dickinson's Landing.....	Farran's Point.....	River St. Lawrence.....	5	1,070½
Farran's Point.....	Upper end of Croyle's Island.....	Farran's Point Canal.....	¾	1,071
Upper end Croyle's Island.....	Williamsburg or Morrisburg.....	River St. Lawrence.....	10½	1,081½
Williamsburg.....	Rapid Plat.....	Rapid Plat Canal.....	4	1,085½
Rapid Plat.....	Point Iroquois Village.....	River St. Lawrence.....	4½	1,090
Point Iroquois Village.....	Upper end Presqu'île.....	Point Iroquois Canal.....	3	1,093
Presqu'île.....	Point Cardinal, Edwardsburgh.....	Junction Canal.....	2½	1,095½
Point Cardinal.....	Head of Galops Rapids.....	Galops Canal.....	2	1,097½
Galops Rapids.....	Prescott.....	River St. Lawrence.....	7¾	1,105
Prescott.....	Kingston.....	do.....	59	1,164
Kingston.....	Port Dalhousie.....	Lake Ontario.....	170	1,334
Port Dalhousie.....	Port Colborne.....	Welland Canal.....	27	1,361
Port Colborne.....	Amherstburg.....	Lake Erie.....	232	1,593
Amherstburg.....	Windsor.....	River Detroit.....	18	1,611
Windsor.....	Foot of St. Mary's Island.....	Lake St. Clair.....	25	1,636
Foot of St. Mary's Island.....	Sarnia.....	River St. Clair.....	33	1,669
Sarnia.....	Foot of St. Joseph's Island.....	Lake Huron.....	270	1,939
Foot of St. Joseph's Island.....	Foot of Sault St. Mary.....	River St. Mary.....	47	1,986
Sault St. Mary.....	Head of Sault St. Mary.....	Sault St. Mary Canal.....	1	1,987
Head of Sault St. Mary.....	Pointe aux Pins.....	River St. Mary.....	7	1,994
Pointe aux Pins.....	Duluth.....	Lake Superior.....	300	2,384
Prince Arthur Landing to Lake Shebandowan.....			45	45
Lake Shebandowan to North West Angle.....			312	357
North West Angle to Fort Garry (Winnipeg).....			95	452

Of the 2,384 miles from the Straits of Belle-Ile to the Head of Lake Superior, 71 miles are artificial navigation, and 2,312½ open navigation.

Straits of Belle-Ile to Liverpool, 1,942 geographical or 2,231 statute miles.

The total fall from Lake Superior to Tide-water is about 600 feet.

The Steamboat voyage from Collingwood to Prince Arthur Landing is 532 miles.

## APPENDIX No. 14

## TOLLS—WELLAND AND ST. LAWRENCE CANALS.

GOVERNMENT HOUSE, OTTAWA,

Thursday, 21st day of April, 1881.

*Present :*

HIS EXCELLENCY THE GOVERNOR GENERAL IN COUNCIL.

His Excellency, on the recommendation of the Honorable the Acting Minister of Railways and Canals, has been pleased to amend the Orders in Council now in force, and to make the following alterations in the existing rates of tolls on the Welland and St. Lawrence Canals, namely:

1. All through freight westwards, from Montreal to Lake Erie, shall continue to pay the existing tolls for passage through the St. Lawrence Canals, but shall pass through the Welland Canal free

2. All through freight, eastwards from Lake Erie to Montreal, shall continue to pay the existing tolls for passage through the Welland Canal, but shall pass through the St. Lawrence Canals free.

3. Goods shipped to any port west of the St. Lawrence canals, tolls upon which have already been paid for passage through such canals, may be re-shipped from such ports and be passed through the Welland Canal free of tolls in the same way as if they had been shipped through direct in the first instance.

4. Whereas, at present, articles coming under the heading "Class No. 4," which comprises all articles not enumerated in the remaining classes, pay at the rate of 40 cents a ton for passage through the Welland Canal, and 20 cents a ton for passage through the St. Lawrence Canals, henceforward, these unenumerated articles shall, if in transit westwards, pay 20 cents a ton for passage through the St. Lawrence Canals, and be permitted to pass through the Welland Canal free; and if in transit eastwards shall pay 20 cents a ton for passage through the Welland Canal, passing through the St. Lawrence Canals free.

5. All classes of goods not otherwise provided for comprised in classes "3" and "4," with the exception of coal, shall, if using the Welland Canal only, in transit westwards, pay 15 cents a ton. Coal, however, shall continue to pay, as at present, 20 cents a ton for passage either way.

6. Rye, buckwheat, and any other grains not enumerated, shall be classed as belonging to class *three* of the existing Schedule of Canal tolls.

J. O. COTÉ,

*Clerk, Privy Council.*

REPORTS

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RAILWAY STATISTICS

OF CANADA

AND CAPITAL, TRAFFIC AND WORKING EXPENDITURE  
OF THE RAILWAYS OF THE DOMINION.

1881-82.

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Printed by Order of Parliament.

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OTTAWA:  
PRINTED BY MACLEAN, ROGER & CO., WELLINGTON STREET.  
1883.





DEPARTMENT OF RAILWAYS AND CANALS,  
OFFICE OF THE CHIEF ENGINEER AND GENERAL MANAGER,  
CANADIAN GOVERNMENT RAILWAYS,

OTTAWA, 26th February, 1883.

SIR,—I have the honor to submit to you my Statistical Report upon the Railways of the Dominion, for the year ended the 30th June, 1882. The returns obtained from the companies are in many cases very incomplete; and the changes which have taken place in the management of some of the leading railways have been permitted to interfere unduly with the promptitude and completeness of their returns, thus adding to the difficulty attending the preparation of the Report, and also impairing its accuracy.

Upon reference to the tables, it will be seen that amalgamation has proceeded apace, and also that the traffic has not flagged. It is a significant fact that the increase in the receipts is by no means in proportion to that in the traffic, whether passenger or freight; the increase in the number of passengers carried being 34 per cent., and that in the receipts only 22 per cent., while the freight traffic shows an increase of 12 per cent. in tonnage, and at the same time an actual diminution of 5 per cent. in the receipts. This is probably due to competition, but I am unable to submit a table of existing rates, most of the companies having omitted to furnish the information necessary.

The time has in my opinion arrived when it would be expedient to extend the powers of the Railway Committee of the Privy Council, so as to enable them to deal with the unguarded level crossings on all the railways in the Dominion, and also to regulate the height of all overhead bridges.

In the case of the Canadian Pacific Railway, I must observe that the mileage under traffic on the 30th June was, in reality, 765½ miles, but inasmuch as the portion of the road between Montreal and Ottawa (making, with its branches, 156½ miles) was only acquired some two weeks previously to that date, and had until then formed part of the Quebec, Montreal, Ottawa & Occidental Railway, it is included in my Report in the mileage of the latter road, the business done upon it during the last fiscal year having been, with the exception of that of those two weeks, performed by that railway, and included in its return. The full mileage (339 miles) is therefore given to the Q. M. O. & O. Railway, leaving 609 miles to the Canadian Pacific.



The gauges of railways in operation on the 30th June, 1881, were:

5 feet 6 in .....	60.00
4 " 8½ " .....	6,529.51
3 " 6 " .....	671.00
	<hr/>
	7,260.51
	<hr/>

The changes in gauge are, therefore:

5 feet 6 in .....	.....
4 " 8½ " increase.....	636.93
3 " 6 " decrease'.....	367.00

The nominal capital on the 30th June, 1882, was:

Ordinary share capital.....	\$142,936,524 63
Preference " .....	71,531,940 40
Bonded debt.....	92,487,932 42
	<hr/>
	\$306,956,397 45

Aid from Dominion Government. \$80,757,559 86\*

" Ontario " .	3,205,536 02
" Quebec " .	11,433,097 89
" New Brunswick " .	1,583,665 00
" Nova Scotia " .	822,330 00
" Municipalities .....	8,809,944 63
Capital from other sources .....	2,043,279 45

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\$108,655,412 85

Total nominal capital..... \$415,611,810 30

The nominal capital at the close of the previous year was:

Ordinary share capital. ....	\$128,061,520 10
Preference " .....	71,466,460 40
Bonded debt.....	84,891,313 33
Government and municipal aid.....	104,304,459 26
Other sources.....	561,947 22
	<hr/>
Total.....	\$389,285,700 31

\* Not including \$4,516,494.79 which appeared in former years, being expenditure upon preliminary surveys, telegraph lines, etc., Georgian Bay Branch, Dawson Route and Fort Francis Locks.

There is, therefore, an increase of \$26,326,109.99 in the nominal capital, made up thus:

Ordinary share capital.....	\$14,875,004 53
Preference do .....	65,480 00
Bonded debt.....	7,596,619 09
Government and municipal aid.....	2,307,674 14
Other sources.....	1,481,332 23
<b>Total.....</b>	<b>\$26,326,109 99</b>

The capital per mile of railway completed and under construction is, therefore:

Ordinary share capital.....	\$12,696 44
Preference " .....	6,353 90
Bonded debt .....	8,215 30
Government and municipal aid.....	9,456 30
Other sources.....	181 14
	<b>\$36,903 08</b>

The mileage of steel and iron rails, and the equipment of the railways, compared with the preceding year as follows:

	1881-82.	1880-81.	Increase.	Decrease.
Miles laid with iron rails.....	1,983·53	2,660·66		671·13
do steel do .....	6,085·91	4,935·15	1,150·76	
Length of sidings.....	952·89	878·47	74·42	
Number of grain elevators.....	25	24	1	
do crossings guarded.....	89	82	7	
do do unguarded.....	8,477	7,589	888	
do overhead bridges.....	349	333	16	
do crossings of other railways.....	140	134	6	
do junctions with do .....	230	198	22	
do do branch lines.....	79	83		4
do engines owned.....	1,328	1,202	126	
do do hired.....	3	9		6
do first class cars owned.....	632	606	26	
do do hired.....	33	34		1
do second class and immigrant cars owned.....	362	351	11	
do do do hired.....	1	2		1
do baggage, mail and express cars owned.....	357	311	46	
do do do hired.....	31	33		2
do cattle, box and freight cars owned.....	18,910	16,922	1,988	
do do do hired.....	1,392	984	408	
do platform cars owned.....	9,596	8,124	1,472	
do do hired.....	25	85		60
do coal and dumping cars owned.....	2,050	1,716	334	

The total train mileage for the year (Statement No. 4) was 27,846,411 miles, against 27,301,306 miles in 1880-81, an increase of 545,299 miles, or 1·99 per cent.

The number of passengers carried was 9,352,335½, against 6,943,671, an increase of 2,408,664½, or 34·68 per cent. The tonnage of freight handled was 13,575,787 tons, against 12,065,323, an increase of 1,510,364 tons, or 12·51 per cent.

Comparative statement of traffic on principal lines :

Name of Railway.	Passengers Carried.		Increase.	Decrease.
	1881-82.	1880-81.		
Grand Trunk and leased lines.....	2,710,963	2,179,793	531,170	.....
Great Western do .....	2,289,028	1,838,788	450,240	.....
Intercolonial.....	779,994	631,245	148,749	.....
Canada Southern.....	312,331	260,990	51,341	.....
Northern and North-western .....	476,878	411,847	65,031	.....
Midland.....	126,111	116,554	9,557	.....
Toronto, Grey and Bruce.....	145,649	111,076	34,030	.....

STATEMENT of Freight carried on same Railways.

Name of Railway.	Tons.		Increase.	Decrease.
	1881-82.	1880-81.		
Grand Trunk and leased lines.....	3,595,192	3,295,288	299,904	.....
Great Western do .....	2,741,166	2,572,052	169,114	.....
Intercolonial.....	838,596	725,577	113,019	.....
Canada Southern.....	2,129,733	2,135,811	.....	6,078
Northern and North-western.....	614,042	562,309	51,733	.....
Midland.....	237,845	202,095	35,750	.....
Toronto, Grey and Bruce.....	124,560	116,487	8,073	.....

The earnings of the Railways (Statement No. 6) compare as follows :

	1881-82.	1880-81.	Increase.	Decrease.
	\$	\$	\$	\$
Passengers.....	10,018,478	8,223,254	1,795,224	.....
Freight.....	17,729,945	18,666,982	.....	937,037
Mails and Express.....	1,037,460	946,159	91,301	.....
Other Sources.....	235,857	145,332	90,525	.....
Earnings of railways not given in detail.....	6,049	5,782	267	.....
Total.....	29,027,789	27,987,509	1,977,317	937,037

The earnings per mile of Railways under traffic were therefore :

	1881-82.	1880-81.
	\$	\$
Passenger traffic.....	1,335	1,133
Freight do .....	2,362	2,571
Mails and Express.....	138	130
Other sources and not classified .....	32	21
Total.....	3,867	3,855

The operating expenses (Statement No. 7) compare thus :

	1881-82.	1880-81.	Increase.	Decrease.
	\$	\$	\$	\$
Maintenance .....	4,614,041	4,115,098	498,943	.....
Working and repairs of engines.....	6,834,530	5,975,720	850,810	.....
do cars.....	2,219,015	2,065,214	153,801	.....
General operating expenses.....	8,643,939	7,747,511	896,428	.....
Expenses of railways not stated in detail.....	79,183	217,875	.....	138,692
Total.....	22,390,708	20,121,418	2,407,982	.....

The earnings of the Railways thus show a nett increase of \$1,040,280 over those of the previous year, and the working expenses of \$2,269,290.

The nett profits of the two years were :

	1881-82.	1880-81.	Increase.	Decrease.
	\$	\$	\$	\$
Receipts.....	29,027,789	27,987,509	1,040,280	.....
Expenses .....	22,390,708	20,121,418	2,177,318	.....
Nett profit .....	6,637,081	7,866,091	.....	.....

The share and bonded liability per mile of railway complete and under construction is \$27,363. The capital liability for shares and bonds of railways in operation is, approximately, \$303,100,677. The nett earnings of the year would thus be equal to the payment of a dividend of 2.21 per cent. upon the share and bonded liability.

The following table gives the amounts of the year and their causes :

	Killed.		Injured.	
	1881-82.	1880-81.	1881-82.	1880-81.
Fell from cars or engines .....	24	15	47	15
Getting off or on trains or engines in motion.....	8	7	30	12
At work making up trains .....	5	2	28	31
Putting arms or heads out of windows .....			1	
Coupling cars.....	7	4	158	51
Collisions or trains thrown from track.....	11	11	46	22
Explosions.....	1		4	1
Striking bridges.....	2	4	9	
Walking or being on track.....	89	56	22	13
Other causes.....			52	2
Total.....	147	99	397	147

This table is not available for purposes of comparison of the numbers killed and injured during the two years, as until the last year the Grand Trunk made no return of persons injured, and the Quebec, Montreal, Ottawa & Occidental Railway has this year omitted to return either killed or injured. Nevertheless, making all deductions, the accidents have increased in a far higher ratio than the traffic, the proportion of passengers killed to the number carried having been, approximately, 1 in 716,061, against 1 in 991,953 in 1880-81.

The amounts of Government and Municipal loans, bonuses, &c., paid and promised, including the cost of the Government Railways, were :

Dominion Government.....	\$114,242,442	86
Ontario do .....	4,309,149	02
Quebec do .....	14,036,742	22
New Brunswick Government.	3,315,500	00
Nova Scotia do .	1,906,875	00
		\$137,810,709 10
Municipalities in Ontario:....	\$8,138,244	37
do Quebec.....	4,171,000	00
do New Brunswick	296,500	00
do Nova Scotia.	250,000	00
do Manitoba....	270,000	00
		\$13,125,744 37
Total .....	\$150,936,453	47

Up to 30th June, 1881, the Government and Municipal aid promised was \*\$152,715,806.54. There was therefore, virtually, an increase of \$2,737,141.72.

\* Including \$4,516,494.79. Preliminary surveys, telegraph lines, Georgian Bay Branch, Dawson Route and Fort Francis Locks, omitted in the present Report.



The amounts still to be paid to railways on completion are :

	Total Subsidy.	Paid.	To be Paid.
	\$ cts.	\$ cts.	\$ cts.
Dominion Government.....	114,242,442 86	80,757,559 86	33,484,883 00
Ontario do .....	4,309,149 02	3,205,536 02	1,103,613 00
Quebec do .....	14,036,742 22	11,433,097 89	2,603,644 33
New Brunswick do .....	3,315,500 00	2,763,665 00	551,835 00
Nova Scotia do .....	1,906,875 00	822,330 00	1,084,545 00
Municipalities.....	13,125,744 37	8,809,944 63	4,315,799 74
<b>Total.....</b>	<b>150,936,453 47</b>	<b>107,792,133 40</b>	<b>43,144,320 07</b>

\* Including \$1,180,000 granted to European and North American Railway.

I have the honor to be, Sir,

Your obedient servant,

COLLINGWOOD SCHREIBER,

*Chief Engineer and Gen. Man., Can. Gov. Rys.*

A. P. BRADLEY, Esq., Secretary,

Department Railways and Canals.

No. 1.—SUMMARY STATEMENT ON CAPITAL.

Table with columns: Number, Name of Railway, Length of Line (Completed, Under Construction), Ordinary Share Capital (Authorized, Subscribed, Paid Up), Preference Share Capital (Authorized, Subscribed, Paid Up), Bonded Debt (Authorized, Subscribed, Paid Up, Rate of Interest), Government Aid (Loan, Bonus, Subscription to Shares or Bonds, Paid Up), Municipal Aid (Loan, Bonus, Subscription to Shares or Bonds, Paid Up), Capital from Other Sources (Subscribed, Paid Up), Total Capital (Subscribed, Paid Up), Floating Debt (Amount, Rate of Interest), Total Cost of Railway and Rolling Stock, Remarks.

\*Granted to European and North American Railway, included in Share Capital upon purchase by present owners.



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SUMMARY STATEMENTS.

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No. 2.—SUMMARY STATEMENT OF

Number.	Name of Railway.	Length of Line.				Length of Siding.	Weight per Yard.		Number of Ties to Mile.
		Completed. (Rails laid.)	Under Con- struction.	Iron Rails.	Steel Rails.		Iron Rails.	Steel Rails.	
						Lbs.	Lbs.		
1	Albert .....	50·00		50·00		2·25	56	2,240	
2	Atlantic and North-West...		8·00						
3	Bay of Quinté and Naviga- tion Company.....	3·50			3·50	·25	50	3,000	
4	Canada Atlantic.....	80·00	100·00		80·00		56	2,300	
5	Canada Southern.....	329·43		99·91	229·52	96·75	60	2,800	
6	Canadian Pacific.....	964·00	2184·00	72·50	891·50		56 & 58	56 & 57½	2,640
7	Carillon and Grenville.....	13·00		13·00			65	2,200	
8	Central Ontario.....	32·00	80·00		32·00	2·00		42	2,200
9	Chatham Branch.....	9·00		9·00		·23	56	2,244	
10	Cobourg, Peterboro' and Marmora .....	47·00		47·00			56	2,650	
11	Credit Valley.....	183·50			183·50	17·50	54 & 56	2,340	
12	Fredericton.....	22·50		21·50	1·00		56	56	2,300
13	Grand Southern.....	82·50		2·00	80·50	3·00	50	2,500	
14	Grand Trunk and leased Lines.....	1235·50		210·25	1025·25	246·00	65	65	2,600
15	Great American and Euro- pean Short Line (Oxford and New Glasgow).....								
16	Great Western, 607·07.....	929·71		64·86	864·85	188·69	66	66	2,640
	London and Port Stanley, 23·66.....					2·21	54 & 56	56	2,640
	Wellington, Grey and Bruce, 168·35.....					17·90	50 to 56	57½	2,640
	London, Huron and Bruce, 68·99.....							57½	2,640
	Brantford, Norfolk & Port Burwell, 34·74.....					3·17	50 to 56	66	2,640
	Galt and Guelph, 27.....								
17	Halifax and Cape Breton Railway and Coal Co.....	79·75			79·75	4·00		56	2,112
18	Intercolonial.....	840·00		22·50	817·50	106·33	56	56 & 57½	2,640
19	International.....	69·66		69·66			56		2,260
20	Kent Northern.....	18·00	9·00	18·00		·50			2,640
21	Kingston and Pembroke....	71·00	38·00	51·00	20·00	10·00	56	56	2,640
22	Manitoba & South-Western	50·00			50·00				
23	Massawippi Valley.....	34·00		16·00	18·00	1·00	56	50	2,400
24	Midland, 143·65.....	450·15		53·00	90·65	28·00	56	56	2,112
	Toronto and Nipis- sing, 105·50.....			47·50	58·00	16·00	40	58	2,640
	Victoria, 55·50.....			41·50	14·00		55	56	2,800
	Whitby, Port Perry and Lindsay, 46·50.....			36·50	10·00	4·50	56	55 & 56	2,500
	Grand Junction, 90·00.....			34·00	56·00	3·00	56	56	2,200
	Toronto & Ottawa, 9.....		70·66		9·00				
25	Montreal and Vermont Junction.....	23·60			23·60	2·00		60	2,600
	Carried forward.....	5,617·80	2,489·66	979·68	4,638·12	755·28			

Characteristics of Roads, &c.

Nature of Rail Fastening.	No. of Grain Elevators.		Number of Level Crossings		Number of overhead Bridges.	Height of overhead Bridges above Rail level.	Level Crossings of other Railways	Number of Junctions with other Railways.	Number of Junctions with Branch Lines.	Radius of sharpest curve	Number of Feet per mile of heaviest gradient.	Gauge of Railway.		Remarks.
	Guarded.	Not Guarded.	Number of	Not Guarded.								Number.	Number.	
						Feet.				Feet.	Feet.	ft in		
Fish plates.....			91					1			76	4 8½	1	
.....													2	
Fish plates.....			11					1		400	90	4 8½	3	
do .....			35				2	1		5700	40	4 8½	4	
do .....			310	10	19	9	11	3		1432	75	4 8½	5	
do .....	1	2	350	8	18to19	1	5	7			50	4 8½	6	
do .....	1		7	1	16					1910	100	5 6	7	
do .....								1			53	4 8½	8	
do and scab- bards.....			5					1		1432	53	4 8½	9	
do and chairs.....	1		31				1	2		573	96	5 6	10	
do .....	4	3	194	4	21	10	9	2		1146		4 8½	11	
.....			11					1				4 8½	12	
Fish plates.....							1	3			80	4 8½	13	
do and bolts.....	4	29	2238		15' 8" and 18' 4"	34	68	15		1100	53	4 8½	14	
.....													15	
Fish plates.....	2	28	457	121	18	25	20	16		1495	52·80	4 8½	16	
do .....			32	5	18	2	1	2		716	52·8	4 8½		
do .....		3	190	4	18	5	2	2		1146	70	4 8½		
.....			61	1	18	1		2		1375	41·20	4 8½		
.....		1	46	1	18	1	1	2		645	81·20	4 8½		
Fish plates.....			45	9	18½		1				79·25	4 8½	17	
do .....		8	2177	28	16 & 35	1	15	11		694	65·00	4 8½	18	
do .....							2			1146	66	4 8½	19	
do .....							1			1433	60	4 8½	20	
do .....			43	1	17	1	1			955	79	4 8½	21	
.....													22	No information.
Fish plates and trim- ble joint.....			20	1	19		2	1			80	4 8½	23	
Fish plates.....				6	21·50	3	5			1430	65	4 8½	24	
do .....						1	2			600	106	3 6		
do .....			25			1	2				75	4 8½		
do .....			51			2	3			1433	90	4 8½		
do .....	7		103	3	22	1	2	1		80	82	4 8½		
do .....			20	1	24	4	2			1400	53	4 8½		
Fish plates.....			51	1	17·5		2				52	4 8½	25	
	18	76	6604	302		106	168	64						

No. 2.—SUMMARY STATEMENT OF

Number.	Name of Railway.	Length of Line.				Length of Siding.	Weight per Yard.		Number of Ties to Mile.
		Completed. (Rails laid.)	Under Con- struction.	Iron Rails.	Steel Rails.		Iron Rails.	Steel Rails.	
	Brought forward .....	5617·80	2489·66	979·68	4638·12	755·28			
26	Montréal and Sorel.....	47·00			47·00	1·00		56	
27	Napanee, Tamworth and Quebec .....		77·50						
28	Napierville Junction and Quarry Co.....		5·00						
29	New Brunswick.....	174·00			174·00			52	2,640
30	New Brunswick and Canada	127·00		64·50	62·50	16·00	56	56	2,600
31	Northern & North-Western.	377·54		150·00	227·54	74·74	58	56	
32	Nova Scotia, Nictaux and Atlantic.....		75·00						
33	Ontario and Quebec .....		199·00						
34	Petitcodiac and Elgin.....	14·00		14·00		0·50	56		2,240
35	Portage, Westbourne and North-Western.....	35·00			35·00				
36	Pontiac & Pacific Junction.	4·00	23·00	4·00			56		
37	Prince Edward Island.....	198·50		167·75	30·75	14·00	40	50	2,640
38	Quebec and Lake St. John.	42·00	218·00		42·00			56	2,640
39	Quebec Central.....	145·00	55·00	87·00	58·00	9·00	56	56	2,640
40	Quebec, Montreal, Ottawa and Occidental.....	339·00		42·00	297·00	18·00	56	56 & 80	2,640
41	Stanstead, Shefford and Chambly .....	43·00		38·50	4·50	5·50		60	2,400
42	St. John and Maine.....	92·00		65·00	27·00		56	56 & 57½	
43	St. Lawrence and Ottawa...	59·00		19·00	40·00	9·00	56	56 & 57½	2,640
44	St. Martins and Upham.....	30·00		30·00			56		2,240
45	South-Eastern, 161·00..... } Lake Champlain and St. Lawrence, 63·00 } Montreal, Portland & Boston, 36·00..... }	260·00		126·00	134·00	20·00		57½	2,800
46	Spring Hill and Parrsboro }	32·00		27·00	5·00	1·25			
47	Toronto, Grey and Bruce ... }	191·50		5·00	186·50	15·00		60	2,464
48	Welland.....	25·00			25·00	5·12		64	
49	Waterloo & Maqog, 23·00 } Missisquoi Valley, } 10·10..... }	33·10		23·00			56		2,450
50	Western Counties.....	67·00	47·00	10·10			56		
51	Windsor and Annapolis... }	84·00		67·00	20·00	4·00	56		2,600
	Windsor Branch..... }	32·00		64·00	20·00	4·50	50 & 67	56	2,640
		32·00			32·00				
		8069·44	3189·16	1983·53	6085·91	952·89			

Characteristics of Roads, &c. — *Continued.*

Nature of Rail Fastening.	No. of Grain Elevators.		Number of Level Crossings.		Number of overhead Bridges.	Height of overhead Bridges above Rail level.	Level Crossings of other Railways.	Number of Junctions with other Railways.	Number of Junctions with Branch Lines.	Radius of sharpest curve.	Number of Feet per mile of heaviest gradient.	Gauge of Railway.		Remarks.
	Guarded.	Not Guarded.	Feet.	ft in										
.....	18	76	6604	302	.....	106	168	64	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4 8½	26	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	.....
Fish plates.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	85	4 8½	29	.....
do and chairs.....	.....	.....	60	1	18	3	3	.....	1910	80	4 8½	30	.....	.....
do.....	3	5	296	17	18	8	10	.....	1433	74	4 8½	31	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4 8½	32	Under construction
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	33	do
Chairs.....	.....	.....	10	.....	.....	.....	1	.....	1000	80	4 8½	34	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35	No information.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36	.....
Fish plates.....	.....	.....	955	2	17.25	.....	.....	.....	396	75	3 6	37	.....	.....
Steel do flanged.....	.....	.....	12	1	14	.....	1	.....	900	132	4 8½	38	.....	.....
Fish plates.....	.....	.....	26	.....	.....	1	4	1	630	76	4 8½	39	.....	.....
Plates and bolts.....	.....	2	222	4	18.6	.....	4	5	.....	87	4 8½	40	.....	.....
Wrought chairs and fish joints.....	.....	.....	42	.....	.....	3	4	.....	.....	60	4 8½	41	.....	.....
.....	.....	.....	21	2	16	3	3	1	.....	.....	4 8½	42	.....	.....
Fish plates and steel scabbards.....	1	1	66	8	16 & 21	1	2	2	1146	52½	4 8½	43	.....	.....
Fish plates, bolts and sleeves.....	.....	.....	22	.....	.....	1	1	.....	.....	120½	4 8½	44	.....	.....
do.....	.....	.....	1	20.6	6	7	4	.....	.....	60	4 8½	45	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	12	.....	.....	1	.....	900	60	4 8½	46	.....	.....	.....
Chairs.....	1	3	.....	7	17 & 22	5	4	1	500	110	4 8½	47	.....	.....
Fish plates.....	2	.....	30	3	17	3	4	.....	1930	84	4 8½	48	.....	.....
Chairs and fish plates do.....	.....	1	.....	.....	.....	1	1	1	.....	90	4 8½	49	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fish plates.....	.....	1	30	.....	.....	.....	.....	.....	600	84	4 8½	50	.....	.....
do.....	.....	.....	69	1	32	.....	1	.....	699	75½	4 8½	51	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	25	89	8477	349	.....	140	220	79	.....	.....	.....	.....	.....	.....



No. 3.—SUMMARY STATEMENT of the different

Number.	Name of Railway.	Length of Line.		Number of Engines.		Number of 1st Class Cars.	
		Completed.	Under Construction.	Owued.	Hired.	Owued.	Hired.
1	Albert .....	50	.....	3	.....	3	.....
2	Atlantic and North-west .....		8				
3	Bay of Quinté Navigation Co. ....	3 50	.....	1	.....	1	.....
4	Canada Atlantic.....	80	100				
5	Canada Southern .....	329 43	.....	89	.....	26	.....
6	Canadian Pacific.....	964	2,184	118	.....	40	.....
7	Carillon and Grenville .....	13	.....	3	.....	2	.....
8	Central Ontario .....	32	80	2	.....	2	.....
9	Chatham Branch .....	9	.....	2	.....	1	.....
10	Cobourg, Peterboro' and Marmora .....	47	.....	5	.....	3	.....
11	Credit Valley .....	183 50	.....	19	.....	12	.....
12	Fredericton .....	22 50	.....	2	.....	3	.....
13	Grand Southern.....	82 50	.....	5	.....	2	.....
14	Grand Trunk and leased lines.....	1,235 50	.....	444	.....	180	29
15	Great American and European Short Line Co. (Oxford and New Glasgow).....						
16	Great Western .....	607 07					
	London and Port Stanley .....	23 66					
	Wellington, Grey and Bruce .....	168 35					
	London, Huron and Bruce .....	68 89					
	Brantford, Norfolk and Port Burwell ...	34 74					
	Galt and Guelph .....	27 00					
17	Halifax and Cape Breton Railway and Coal Co.....	79 75	.....	9	.....	6	.....
18	Intercolonial .....	840	.....	124	.....	51	.....
19	International .....	69 66	.....	3	.....	2	.....
20	Kent Northern .....	18	9	1	.....		
21	Kingston and Pembroke .....	71	38	7	.....	5	.....
22	Manitoba and South-Western.....	50	.....				
23	Massawippi Valley.....	34	.....				
24	Midland .....	143 65					
	Toronto and Nipissing .....	105 50		15	1	12	1
	Victoria .....	55 00		12			
	Whitby, Port Perry and Lindsay.....	46 50	450 15	4		4	
	Grand Junction .....	90 00		4		3	
	Toronto and Ottawa.....	9 00		5		6	
25	Montreal and Vermont Junction .....	23 60	70 66				
26	Montreal and Sorel .....	47	.....	3	.....	1	1
27	Napanea, Tamworth and Quebec.....		77 60				
28	Napierville Junction and Quarry Co.....		5				
29	New Brunswick .....	174	.....	9	.....	4	.....
30	New Brunswick and Canada .....	127	.....	11	.....	8	.....
31	Northern and Northwestern .....	377 54	.....	44	.....	25	.....
32	Nova Scotia, Nictaux and Atlantic.....		75				
33	Ontario and Quebec .....		199				
34	Petitcodiac and Elgin .....	14	.....	1	.....	1	.....
35	Portage, Westbourne and North-Western.....	35	.....				
36	Pontiac and Pacific Junction.....	4	23	15	.....	14	.....
37	Prince Edward Island .....	198 50	.....	18	.....	14	.....
38	Quebec and Lake St. John .....	42	218	4	.....	2	.....
39	Quebec Central .....	145	55	10	.....	6	.....
40	Quebec, Montreal, Ottawa and Occidental.....	339	.....	36	.....	33	.....
41	Stanstead, Shefford and Chambly.....	43	.....				
42	St. John and Maine.....	92	.....	8	.....	7	.....
	Carried forward.....		7,255 84		3,142 16	1,252	587 31

descriptions of Rolling Stock.

Number of Second Class and Emigrant Cars.		Number of Baggage, Mail and Express Cars.		Number of Cattle and Box Freight Cars.		Number of Platform Cars.		Number of Hopper and Dumping Cars.		Remarks.
Owued.	Hired.	Owued.	Hired.	Owued.	Hired.	Owued.	Hired.	Owued.	Hired.	
.....	.....	1	.....	10	.....	21	.....	.....	.....	1
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4
12	.....	19	.....	2,078	634	206	.....	.....	.....	5
18	.....	25	.....	580	.....	2,063	.....	.....	.....	6
4	.....	4	.....	.....	.....	3	.....	.....	.....	7
.....	.....	1	.....	.....	.....	5	.....	.....	.....	8
1	.....	.....	.....	.....	.....	.....	.....	.....	.....	9
.....	.....	1	.....	1	.....	50	.....	200	.....	10
12	.....	5	.....	255	.....	164	.....	.....	.....	11
2	.....	.....	.....	5	.....	11	.....	.....	.....	12
4	.....	2	.....	6	.....	44	.....	.....	.....	13
131	.....	105	.....	7,948	.....	2,069	.....	364	.....	14
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
60	.....	38	.....	4,206	299	891	.....	181	.....	16
4	.....	6	.....	30	.....	70	.....	150	.....	17
41	.....	35	.....	1,524	.....	1,161	.....	1,018	.....	18
.....	.....	.....	.....	2	.....	8	.....	.....	.....	19
1	.....	.....	.....	.....	.....	14	.....	.....	.....	20
.....	.....	4	.....	5	.....	110	.....	.....	.....	21
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22
2	.....	7	.....	131	449	.....	.....	.....	.....	23
.....	.....	1	.....	10	.....	25	.....	.....	.....	} 24
.....	.....	3	.....	37	.....	70	15	.....	.....	
.....	.....	3	30	.....	.....	40	.....	10	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25
.....	.....	1	.....	15	.....	18	.....	.....	.....	26
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27
.....	.....	6	.....	66	.....	90	.....	.....	.....	28
3	.....	.....	.....	31	.....	148	.....	.....	.....	29
8	.....	23	.....	366	.....	773	.....	57	.....	30
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	32
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	33
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	34
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35
12	.....	2	.....	150	.....	100	.....	.....	.....	36
2	.....	1	.....	2	.....	37	.....	.....	.....	37
6	.....	5	.....	78	.....	172	.....	.....	.....	38
18	.....	19	.....	491	.....	432	.....	.....	.....	39
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40
.....	.....	7	.....	19	.....	90	.....	.....	.....	41
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	42
341	.....	324	30	18,046	1,382	8,885	15	1,980	.....	.....

Supplied by Grand Trunk.

Not in regular operation.  
Operated by Connecticut and Passumpsic Railway Co.

Operated by Central Vermont.

Also 5 parlor and staff cars and 17 Conductors' vans.

Not in regular operation.

Operated by Central Vermont.

No. 3.—SUMMARY STATEMENT of the different

Number.	Name of Railway.	Length of Line.		Number of Engines.		Number of 1st. Class Cars.	
		Completed.	Under Construction.	Owned.	Hired.	Owned.	Hired.
	Brought forward.....	7,255·84	3,142·16	1,252	1	587	31
43	St. Lawrence and Ottawa.....	59	.....	10	.....	.....	.....
44	St. Martins and Upham .....	30	.....	1	1	.....	1
45	South Eastern .....	161·00	} 260 .....	} 25 .....	} 16 .....	} .....	} .....
	Lake Champlain and St. Lawrence.....	63·00					
	Montreal, Portland and Boston.....	36·00					
46	Spring Hill and Parrsboro'.....	32	.....	1	.....	1	.....
47	Toronto, Grey and Bruce .....	191·50	.....	22	.....	16	.....
48	Waterloo and Magog .....	23·00	} 33·10 .....	} .....	} 1 .....	} .....	} 1 .....
	Missisquoi Valley.....	10·10					
49	Welland .....	25	.....	3	.....	5	.....
50	Western Counties .....	67	.....	4	.....	2	.....
51	Windsor and Annapolis .....	84	.....	10	.....	5	.....
	Windsor Branch.....	32	.....	.....	.....	.....	.....
	Total .....	8,069	3,189·16	1,328	3	632	33

description of Rolling Stock.

Number of Second Class and Emigrant Cars.		Number of Baggage, Mail and Express Cars.		Number of Cattle and Box Freight Cars.		Number of Platform Cars.		Number of Hopper and Dumping Cars.		Remarks.
Owned.	Hired.	Owned.	Hired.	Owned.	Hired.	Owned.	Hired.	Owned.	Hired.	
341	.....	324	30	18,046	1,382	8,885	15	1,980	.....	
4	.....	5	.....	97	.....	54	.....	.....	.....	43
.....	1	.....	.....	.....	.....	.....	.....	.....	.....	44
8	.....	9	.....	396	.....	358	.....	.....	.....	45
.....	.....	1	.....	2	.....	6	.....	50	.....	46
.....	.....	8	.....	175	.....	150	.....	.....	.....	47
.....	.....	.....	1	.....	10	.....	10	.....	.....	48
2	.....	4	.....	123	.....	13	.....	.....	.....	49
2	.....	2	.....	19	.....	58	.....	.....	.....	50
5	.....	4	.....	52	.....	72	.....	20	.....	51
362	1	357	31	18,910	1,392	9,596	25	2,050	.....	

Also 2 parlor day cars.

Also 9 Conductors' vans.

## No. 4.—SUMMARY STATEMENT of the

Number.	Name of Railway.	Mileage.	Train Mileage.				
			Passenger Trains.	Freight Trains.	Mixed Trains.	Total Train Mileage.	
1	Albert .....	50·00	350	7,160	29,390	36,900	
2	Bay of Quinté and Navigation Co .....	3·50	3,612	.....	2,422	6,034	
3	Canada Atlantic .....	48·00	12,384	12,384	.....	24,768	
4	Canada Southern .....	329·43	772,996	1,393,230	.....	2,166,226	
5	Canadian Pacific .....	609·00	317,841	544,929	54,473	917,243	
6	Carillon and Grenville .....	13·00	7,500	500	.....	8,000	
7	Central Ontario .....	32·00	.....	.....	.....	.....	
8	Chatham Branch .....	9·00	.....	.....	19,836	19,836	
9	Cobourg, Peterboro' and Marmora .....	47·00	.....	.....	9,700	9,700	
10	Credit Valley .....	183·50	257,256	112,800	41,124	411,180	
11	Fredericton .....	22·50	14,398	.....	28,796	43,194	
12	Grand Southern .....	82·50	.....	.....	.....	.....	
13	Grand Trunk and leased Lines .....	1,235·50	2,388,970	5,405,742	1,496,214	9,290,926	
14	Great Western .....	607·07	929·71	1,583,011	2,367,993	Ft. & Mixed.	3,951,004
	London and Port Stanley .....	.....	.....	.....	.....	.....	78,388
	Wellington, Grey & Bruce 168·35	.....	.....	.....	.....	.....	437,564
	London, Huron & Bruce .. 68·89	.....	.....	.....	.....	.....	187,873
	Brantford, Norfolk and Port Burwell .....	54·74	.....	.....	.....	.....	69,791
	Galt and Guelph .....	27·00	.....	.....	.....	.....	.....
15	Halifax and Cape Breton Railway and Coal Co .....	79·75	49,924	58,218	.....	108,142	
16	Intercolonial .....	840·00	815,798	2,379,778	Ft. & Mixed.	3,195,566	
17	International .....	69·66	.....	.....	.....	.....	
18	Kent Northern .....	18·00	.....	.....	.....	.....	
19	Kingston and Pembroke .....	71·00	.....	.....	120,000	120,000	
20	Manitoba and South-Western .....	.....	.....	.....	.....	.....	
21	Massawippi Valley .....	34·00	74,009	62,380	8,622	145,011	
22	Midland .....	143·65	441·15	247,964	181,004	428,968	
	Toronto and Nipissing .. 105·50	.....	331,606	1,030,972	.....	1,362,578	
	Victoria .....	55·50	35,056	28,470	20,656	84,182	
	Whitby, Port Perry and Lindsay .....	46·50	55,440	36,102	.....	91,542	
	Grand Junction .....	90·00	.....	.....	.....	63,376	
	Toronto and Ottawa .....	.....	.....	.....	.....	.....	
23	Montreal and Vermont Junction .....	23·60	54,108	102,948	100	157,156	
24	New Brunswick .....	174·00	.....	.....	.....	.....	
25	New Brunswick and Canada .....	127·00	84,618	116,239	Ft. & Mixed.	200,857	
26	Northern and North-Western .....	377·54	418,375	425,707	242,004	1,086,086	
27	Petitcodiac and Elgin .....	14·00	.....	.....	9,072	9,072	
28	Portage, Westbourne & North-Western	.....	.....	.....	.....	.....	
29	Prince Edward Island .....	198·50	74,710	161,815	Ft. & Mixed.	253,185	
30	Quebec and Lake St. John .....	35·00	.....	.....	.....	.....	
31	Quebec Central .....	145·00	87,014	104,520	Ft. & Mixed.	191,534	
32	Quebec, Montreal, Ottawa and Occi- dental .....	339·00	424,707	506,499	Ft. & Mixed.	931,206	
33	Stanstead, Shefford and Chambly .....	43·00	41,174	53,302	5,542	100,018	
34	St. John and Maine .....	92·00	.....	.....	.....	193,530	
35	St. Lawrence and Ottawa .....	59·00	79,329	46,732	25,947	152,008	
36	St. Martins and Upham .....	30·00	.....	.....	11,128	11,128	
37	South-Eastern .....	161·00	.....	.....	.....	.....	
	Lake Champlain and St. Lawrence .....	63·00	252,256	270,605	90,292	613,063	
	Montreal, Portland and Boston .....	36·00	.....	.....	.....	.....	
38	Spring Hill and Parrsboro' .....	32·00	.....	.....	.....	.....	
39	Toronto, Grey and Bruce .....	191·50	201,556	209,368	Ft. & Mixed.	401,924	
	Carried forward .....	7,289·34	.....	.....	.....	27,558,699	

Operations of the Year and Mileage.

Engine Mileage,	Total Number of Passengers Carried.	Tons of Freight of 2,000 lbs., Handled.	Average Rate of Speed of Passenger Trains. Miles per Hour.	Average Rate of Speed of Freight Trains. Miles per Hour.	Number.	Remarks.
38,400	12,563	38,293	15	12	1	
6,034	3,720	5,065	10	10	2	
24,768	11,315	9,377	25	15	3	
2,595,447	312,331	2,129,733	35	15	4	
.....	388,785	634,153	22½	15	5	
8,200	14,820	1,500	25	20	6	
.....	38,896	9,493	18	.....	7	
19,836	.....	.....	20	.....	8	
9,800	5,737	27,046	15	.....	9	
475,000	224,450	142,035	27½	12	10	
44,094	24,813	8,859	23	.....	11	
.....	.....	.....	.....	.....	12	Not yet in regular operation.
12,237,968	2,710,963	3,595,192	27	12	13	
4,916,190	1,711,513	2,460,565	.....	.....	14	
87,429	179,580	23,043	.....	.....	.....	
461,584	271,931	167,918	.....	.....	.....	
184,116	82,454	72,118	.....	.....	.....	
70,041	43,550	17,522	.....	.....	.....	
.....	.....	.....	.....	.....	.....	
108,142	39,356	11,132	20	12	15	
3,900,850	779,994	838,956	.....	.....	16	
.....	.....	25,340	.....	.....	17	No information.
.....	.....	.....	.....	.....	18	Not in regular operation.
120,000	26,068	96,660	15	15	19	
.....	.....	.....	.....	.....	20	Not in regular operation.
145,011	50,060	91,629	22	10	21	
428,968	126,111	237,845	.....	.....	22	
1,597,541	87,058	120,573	20	12	.....	
84,182	15,814	39,471	.....	.....	.....	
96,203	46,869	82,797	25	20	.....	
63,376	30,371	41,426	15	.....	.....	
.....	.....	.....	.....	.....	.....	
157,156	113,891½	672,510	26½	12	23	
.....	36,262	58,153	.....	.....	24	
.....	.....	182,105	18	11	25	
1,379,971	476,878	614,107	.....	.....	26	
9,072	1,855	11,300	.....	13	27	
.....	.....	.....	.....	.....	28	Not in regular operation.
317,194	118,436	48,315	21	13	29	
.....	22,418	21,780	20	14	30	
206,634	74,894	57,297	25	15	31	
1,561,856	543,900	350,407	26	10½	32	
100,018	32,809	37,110	23	12	33	
216,168	67,463	31,640	21	13	34	
214,887	44,178	100,540	25	12	35	
11,518	3,450	5,974	.....	15	36	
613,063	240,265	191,061	30	12	37	
.....	.....	.....	.....	.....	.....	
.....	5,890	31,164	.....	.....	38	
551,340	145,649	124,560	25	15	39	
33,062,087	9,167,360	13,395,764	.....	.....	.....	

## No. 4.—SUMMARY STATEMENT of the

Number.	Name of Railway.	Mileage.	Train Mileage.			
			Passenger Trains.	Freight Trains.	Mixed Trains.	Total Train Mileage.
	Brought forward.....	7,289·34				27,558,699
40	Welland.....	25·00	35,506	18,616	865	54,989
41	Waterloo and Magog .....23·00 } Missisquoi Valley .....10·10 }	33·10	14,504		8,420	22,924
42	Western Counties.....	67·00			45,362	45,362
43	Windsor and Annapolis.....24·00 } Windsor Branch.....32·00 }	116·00	58,919		105,518	164,437
	Total .....	7,530·44				27,846,411

Operations of the Year and Mileage—Continued.

Engine Mileage.	Total Number of Passengers Carried.	Tons of Freight of 2,000 lbs. Handled.	Average Rate of Speed of Passenger Trains. Miles per Hour.	Average Rate of Speed of Freight Trains. Miles per Hour.	Number.	Remarks.
33,062,087	9,167,360	13,395,764	.....	.....		
55,729	70,717	75,882	20	15	40	
22,924	.....	14,134	20	14	41	
52,552	25,009	19,285	17	.....	42	
181,555	89,249	70,722	22	14	43	
33,374,847	9,462,333	13,575,787	.....	.....		



## No. 5.—SUMMARY STATEMENT OF

Number.	Name of Railway.	Mileage.	Flour.		Grain.	
			Barrels.	Tons.	Bushels.	Tons.
1	Albert.....	50·00	4,282	428	7,093	126
2	Bay of Quinté and Navigation Co.....	3·50	9,720	972	65,470	1,900
3	Canada Atlantic.....					
4	Canada Southern.....	329·43		132,991		499,380
5	Canadian Pacific.....	609·00	40,006	3,994	3,937,166	36,438
6	Carillon and Grenville.....	13·00				
7	Central Ontario.....	32·00				
8	Chatham Branch.....	9·00				
9	Cobourg, Peterboro' and Marmora.....	47·00			92,367	2,309
10	Credit Valley.....	183·50		17,338		20,609
11	Fredericton.....	23·59	18,600	1,869	1,290	29
12	Grand Southern.....	82·50				
13	Grand Trunk and Leased Lines.....	1,235·50				
14	Great Western.....	607·07	929·71			
	London and Port Stanley.....	23·66				
	Wellington, Grey and Bruce.....	168·35				
	London, Huron and Bruce.....	68·89				
	Brantford, Norfolk and Port Burwell.....	34·74				
	Galt and Guelph.....	27·00				
15	Halifax and Cape Breton Railway and Coal Co.....	79·75				
16	Intercolonial.....	840·00	692,095	69,209	560,253	10,572
17	International.....					
18	Kent Northern.....	18·00				
19	Kingston and Pembroke.....	71·00	1,300	130	113,000	2,712
20	Manitoba and South Western.....					
21	Massawippi Valley.....	34·00				
22	Midland.....	143·65	441·15	25,351	2,535	1,560,153
	Toronto and Nipissing.....	105·59		40,153	4,015	523,878
	Victoria.....	55·50		4,230	423	84,527
	Whitby, Port Perry and Lindsay.....	46·50		6,725	672	593,778
	Grand Junction.....	90·00				17,813
	Toronto and Ottawa.....					
23	Montreal and Vermont Junction.....	23·66				
24	New Brunswick.....	174·00				
25	New Brunswick and Canada.....					
26	Northern and North-Western.....	377·54	183,993	19,871	4,478,199	128,220
27	Petitcodiac and Elgin.....	14·00				
28	Portage, Westbourne and North-Western.....					
29	Prince Edward Island.....	198·50	24,819	2,434	478,036	8,179
30	Quebec and Lake St. John.....	35·00				
31	Quebec Central.....	145·00	28,342	2,834	22,164	499
32	Quebec, Montreal, Ottawa and Occidental.....	339·00	179,200	17,920	439,400	12,303
33	Stanstead, Shefford and Chambly.....	43·00				
34	St. John and Maine.....	92·00				
35	St. Lawrence and Ottawa.....	59·00		2,611		16,669
36	St. Martins and Upham.....	30·00	400	40	370	1
37	South Eastern.....	161·00				
	Lake Champlain and St. Lawrence.....	63·00	260·00	36,224	3,622	500,000
	Montreal, Portland and Boston.....	36·00				12,683
38	Spring Hill and Parrsboro'.....	32·00			239	
39	Toronto, Grey and Bruce.....	191·50	57,108	5,708	1,276,798	29,732
40	Welland.....	25·00	60,858	6,085	1,132,143	32,832
41	Waterloo and Magog.....	23·00				
	Missisquoi Valley.....	10·10	33·10	2,428	243	9,627
42	Western Counties.....	67·00	4,139	414		
43	Windsor and Annapolis.....	84·00				
	Windsor Branch.....	32·00	116·00	33,665	3,366	

Description of Freight carried.

Live Stock.		Lumber of all kinds except Firewood.		Firewood.		Manu- factured Goods.	All other Articles.	Total Weight Carried.	Number.	Remarks.
No.	Tons.	Feet.	Tons.	Cords.	Tons.	Tons.	Tons.	Tons.		
1,201	400	11,185,280	13,981	812	1,247	3,563	18,546	38,293	1	
6	5	300,000	300			1,105	783	5,065	2	
									3	No information.
	71,127		360,683		5,000	150,787	909,785	2,129,733	4	
49,137	21,150	136,164,645	139,830	12,532	15,937	104,236	313,568	635,153	5	
								1,500	6	No details.
								9,493	7	do
									8	No information.
		16,700,000	24,000	360	700		37	27,046	9	
	10,583		18,611		8,756	2,222	63,916	142,036	10	
650	80	70,000	120	1,700	2,260	1,500	3,019	8,859	11	
									12	Not in regular operation.
								3,595,192	13	No details.
								2,460,565	14	do
								23,043	15	do
								167,918	16	do
								72,118	17	do
								17,522	18	do
73,479	12,865	78,356,418	98,749	18,900	28,790	238,769	380,002	838,956	15	
								25,340	16	
									17	
									18	Not in regular operation.
275	132	20,610,000	26,793	6,650	12,350	27,750	26,793	96,660	19	
									20	do
7,360	1,590		147,010	370	530	25,605	19,354	91,629	21	No details.
	2,624	9,259,778	16,060	33,814	59,174	7,532	15,451	237,845	22	
	216	10,116,200	16,688	1,429	2,858	2,930	2,352	120,573	23	
5,490	2,043	25,510,184	36,008	3,632	5,394		20,867	281,003	24	
								82,797	25	
								41,426	26	
									27	No information.
								602,510	28	No details. Operated by Gen. Vermont
									29	No details.
								58,153	30	
								182,105	31	
11,613	5,306	165,391,324	263,196	17,216	28,406	135,665	33,378	614,042	32	
		8,000,000	10,000			450	950	11,300	27	
									28	Not in regular operation.
4,716	789	3,874,834	7,723	2,166	3,997		25,193	48,315	29	
		3,080,000	4,436	9,440	14,344	3,000		21,780	30	
2,917	692	23,170,000	33,101			1,005	19,165	57,297	31	
19,564	7,067	33,385,800	47,694	48,500	72,750	59,870	132,803	350,407	32	
								37,110	33	No details.
								31,640	34	do
	750		41,566			26,241	12,703	100,540	35	
40	2	4,652,000	5,816	35	60	5	50	5,974	36	
	2,611		28,020				144,125	191,061	37	
			11,563				19,362	31,164	38	
26,436	7,647	4,498,819	7,155	16,172	27,912	21,813	24,583	124,560	39	
	12		7,302			9,038	20,613	75,882	40	
		1,936,000	2,420	560	560	180	9,507	14,140	41	
231	95	7,711,240	10,680	2,308	3,462	1,966	2,668	19,285	42	
7,517	2,225	8,721,320	11,556	1,939	2,945	11,538	39,092	70,722	43	

No. 6.—SUMMARY STATEMENT OF EARNINGS.

Number.	Name of Railway.	Mileage.	Passenger Traffic.	Freight Traffic.	Mails and Express Freight.	Other Sources.	Total.	Remarks.
			\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	
1	Albert.....	50-00	6,340 12	14,658 57	1,126 80	603 62	22,729 11	
2	Bay of Quinté and Navigation Co.....	3-50	893 30	2,518 00	414 00	55 70	3,881 00	
3	Canada Atlantic.....	48-00	6,774 08	9,277 07	226 48	73 07	17,050 70	For five months.
4	Canada Southern.....	329-43	761,882 09	2,110,837 57	65,970 74	3,821 01	2,941,511 41	
5	Canadian Pacific.....	609-00	696,824 78	890,384 60	39,273 73	19,730 82	1,546,213 93	
6	Carillon and Greenville.....	13-00	17,166 98	7,940 81	2,734 68	.....	6,049 71	No details.
7	Central Ontario.....	32-00	1,361 51	7,494 94	193 44	.....	7,639 89	
8	Chatham Branch.....	9-00	1,608 77	18,638 02	.....	.....	20,146 79	
9	Cobourg, Peterboro and Marmora.....	47-00	149,966 65	176,734 07	9,320 80	.....	336,911 52	
10	Credit Valley.....	183-50	12,924 36	8,166 21	2,273 12	.....	23,364 29	
11	Fredericton.....	23-50	3,501,521 47	6,695,880 10	850,481 21	88,178 91	10,639,061 69	
12	Grand Southern.....	82-50	1,819,434 71	2,585,409 38	159,325 41	18,206 02	4,586,975 52	
13	Grand Trunk and Leased Lines.....	1,235-50	91,754 62	259,692 36	4,227 99	.....	79,684 97	
14	Great Western.....	929-71	173,350 11	175,721 61	24,634 71	.....	372,746 43	
15	London and Port Stanley.....	697-07	77,762 79	87,242 60	5,867 38	.....	170,872 77	
16	London, Huron and Bruce.....	148-35	21,223 65	35,276 79	408 59	.....	55,609 03	
17	Brantford, Norfolk and Port Burwell.....	34-74	32,391 12	19,681 10	11,781 94	13,237 79	76,391 95	
18	Galt and Guelph.....	47-00	651,896 94	1,303,495 00	117,928 15	6,542 57	2,079,262 66	
19	Halifax and Cape Breton Ry. and Coal Co.....	79-75	13,682 29	32,313 72	4,691 64	.....	48,647 65	
20	International.....	840-00	19,515 55	66,583 12	3,172 20	6,090 68	95,461 55	do
21	Kent Northern.....	69-66	48,822 36	118,211 66	7,332 30	2,713 42	189,479 73	do
22	Kingston and Pembroke.....	18-00	99,546 79	289,547 54	8,782 92	6,482 95	404,360 20	
23	Manitoba and South-Western.....	441-15	16,460 39	124,264 31	11,404 82	2,080 12	200,235 64	
24	Massachusetts Valley.....	143-65	28,209 23	70,016 58	3,447 04	2,372 76	104,075 61	
25	Toronto and Nipissing.....	105-50	39,845 81	86,761 33	2,221 56	159 57	131,007 97	
26	Toronto.....	55-50	53,848 36	124,346 00	5,504 00	.....	181,698 36	
27	Whitby, Port Perry and Lindsay.....	46-50	.....	.....	.....	.....	.....	
28	Grand Junction.....	90-00	.....	.....	.....	.....	.....	
29	Toronto and Ottawa.....	.....	.....	.....	.....	.....	.....	
30	Montreal and Vermont Junction.....	23-60	.....	.....	.....	.....	.....	

23

24 New Brunswick .....	174-00	46,746 33	115,578 79	5,012 21	5,368 63	174,168 35
25 New Brunswick and Canada .....	127-00	47,631 20	183,513 66	74,420 17	.....	236,157 07
26 Northern and North-Western .....	377-54	411,169 73	876,797 66	350 66	.....	1,362,387 46
27 Petitcodiac and Elgin .....	14-00	529 01	5,350 33	.....	.....	6,229 80
28 Portage, Westbourne and North-Western .....	198-50	63,949 28	64,776 28	8,542 00	.....	137,267 54
29 Prince Edward Island .....	35-00	7,378 08	16,697 39	334 80	.....	24,410 25
30 Quebec and Lake St. John .....	145-00	50,724 87	75,273 62	7,277 25	3,341 25	136,819 69
31 Quebec Central .....	339-00	524,933 13	412,780 63	20,220 62	34,080 38	992,014 66
32 Quebec, Montreal, Ottawa and Occidental .....	43-00	30,453 29	35,375 87	3,153 44	.....	58,982 70
33 Stanstead, Shefford and Chambly .....	92-00	67,324 88	33,253 53	12,887 89	.....	123,468 37
34 St. John and Maine .....	59-00	41,316 46	66,439 34	7,927 19	2,272 09	139,855 57
35 St. Lawrence and Ottawa .....	30-00	2,238 39	4,161 70	.....	.....	6,399 49
36 St. Martin's and Upham .....	260-00	177,091 28	379,468 74	17,987 05	11,115 64	485,552 71
37 South-Eastern .....	.....	.....	.....	.....	.....	.....
Lake Champlain and St. Law- rence .....	.....	.....	.....	.....	.....	.....
Montreal, Portland and Boston .....	63-00	.....	.....	.....	.....	.....
Toronto, Grey and Bruce .....	36-00	.....	.....	.....	.....	.....
38 Spring Hill and Parrsboro' .....	32-00	3,451 87	17,382 73	801 28	.....	21,635 88
39 Welland .....	191-50	129,704 01	233,898 65	19,417 87	.....	373,020 33
40 Waterloo and Magog .....	25-00	21,330 15	59,650 86	2,420 49	8,760 00	72,161 50
41 Missisquoi Valley .....	33-10	4,068 56	10,301 11	1,260 64	.....	15,630 31
42 Windsor and Annapolis .....	67-00	22,723 21	15,431 34	1,247 59	343 83	39,745 37
43 Windsor Branch .....	84-00	86,596 57	100,536 19	9,699 53	742 97	197,876 26
44 Windsor .....	32-00	.....	.....	.....	.....	.....
45 Windsor .....	7,530-44	10,018,477 98	17,739,945 01	1,057,460 51	236,867 30	29,027,789 61

Not in regular operation.



23 Montreal and Vermont Junction.....	23·60	13,320 78	37,391 84	28,723 25	32,130 97	109,566 84
24 New Brunswick.....	174·00	36,009 30	33,852 77	6,512 69	34,440 20	109,814 87
25 New Brunswick and Canada.....	127·00	62,154 33	44,686 86	10,441 00	37,540 68	154,822 87
26 Northern and North-Western.....	377·54	204,260 04	194,371 43	47,875 10	376,845 16	823,351 73
27 Pettoodiac and Elgin.....	14·00	1,081 29	2,458 90	294 30	1,274 60	5,109·09
28 Fortage, Westbourne and North-Western	198·50	90,225 56	66,896 33	20,232 99	56,805 09	238,259 97
29 Prince Edward Island.....	35·00	5,185 37	*9,603 66	.....	5,418 33	20,207 36
30 Quebec and Lake St. John.....	145·00	38,238 16	29,393 05	7,887 50	23,278 67	98,797 38
31 Quebec Central.....	339·00	165,752 85	245,207 51	80,761 69	316,572 44	808,294·49
32 Quebec, Montreal, Ottawa and Occidental	43·00	30,401 89	17,811 30	8,328 22	14,420 57	70,961 98
33 Stanstead, Shefford and Chambly.....	92·00	21,104 48	36,531 41	18,630 47	29,239 39	105,505 75
34 St. John and Maine.....	59·00	23,334 22	38,905 90	8,832 88	37,327 62	109,000 62
35 St. Lawrence and Ottawa.....	30·00	3,306 69	2,047 97	150 00	994 00	6,488 66
36 St. Martins and Upham.....	.....	.....	.....	.....	.....	.....
37 South Eastern.....	260·00	93,065 01	87,275 52	22,962 30	165,780 16	369,082 99
Lake Champlain & St. Law- rence.....	.....	.....	.....	.....	.....	.....
Montreal, Portland & Boston 36	.....	.....	.....	.....	.....	.....
38 Spring Hill and Parrboro'.....	32·00	58,296 82	90,174 59	17,979 62	113,300 25	18,816 65
39 Toronto, Grey and Bruce.....	191·50	25·00	9,961 10	6,794 54	24,094 05	279,751 28
40 Welland.....	25·00	.....	.....	.....	.....	56,521 41
41 Waterloo and Megog.....	33·10	8,111 28	4,298 15	1,185 86	2,370 34	15,965 65
Missisquoi Valley.....	.....	.....	.....	.....	.....	.....
10 10 }	.....	.....	.....	.....	.....	.....
42 Western Counties.....	67·00	16,612 67	7,650 46	781 63	7,674 77	32,719 53
43 Windsor and Annapolis.....	116·00	65,600 33	28,895 89	9,346 08	39,071 13	142,913 43
Windsor.....	.....	.....	.....	.....	.....	.....
84 }	.....	.....	.....	.....	.....	.....
32 }	.....	.....	.....	.....	.....	.....
7530·44	.....	4,614,040 72	6,834,530 29	2,219,015 14	8,643,939 23	22,390,708 80

No details.

\* And Cars.

No. 8.—SUMMARY

Number.	Name of Railway.	Mileage.	Passengers, Employés or Others.	Fell from cars or engines.		Jumping on or off trains or engines when in motion.		At work or on track making up trains		Putting arms of heads out of window.	
				Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1	Albert.....	50 00	.....	.....	.....	.....	.....	.....	.....	.....	.....
2	Bay of Quinté Navigation Co.....	3 50	Employés .....	.....	.....	.....	.....	.....	.....	.....	.....
3	Canada Atlantic.....	48 00	.....	.....	.....	.....	.....	.....	.....	.....	.....
4	Canada Southern.....	329 43	{ Passengers .....	.....	1	.....	.....	.....	.....	.....	.....
			{ Employés .....	.....	5	.....	3	1	.....	.....	.....
			{ Others .....	1	.....	1	.....	.....	.....	.....	.....
5	Canada Pacific.....	609 00	{ Employés .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
6	Carillon and Grenville.....	13 00	.....	.....	.....	.....	.....	.....	.....	.....	.....
7	Central Ontario.....	32 00	Others .....	.....	.....	.....	.....	.....	.....	.....	.....
8	Chatham Branch.....	9 00	.....	.....	.....	.....	.....	.....	.....	.....	.....
9	Cobourg, Peterboro' and Marmora	47 00	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	Credit Valley .....	183 50	{ Employés .....	1	.....	.....	.....	.....	.....	.....	.....
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
11	Fredericton.....	23 50	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	Grand Southern.....	82 50	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	Grand Trunk and leased lines....	1235 50	{ Passengers .....	3	.....	2	.....	.....	.....	.....	.....
			{ Employés .....	2	.....	1	.....	2	.....	.....	.....
			{ Others .....	2	.....	1	.....	.....	.....	.....	.....
			{ Passengers .....	2	1	.....	3	.....	.....	.....	.....
14	Great Western.....	607 07	{ Employés .....	2	1	.....	1	1	1	.....	.....
			{ Others .....	.....	2	.....	2	.....	.....	.....	
			{ Employés .....	1	.....	.....	1	.....	.....	.....	
14	London and Pt. Stanley	23 66	{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	
14	Wellington, Grey and Bruce.....	168 35	{ Employés .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
14	London, Huron and Bruce.....	68 89	{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	
14	Brantford, Norfolk and Port Burwell.....	34 70	{ Employés .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
14	Galt and Guelph.....	27 00	{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	
15	Halifax and Cape Breton Railway and Coal Company.....	79 75	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	Intercolonial.....	840 00	{ Passengers .....	.....	.....	1	1	.....	.....	.....	.....
			{ Employés .....	1	10	.....	4	1	14	.....	1
			{ Others .....	.....	.....	.....	1	.....	.....	.....	
17	International.....	69 66	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	Kent Northern.....	18 00	.....	.....	.....	.....	.....	.....	.....	.....	.....
19	Kingston and Pembroke.....	71 00	Employés .....	.....	.....	.....	.....	.....	.....	.....	.....
20	Manitoba and South-Western.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
21	Massawippi Valley.....	34 00	{ Employés .....	.....	.....	.....	.....	.....	.....	.....	.....
22	Midland .....	143 65	{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Passengers .....	.....	.....	.....	1	.....	.....	.....	
			{ Employés .....	1	1	.....	.....	1	.....	.....	
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
22	Toronto and Nipissing.....	105 50	{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Passengers .....	.....	.....	.....	.....	.....	.....	.....	
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
22	Victoria.....	55 50	{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Passengers .....	.....	.....	.....	.....	.....	.....	.....	
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
22	Whitby, Port Perry and Lindsay .....	441 15	{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Passengers .....	.....	.....	.....	.....	.....	.....	.....	
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
22	Grand Junction.....	90 00	{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
22	Toronto and Ottawa....	.....	{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Employés .....	.....	.....	.....	.....	.....	.....	.....	
23	Montreal and Vermont Junction...	23 66	.....	.....	.....	.....	.....	.....	.....	.....	.....
24	New Brunswick.....	176 00	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	New Brunswick and Canada.....	127 00	.....	.....	.....	.....	.....	.....	.....	.....	.....
26	Northern and North-Western.....	377 54	{ Employés .....	3	.....	1	1	.....	1	.....	.....
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	
27	Petitcodiac and Elgin.....	14 00	Employés .....	.....	.....	.....	.....	.....	.....	.....	.....
28	Portage, Westbourne and North- Western .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carried forward.....			.....	.....	.....	.....	.....	.....	.....	.....	.....
				19	21	6	19	5	17	.....	1

OF ACCIDENTS.

Coupling cars.		Collisions, or by trains thrown from track		Walking, standing, lying or being on track.		Explosions.		Striking bridges.		Other causes.		Totals.		Number.	Remarks.
Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		
.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
2	5	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	4	13	.....	.....
.....	.....	.....	.....	9	1	.....	.....	.....	.....	.....	.....	10	2	.....	.....
.....	3	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	3	.....	.....
.....	.....	.....	.....	2	1	.....	.....	.....	.....	.....	.....	2	1	.....	.....
.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
.....	1	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	3	1	.....	.....
.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	.....	Not in regular operation.
2	.....	1	.....	3	.....	.....	.....	1	.....	.....	.....	12	.....	.....	.....
1	.....	.....	.....	25	.....	.....	.....	.....	.....	.....	.....	29	.....	.....	.....
.....	.....	3	10	2	.....	.....	.....	.....	.....	1	.....	7	15	.....	.....
.....	11	2	1	5	1	.....	.....	1	.....	.....	.....	10	17	.....	.....
.....	.....	.....	.....	9	4	.....	.....	.....	.....	.....	.....	9	8	.....	.....
.....	3	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	4	.....	.....
.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....
.....	28	3	7	4	.....	1	3	.....	.....	.....	.....	10	67	.....	.....
.....	.....	.....	.....	7	2	.....	.....	.....	.....	.....	.....	7	3	.....	.....
1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....
.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	1	2	.....	.....
.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	6	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1	11	1	1	.....	.....	.....	.....	1	.....	.....	.....	6	15	.....	.....
.....	1	.....	.....	3	2	.....	.....	.....	.....	.....	.....	3	3	.....	.....
.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
7	68	10	24	79	11	1	3	1	2	.....	2	130	166	.....	.....



No. 8.—SUMMARY OF

Number.	Name of Railway.	Mileage.	Passengers, Employes or Others.	Fell from cars or engines.		Jumping or or off trains or engines when in motion.		At work or on track making up trains.		Putting arms or heads out of window.	
				Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
	Brought forward.....			19	21	6	19	5	17	.....	1
29	Prince Edward Island.....	198.50	{ Employés .....	1	.....	.....	.....	.....	.....	.....	.....
			{ Others .....	.....	.....	.....	.....	.....	.....	.....	.....
30	Quebec and Lake St. John.....	35.00	{ Employés .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Others .....	2	.....	.....	.....	.....	.....	.....	.....
31	Quebec Central.....	145.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
32	Quebec, Montreal, Ottawa and Occidental .....	339.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
33	Stanstead, Shefford and Cham- bly .....	43.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
34	St. John and Maine.....	92.00	Employés .....	.....	.....	.....	.....	.....	.....	.....	.....
35	St. Lawrence and Ottawa.....	59.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
36	St. Martin's and Upham.....	29.12	.....	.....	.....	.....	.....	.....	.....	.....	.....
37	South Eastern .....	260.00	{ Employés .....	.....	.....	.....	.....	.....	2	.....	.....
			{ Others .....	.....	.....	1	.....	.....	.....	.....	.....
38	Spring Hill and Parrsboro' .....	32.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
39	Toronto, Grey and Bruce.....	191.50	{ Passengers .....	.....	.....	.....	.....	.....	.....	.....	.....
			{ Employés .....	1	2	.....	.....	.....	.....	.....	.....
			{ Others .....	1	.....	1	.....	.....	.....	.....	.....
40	Welland.....	25.00	Others .....	.....	.....	.....	.....	.....	.....	.....	.....
41	Waterloo and Magog.....	23.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
42	Western Counties.....	67.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
43	Windsor and Annapolis.....84	116.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Windsor Branch.....32										
	Total.....			24	23	8	19	5	19	.....	1

ACCIDENTS.—*Concluded.*

Coupling cars.		Collisions, or by trains thrown from track.		Walking, standing, lying or being on track.		Explosions.		Striking bridges.		Other Causes.		Totals.		Number.	Remarks.
Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		
7	68	10	24	79	11	1	3	1	2	.....	2	130	166	.....	No information.
.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	
.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
.....	2	.....	.....	2	.....	.....	.....	1	.....	.....	.....	3	4	.....	
.....	.....	.....	.....	2	1	.....	.....	.....	.....	.....	.....	3	1	.....	
.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	
.....	1	.....	.....	.....	.....	.....	1	.....	1	.....	.....	1	5	.....	
.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	6	.....	.....	
.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
7	72	11	29	89	12	1	4	2	3	.....	2	147	184	.....	

No. 9.—LINES of Railway owned by Coal and Iron Mines.

Name.	Length of Railway.	Gauge.	No. of Engines.	No. of Waggon.	Remarks.
		Ft. in.			
<b>NOVA SCOTIA.</b>					
Intercolonial .....	9.75	4 8½	2	88	
Nova Scotia Coal Co. ....	6.75	5 6	2	78	
Vale Coal and Iron Co. ....	6	4 8½	1	.....	Waggon supplied by Intercolonial Railway.
Acadia Coal Co. ....	3	4 8½	1	2	Business done with I. C. R., G.T.R. and W.A. cars.
Spring Hill .....	5	4 8½	3	.....	
Steel Company of Canada..	14	4 8½ and 3 0	5	55	Waggon supplied by I. C. R. and Spring Hill and Parrsboro' Railway.
South Pictou .....	6	4 8½	6	340	Late Albion.
	50.50	.....	20	563	
					Gauge. Miles.
					5 ft. 6 in. 6.75
					4 " 8½ " 40.75
					3 " 0 " 3
					Total..... 50.50
<b>CAPE BRETON.</b>					
New Campbellton .....	1.50	3 6	1	30	
Glace Bay .....	.52	4 8½	1	176	
Sydney .....	4.50	4 8½	3	160	
Sydney and Louisburg .....	40	3 0	4	265	Also 2 passenger, 1 freight and 1 flat car.
Gowrie .....	1.75	3 6	2	100	
International .....	13	4 8½	3	140	
Lingan .....	1	3 6	1	80	Also 1 first-class and 1 second-class passenger cars.
Victoria .....	3.75	4 8½	1	40	Purchased by General Mining Association. Under reconstruction.
Caledonia .....	2.25	4 8½	1	50	
	68.27	.....	17	1,041	
					Gauge. Miles.
					4 ft. 8½ in. 24.02
					3 " 6 " 4.25
					3 " 0 " 40
					Total..... 68.27

No. 10.—STATEMENT of Aid granted to Railways by Governments.

Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscription to Shares or Bonds.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>DOMINION GOVERNMENT.</b>						
Canada Central .....			1,440,600 00			
Canadian Pacific .....			53,166,528 00			
Grand Trunk .....	15,142,633 33					
Intercolonial .....			39,559,369 93			
Prince Edward Island .....			3,466,990 80			
Quebec and Lake St. John .....			384,000 00			
Toronto, Grey and Bruce .....			2,656 00			
Windsor and Annapolis .....		15,142,633 33	1,089,674 00	99,099,809 53		
<b>ONTARIO GOVERNMENT.</b>						
Canada Atlantic .....			270,000 00			
Canada Southern .....			147,858 65			
Central Ontario .....			126,500 00			
Cobourg, Peterboro' and Karmora .....			44,740 00			
Credit Valley .....			457,500 00			
Grand Junction .....			182,500 00			
Georgian Bay and Lake Erie .....			336,000 00			
Hamilton and North-Western .....			565,020 00			
Kingston and Pembroke .....			453,522 50			
London, Huron and Bruce .....			178,630 08			
Midland .....			168,350 20			
Northern .....			196,800 00			
Toronto and Nipissing .....			105,212 00			
Lake Simcoe Junction .....			53,000 00			
Toronto, Grey and Bruce .....			375,282 00			
Victoria .....			312,000 00			
Wellington, Grey and Bruce .....			241,376 00			
Whitby, Port Perry and Lindsay .....			94,957 59			
Carried forward, .....		15,142,633 33		4,309,149 02		103,408,958 55

No. 10.—STATEMENT of Aid granted to Railways by Government.—Concluded.

Name of Railway.	Loan	total.	Bonus.	Total.	Subscrip- tion to Shares or Bonds.	total.
	\$ cts	\$ cts.	\$ cts	\$ cts	\$ cts	\$ cts.
Brought forward .....	15,142,633 33			103,408 958 55		
<b>QUEBEC GOVERNMENT.</b>						
International .....						
Lake Champlain and St. Lawrence .....			364,536 22			
St. Lewis and Kennebec .....			380,000 00			
Missisquoi Valley .....			228,000 00			
Montreal, Portland and Boston .....			85,000 00			
Pontiac and Pacific Junction .....			468,000 00			
Quebec and Lake St. John .....			850,000 00			
Quebec Central .....			681,250 00			
Quebec, Montreal, Ottawa and Occidental .....	6,116,956 00		4,227,000 00			
South-Eastern .....			444,000 00			
Waterloo and Megog .....	6,116,956 00		92,000 00	7,819,786 22	100,000 00	107,000 00
<b>NEW BRUNSWICK GOVERNMENT.</b>						
Albert .....			455,000 00			
Chatham Branch .....			32,000 00			
Fredericton .....			230,000 00			
Grand Southern .....			412,500 00			
Kent Northern .....			135,000 00			
New Brunswick .....			76,000 00			
New Brunswick and Canada .....			575,000 00			
Petitcodiac and Elgin .....			70,000 00			
St. Martins and Upham .....			150,000 00			
St John and Maine .....			† 880,000 00	3,015,500 00	† 300,000 00	300,000 00

<b>NOVA SCOTIA GOVERNMENT.</b>					
Halifax and Cape Breton Railway and Coal Company.....	643,545 00				
Nova Scotia, Nictaux and Atlantic.....	440,000 00				
Spring Hill and Parrsboro' .....	144,230 00				
Western Counties.....	679,100 00				
	1,906,875 00				
		21,259,589 33			400,000 00

\* Included in Quebec Central. | † Granted to late European and North American Railway.

No. 10.—STATEMENT of Aid granted to Railways by Municipalities, &c.

Municipalities.	Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscription to Shares or Bonds.	Total.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>ONTARIO.</b>							
Township of Deseronto.....	Bay of Quinté & Navigation Co.	.....	.....	5,000 00	5,000 00		
do Rambridge.....	Canada Atlantic.....	.....	.....	20,000 00			
do Russell.....	do.....	.....	.....	10,000 00			
City of Ottawa.....	do.....	.....	.....	100,000 00	130,000 00		
Renfrew.....	Canada Central.....	.....	.....			30,000 00	
Norton.....	do.....	.....	.....			7,000 00	
Adamstown.....	do.....	.....	.....			5,000 00	
Pembroke.....	do.....	.....	.....	75,000 00	75,000 00		42,500 00
County of Elgin.....	Canada Southern.....	.....	.....	200,000 00			
Township of Townsend.....	do.....	.....	.....	30,000 00			
do Durham.....	do.....	.....	.....	15,000 00			
do Anderson.....	do.....	.....	.....	15,000 00			
Town of St. Thomas.....	do.....	.....	.....	25,000 00			
Township of Malden.....	do.....	.....	.....	15,000 00			
Town of Amherstburg.....	do.....	.....	.....	15,000 00			
South Norwich.....	do.....	.....	.....	7,500 00			
Northumberland and Durham Savings Bank.....	Cobourg, Peterboro' & Marmora.....	.....	.....	113,500 00			
Trenton Village.....	Central Ontario.....	.....	.....	10,000 00			
Wellington Village.....	do.....	.....	.....	2,500 00			
Town of Picton.....	do.....	.....	.....	21,000 00			
County of Prince Edward.....	do.....	.....	.....	60,000 00			
do Oxford.....	Credit Valley.....	.....	.....	200,000 00			
do Wellington.....	do.....	.....	.....	136,000 00			

do Waterloo.....	do	110,000 00			
do Peel.....	do	75,000 00			
do Halton.....	do	70,000 00			
City of Toronto.....	do	350,000 00			
do St. Thomas.....	do	50,000 00			
Town of Milton.....	do	30,000 00			
do Brantford.....	do	20,000 00			
do Ingersoll.....	do	10,000 00			
do Orangeville.....	do	15,000 00			
Village of Streetsville.....	do	20,000 00			
do Elora.....	do	15,000 00			
do Fergus.....	do	15,000 00			
Township of Woodhouse.....	Georgian Bay and Lake Erie.....	15,000 00			
Town of Simcoe.....	do do	10,000 00			
Township of South Norwich.....	do do	10,000 00			
do North do	do do	40,000 00			
Town of Woodstock.....	do do	25,000 00			
Township of East Oxford.....	do do	25,000 00			
do Woodstock.....	do do	60,000 00			
Town of Woodstock.....	do do	120,000 00			
do Stratford.....	do do	40,000 00			
County of Perth.....	do do	10,000 00			
Township of Mornington.....	do do	15,000 00			
do Elma.....	do do	10,000 00			
Town of Listowel.....	do do	10,000 00			
Township of Wallace.....	do do	30,000 00			
Town of Palmerston.....	do do	25,000 00			
Township of Minto.....	do do	20,000 00			
Town of Harrison.....	do do	80,000 00			
Township of Normanby.....	do do	20,000 00			
do Bentwick.....	do do	65,000 00			
do Brant.....	do do	20,000 00			
do Elderslie.....	do do	45,000 00			
do Arran.....	do do	45,000 00			
do Amab-I.....	do do	43,000 00			
do Kippel.....	do do	32,000 00			
do Albermanle.....	do do	10,000 00			
Town of Mount Forest.....	do do	22,000 00			
Township of Egremont.....	do do	60,000 00			
do Glenelg.....	do do	20,000 00			
Town of Durham.....	do do	32,000 00			
City of Belleville.....	Grand Junction.....	150,000 00			
Village of Stirling.....	do do	5,000 00			
Township of Rawdon.....	do do	15,000 00			
do Seymour.....	do do	35,000 00			
	Carried forward.....	205,000 00			
		1,165,000 00			
		928,000 00			
		2,833,500 00			42,500 00



No. 10.—STATEMENT of Aid granted to Railways by Munic

Municipalities.	Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscrip- tions to Shares or Bonds.	Total.
		\$	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>ONTARIO—Continued.</b>							
Township of Percy.....	Brought forward.....			205,000 00	2,833,500 00		42,500 00
do Asphodel.....	do .....			8,000 00	213,000 00		50,000 00
County of Frontenac.....	Kingston and Pembroke			170,000 00	488,000 00		
City of Kingston.....	do .....			318,000 00			
do Hamilton.....	Hamilton and North-Western.....			99,733 00			
do County of Halton.....	do .....			75,791 00			
do Village of Georgetown.....	do .....			11,289 00			
County of Peel.....	do .....			30,974 00			
do do.....	do .....			354,007 00			
do Simcoe.....	do .....			12,084 00			
Town of Collingwood .....	do .....			22,582 00			
Township of Innisfil.....	do .....			20,740 00			
do Woodhouse.....	do .....			2,500 00			
do Adjala .....	do .....			2,500 00			
do Essa .....	do .....			10,000 00			
do Tossoronto.....	do .....			5,000 00			
do Mulmur.....	do .....			8,000 00			
Village of Alliston.....	do .....					100,000 00	
Not stated .....	do .....						
Township of Nottawasaga .....	do .....			20,386 00	675,586 00		100,000 00
do East Gwillimbury .....	Lake Simcoe Junction .....			45,000 00			
do North do .....	do .....			20,000 00			
do Georgina.....	do .....			20,000 00			
do Whitechurch .....	do .....			15,000 00	100,000 00		
do London.....	London, Huron and Bruce.....			15,000 00			
do Stephen .....	do .....			17,500 00			
do Osborne.....	do .....			25,000 00			
do Hay.....	do .....			15,000 00			
do Goderich.....	do .....			15,000 00			

do	E. Wawanosh.....	do	.....	25,000 00		
do	Hallet.....	do	.....	25,000 00		
do	Tuckersmith.....	do	.....	10,000 00		
do	Turnberry.....	do	.....	5,800 00		
do	Morris.....	do	.....	10,000 00		
do	Stanley.....	do	.....	19,000 00		
do	Village of Clinton.....	do	.....	20,000 00		
do	Exeter.....	do	.....	10,000 00		
do	Kincardine and Wigan.....	do	.....	9,000 00		
do	County of London.....	do	.....	100,000 00		
					311,500 00	
do	Thorah.....	Midland.....	.....	50,000 00		
do	Fort Hope.....	do	.....	30,000 00		
do	Orillia and Matchedash.....	do	.....	12,500 00		
do	Town of Orillia.....	do	.....	12,500 00		
do	Tay.....	do	.....	21,370 85		
do	Onemee.....	do	.....	2,000 00		
do	Mara.....	do	.....	12,500 00		
do	Peterborough.....	do	.....	4,000 00		
					144,870 85	
do	Not stated.....	Napanee, Tamworth and Quebec.....	.....	.....		
do	City of Toronto.....	Northern.....	.....	100,000 00		190,000 00
do	County of Simcoe.....	do	.....	30,000 00		200,000 00
do	Town of Barrie.....	do	.....	13,500 00		
do	do Orillia.....	do	.....	.....		
do	Townships of Collingwood, Euphrasia and St. Vincent.....	do	.....	99,480 00		
					241,980 00	390,000 00
					376,702 59	
do	From various municipalities.....	Toronto and Nipissing.....	.....	40,000 00		
do	Albion.....	Toronto, Grey and Bruce.....	.....	45,000 00		
do	Caledon.....	do	.....	45,000 00		
do	Mono.....	do	.....	30,000 00		
do	Amaranth.....	do	.....	35,000 00		
do	Arthur.....	do	.....	15,000 00		
do	Orangeville.....	do	.....	20,000 00		
do	Mount Forest.....	do	.....	350,000 00		
do	Toronto.....	do	.....	300,000 00		
do	County of Grey.....	do	.....	5,000 00		
do	Owen Sound.....	do	.....	15,000 00		
do	Minto.....	do	.....	35,000 00		
do	Howick.....	do	.....	5,000 00		
do	Gorrie and Wroxeter.....	do	.....	5,000 00		
do	Teeswater.....	do	.....	38,000 00		
do	Culross.....	do	.....	5,000 00		
do	Turnberry.....	do	.....	5,000 00		
					988,000 00	
					6,455,619 44	582,500 00

Carried forward

No. 10—STATEMENT of Aid granted to Railways by Municipalities, &c.—Continued.

Municipalities.	Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscription to Shares or Bonds.	Total.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>ONTARIO—Continued.</b>							
Town of Lindsay.....	Brought forward.....						
Village of Fenelon Falls.....	Victoria.....			85,000 00	6,455,649 44		582,500 00
Verulam and Somerville.....	do do.....			25,000 00			
County of Haliburton.....	do do.....			23,000 00			
				54,000 00			
Fergus.....	Wellington, Grey and Bruce.....			10,000 00	186,000 00		
Peel.....	do do.....			40,000 00			
Elera.....	do do.....			10,000 00			
Maryboro'.....	do do.....			40,000 00			
Nichol.....	do do.....			10,000 00			
Wallace.....	do d3.....			35,000 00			
Minto.....	do do.....			65,000 00			
Bruce.....	do do.....			278,000 00			
Howick.....	do do.....			20,000 00			
Listowel.....	do do.....			15,000 00			
Grey.....	do do.....			35,000 00			
Eima.....	do do.....			30,000 00			
Morris.....	do do.....			30,000 00			
W. Wawanosh.....	do do.....			18,000 00			
Ashfield.....	do do.....			10,000 00			
Turnberry.....	do do.....			28,000 00			
Kincardine.....	do do.....			8,000 00			
Town of Whitty.....	Whitty, Port Perry and Lindsay.....			70,000 00	682,000 00	10,000 00	10,000 00
Township of Whitty.....	do do.....			15,000 00			
do Reach.....	do do.....			30,000 00			
do do.....	do do.....			2,000 00			
County of Victoria.....	do do.....			85,000 00			
Village of Port Perry.....	do do.....			20,000 00			
Brown & Patterson, Manufacturing Company.....	do d2.....			94 93	222,094 93		10,000 00
					7,545,744 37		582,500 00



No. 10.—STATEMENT of Aid granted to Railways by Municipalities, &c.—Continued.

Municipalities.	Name of Railway.	Loan.	Total.	Bonus.	Total.	Subscription to Shares or Bonds.	Total.
		\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
QUEBEC—Concluded.							
	Brought forward.....		2,434,000 00		25,000 00		1,069,000 00
Township of Farnham.....	South Eastern.....					20,000 00	
Village of West Farnham.....	do					5,000 00	
do East do.....	do					5,000 00	
do Waterloo.....	do					30,000 00	
do Drummondville.....	do					15,000 00	
County of Drummond.....	do					90,000 00	
Township of Wickham.....	do					10,000 00	
do St Germin.....	do					15,000 00	
do Sorel.....	do					40,000 00	
Village of Actonvale.....	do					15,000 00	
do Roxton Falls.....	do					15,000 00	
Township of Roxton.....	do					20,000 00	
do Shefford.....	do					50,000 00	
do West Wickham.....	do					10,000 00	
Municipality of Magog.....	Waterloo and Magog.....				15,000 00		528,000 00
			2,434,000 00		40,000 00		1,597,000 00
NEW BRUNSWICK.							
Hillsboro', Hopewell and Harvey Parishes.....	Albert.....			40,000 00			
Coverdale, Hillsboro', Hopewell and Harvey Parishes.....	do			30,000 00			70,000 00
City of Fredericton.....	Fredericton.....			50,000 00			
County of York.....	do			30,000 00			80,000 00
Parish of St. George.....	Grand Southern.....	2,250 00					
do Pennfield.....	do	500 00					
Lepreaux.....	do	500 00	3,000 00				



No. 10.—STATEMENT of Aid granted to Railways by Municipalities, &c.—*Concluded.*  
SUMMARY.

	Loan.		Total.		Bonus.		Total.		Subscrip- tion to Shares or Bonds.		Total.		Grand Totals.		
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	
<i>Governments.</i>															
Dominion .....	15,142,633	33			99,089,809	53									
Ontario .....					4,369,149	02									
Quebec .....	6,116,956	90			7,819,786	22			100,000	00					
New Brunswick .....					3,015,500	00			300,000	00					
Nova Scotia .....					1,906,875	00									
			21,259,589	33			116,151,119	77				400,000	00	137,810,709	10
<i>Municipalities, &amp;c.</i>															
In Ontario .....					7,545,744	37			592,500	00					
Quebec .....	2,434,000	00			140,000	00			1,587,000	00					
Nova Scotia .....					150,000	00			100,000	00					
New Brunswick .....	3,000	00			233,500	00			60,000	00					
Manitoba .....					270,000	00									
			2,437,000	00			8,339,244	37				2,349,500	00	13,125,744	37
			23,696,589	33			124,490,364	14				2,749,500	00	150,936,463	47

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REPORT  
ON THE  
STATE OF THE MILITIA  
OF THE  
DOMINION OF CANADA  
FOR THE YEAR  
1882.

---

PRESENTED TO BOTH HOUSES OF PARLIAMENT BY COMMAND OF  
HIS EXCELLENCY THE GOVERNOR GENERAL.

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OTTAWA :  
PRINTED BY MACLEAN, ROGER & CO. WELLINGTON STREET.  
1883.





## DEPARTMENT OF MILITIA AND DEFENCE,

OTTAWA, February, 1883.

MY LORD,—

I have the honor to forward to Your Excellency the accompanying Report relating to the Militia of the Dominion of Canada for 1882, which is respectfully submitted for Your Excellency's consideration.

ADOLPHE P. CARON,

Minister of Militia and Defence.

His Excellency

The Governor General,  
Ottawa.





	PAGE
No. 2. Inspection Reports of Corps :	
Military District No. 1.....	52 — 61
do 2.....	62 — 73
do 3.....	74 — 81
do 4.....	82 — 89
do 5.....	90 — 99
do 6.....	100 — 103
do 7.....	104 — 113
do 8.....	114 — 121
do 9.....	122 — 129
do 10.....	130 — 131
do 11.....	132 — 135
do 12.....	136 — 139
Abstract .....	140
No. 3. Report of the Inspector of Artillery.....	141 — 159
Ontario .....	149 — 156
Quebec and Maritime Provinces.....	145 — 149
No. 4. Reports of Royal Schools of Gunnery.....	160 — 164
" A " Battery, Quebec.....	161 — 162
" B " do Kingston.....	163 — 164
No. 5. Report of the Inspector of Engineers.....	165 — 168
No. 6. Certificates, the Royal Schools of Gunnery :	
(A) Gunnery.....	169 — 170
(B) Engineers.....	171
(C) Cavalry.....	171
(D) Infantry.....	172
No. 7. Certificates, Schools of Military Instruction :	
Toronto (Province of Ontario).....	173 — 174
Montreal ( do Quebec).....	174
Saint John (Maritime Provinces).....	175
No. 8. Certificates, Boards of Examiners .....	176 — 178
No. 9. Report on the Royal Military College of Canada, by the Adjutant-General, acting for Officer Commanding the Militia.....	179 — 182
No. 10. Annual Report of Royal Military College.....	183 — 195
No. 11. Report of Director of Stores.....	196 — 212
No. 12. Statement of Drill Sheds and Armouries.....	213 — 217

ANNUAL REPORT

ON

THE STATE OF THE MILITIA

FOR

1882.

— : o : —

REPORT OF THE MAJOR-GENERAL COMMANDING THE MILITIA.

—

OTTAWA, December, 1882.

To the Honorable

The Minister of Militia and Defence.

SIR,—I purpose beginning my Report for the present year by extracting from the Supplemental Report of last year, which I had the honor to address to you on the 7th March last, as follows :

“The foundation of military duty is discipline. Without it, as I have stated in my Annual Report, troops are like a rope of sand. I therefore, once more, before it be too late, urge most strongly the establishment of Schools for infantry—permanent Schools, where officers and non-commissioned officers may by example and experience, learn discipline and drill, *i.e.*, their duty.

“I beg to place on record my opinion that half the force, well disciplined, is more valuable than the whole in its present sketchy knowledge of its duties, and I hope, Sir, that this, as the deliberate opinion of the General Officer commanding, may obtain a hearing.

“If, as I understand, only money enough to drill half the force in camp can be provided this year, I would suggest that that money be *not so spent*—but expended on the establishment at once of Infantry Schools.”

It will be perceived what prominence I give to Permanent Schools of Instruction (infantry). My experience of the year 1882 only confirms my opinion of last year, and the one before. I think it essential to have Infantry Schools, and I am

---

still in favor of reducing, if unfortunately reduction be necessary, the rural part of the force to such a number as our finances will allow us to drill, in camp, for not less than sixteen days each year—the lapse of a year between the drills in camp being ruinous to progress in military knowledge.

I have, during this year, consulted many officers on this subject and I have not found any who are not anxious that the drill should be annual.

I beg to call attention to the difference between the advantages possessed by militiamen in England and those of this country. In England the militiaman is drilled by a staff of thoroughly well informed officers and non commissioned officers,—old soldiers—the first year for *three months*, and each subsequent year for *one month*—total in four years, say 180 days.

Compare this with what the Government of Canada allows to its militiaman. The countryman of Canada gets—according to latest rules—about twelve days drill in camp every *two years*; total in *four years*, *twenty-four days*. What can be expected of him in so short a time, and with an interval so long? I am bound to say, that I am surprised at the result obtained—it is most creditable to the intelligence and willingness of the Canadian—but I cannot consider it satisfactory, from the point of view of wishing to have a *fairly efficient force*.

No man can, in that time, learn what ought to be required of him *to know*, before he can be considered a *fairly efficient soldier*. However intelligent, he can only pick up a few ideas on drill—but that which is so much more important, and which makes all the difference between a soldier and a recruit, *viz.*: discipline, must be still wanting—without discipline it is useless to dress men in the uniform of the Queen and consider them soldiers; they cannot be such, until they have had time to acquire that cohesion and that confidence in each other, which are the results of discipline.

I hope, therefore, that the Government of Canada may be induced to act as must a tailor—cut his coat according to his cloth—and make the number of Militia proportionate to the sum voted by Parliament for this service, or *vice versa*, vote sufficient supply for the number enrolled.

My visits to the various Camps, this year, have been, on the whole, very satisfactory. I am glad to be able to say that there has been much more to commend and much less to correct than last year. It must be remembered that those I saw this year were not the same Regiments, generally, as I inspected last year. If, then, the effect of my visits last year, 1881, has had good results on the men I did *not* then see, it is to be presumed, and I shall confidently hope, that I shall, next year, 1883, find the Regiments seen in 1881, far better than they were then.

I will repeat my recommendations of preceding years :—

1st. *Permanent Infantry Schools.*—Of these I think we should have *not less than three*. One for Ontario, at Toronto, in the barracks there ; one for the Province of Quebec, at St. Helen's Island ; one for the Maritime Provinces, at a central place, which, I believe, should be Moncton—as the centre of converging railways—good for New Brunswick, Prince Edward Island and Nova Scotia.

2nd. *Instruction in Camp.*—Not less than 16 days each year for each rural militiaman.

3rd. *Expenditure on Fortifications.*—We have not many, but such as we have should not be allowed to go to decay ; such as are deemed worthless should be destroyed, but none should be allowed to fall into such a state as is the old fort at Toronto—a standing eye-sore to the Dominion.

While on this subject, I would beg to suggest that the repairs of the fortifications should be done—not by the Public Works Department, as is now the case, but by the Militia Department, under the supervision of military Engineers—and this would, I believe, be less expensive and offer opportunity for employing Graduates from the Royal Military College, at Kingston, a very valuable class of young men, whose services should be secured in Canada, as much as possible, by *remunerative* work under Government.

4th. *The Royal Military College.*—Ventilation is, for the third year, the first recommendation I have to make. This has been neglected in the erection of the Royal Military College, and, as a consequence, officers, professors and cadets, find themselves with headaches, and unable, properly, to pursue their studies. Additional rooms for cadets are still necessary. It is a well acknowledged rule that, at all places for the education of young men or boys, the dormitories should be either on the separate system, or each room should contain several students—that two, only, in one room is objectionable. At the Royal Military College, however, though some have rooms to themselves, in some rooms two Cadets are placed. I most strongly recommend that this should be altered. Again I urge the desirability of fulfilling the promises made or expectations raised, that positions in the public service of Canada should be retained for the graduates from the Royal Military College, and especially appointments to vacancies in the Royal Schools of Gunnery.

With a country so prosperous, and with so many opportunities for the employment, as civil Engineers, of any number of young men, as is the country we find on the south of Lake Ontario, it appears to me an unwise policy not only not to take advantage of the talents of the men educated at our own College, but by not employing them, to permit them to carry their talents to a market where they find remunerative employment.



While on the subject of the Royal Military College, I beg to bring forward, for the consideration of Government, a matter of considerable importance, relating to the future of the Cadets there educated.

On reference to the syllabus of instruction, it will be found that the courses in civil engineering and civil surveying are high—as high and complete as are those of any other college in which these subjects are taught—embracing also other subjects, such as mathematics, mechanics, free-hand drawing, geometrical drawing, physics, chemistry and geology—all most useful for civil engineering; a marked feature being that it is practical and performed out of doors.

That these subjects are well and practically taught can be readily proved by the number of graduates who have already entered into the profession of civil engineering—but these graduates enter their profession under disadvantages when compared with young men entering from other colleges in the Dominion, where it is permitted that time so spent may count towards apprenticeship. I would, therefore, suggest for consideration, that time passed at the Royal Military College may count towards apprenticeship in Civil Engineering and Surveying in the same ratio as is permitted in any of the other educational establishments of Canada.

This, I think, would not only be a fair proviso towards the graduates, but would have a very beneficial effect on the prosperity of the College in inducing parents who wish their sons to enter the profession of a civil Engineer, to enter them for the Royal Military College, where, besides having the advantage of a valuable disciplinary course of instruction, they may also become practically well advanced in the profession of their choice.

If legislative measures be necessary to this end, I would strongly urge their adoption.

An exhaustive and favorable Report, made by the Adjutant-General, who inspected the College during my absence in England, is now forwarded. (See appendix No. 9.)

5th. *City Corps*.—Again it is my pleasing duty to speak well of the city corps. I had the satisfaction of finding no falling off in the “Queen’s Own”—they were even better than last year—and besides “signalling” and “ambulance” detachments, they have now *heliographs* in working order under Captain Sankey. In Lieut.-Colonel Otter the Dominion has a Battalion Commanding Officer of exceptional value, of whom it may be proud. At Montreal I also saw an excellent regiment—the 6th Fusiliers—to whom it afforded me satisfaction to say that I wish we had 10,000 such, and I am glad to say there are others not far behind.

6th. *Equipment and Uniform*.—Once more I ask that the obsolete and unserviceable articles now in our stores be condemned and got rid of, and that a supply for the

Infantry may be obtained of the latest and best description—which I firmly believe are those called “Oliver’s” equipment. Experience in Egypt has shewn the faults of the equipment in use in the Imperial Army, and it is stated that Dr. Oliver was sent for to England in order to superintend the issue of a supply of equipment of his invention. Once more I beg to call attention to the fact that after ten months’ trial of the Oliver equipment, two of the most efficient regiments of the army—the old 52nd Light Infantry and the 1st Battalion, Rifle Brigade—reported most favorably of these equipments, and regretted very much when a different description of equipment was issued to them. I have had a photograph, shewing the equipment as carried on a soldier, framed and placed in the Adjutant-General’s office for inspection by all interested in this important point in the efficiency of a soldier.

Since last year a Committee has sat for the purpose of reporting on what alterations they may think advisable in the direction of serviceability and economy to the dress of the officers and men of the Militia. Their report is now under your consideration, and will, I hope, bear good fruit in the future.

#### *Pay.*

It will be remembered that I advocated, last year, a change in the manner of paying the Militia, with a view to inducing them to remain the three years for which they enroll, and which, in consequence of the migratory habits of many of them, appeared to me might be of use, viz. : to give for the first year 25 cents a day, for the second year 50, and for the third year 75 cents. After enquiry, I am disposed to think that 25 cents would be too little for the first year, and that for the first year 50 cents, second year 50 cents, third year 75 cents, might be more successful in retaining the men. That they should be induced to remain there can be no doubt.

It has afforded me much satisfaction to learn that it is intended to increase the pay of that especially useful branch of the militia, the Engineers, from 50 to 75 cents per diem.

#### *Artillery and Rifle Associations.*

I regret very much that it was found impossible to furnish to the Dominion Artillery Association sufficient assistance to allow of their sending a team to Shoe-buryness this year. This was done with such satisfactory results in 1881, not only as regards the skill shown by the team, but also the pleasing spirit of comradeship which was established with their brother Artillerymen of the English Volunteers, that, I hope, the friendly rivalry may be renewed, equally successfully, in 1883, and the necessary grant be made.

Being in England myself, I had the pleasure of seeing the Canadian team of Riflemen sent to Wimbledon, by the Dominion Rifle Association, under Major Tilton, G.G.F.G., and Captain McNaughton, Artillery, and of watching them at some of

the matches. Though not so fortunate as to win the Kolapore Cup, this year, the team was successful in winning many other prizes. I venture to express a hope, that team shooting, rather than for individual prizes, may in future be encouraged by all Rifle Associations, as likely to improve the description of shooting found so very useful in modern warfare, viz.: Volleys fired with steadiness and precision when the smoke clears. I was glad to see once more, at Ottawa, a successful meeting of the Dominion Rifle Association, and that prizes for shooting, somewhat in the manner I suggested, last year, by squads, in military equipment, had been established. They fired partly skirmishing, partly at close interval, and partly in volleys, and at uncertain distances, and at targets, representing the upper part of a man, which rose at uncertain intervals above a parapet. It was a novel sort of contest, which caused much interest, and will, I hope, be continued, in years to come, with most useful results. It is, in my opinion, of the very greatest importance to create a system of reliance among the men, the one on the other, and the shooting by squads will encourage this feeling, as well as improve the average number of fair shots.

I hope that the Government will once more offer assistance to the Artillery as well as to the Rifle Association, to enable both institutions to send teams to England, and now that a few 40-pounder Armstrongs have been received for the instruction of the Artillerymen of Canada, I hope they may be able to show that they have learnt their drill to some effect when they get to Shoeburyness.

I am glad to have received good Reports regarding the Rifle Associations in the several Military Districts.

As the Artillery have received an improved description of gun for instruction, so also we have to congratulate the Riflemen on the issue to the Dominion Rifle Association of 75 Martini-Henri rifles, for the training of the Team to be sent to England, obtained through the able representations of Major Tilton, G.G.F.G., when in England.

#### *Arms and Ammunition.*

I made mention, last year, of the small arms Ammunition Factory under construction at Quebec.

It is still unfinished, after upwards of two years' work. Under the able superintendence of Captain Prevost, and the clever mechanical engineer he has obtained from England, it is to be hoped that, before another year shall have elapsed, a supply of Snider ammunition, superior to anything obtained in England, may be produced, and furnished at decreased expense to the Canadian riflemen.

#### *Maps.*

Again I have to advocate the providing of maps to the various headquarters of Districts, and with this view to employ the services of graduates from the Royal

Military College, under a competent military Engineer, so that Positions may be decided on, on which, in case of war, Earthworks should then be erected. The issue of small but correct maps to officers on service is of the *utmost importance*.

*The Staff.*

An increase of one Brigade-Major to assist Lieutenant-Colonel Taylor, Deputy Adjutant-General, in one of the three districts of which he has charge, has been made by the re-appointment of Lieutenant-Colonel Crewe-Read (a very valuable officer) to the staff of the Militia. Lieutenant-Colonel Irwin, R.A., late of the Royal School of Gunnery, at Quebec, has become the Inspector of Artillery of the Dominion, and stationed at Headquarters, Ottawa. The Deputy Adjutant-General's appointment in British Columbia is still vacant.

The war in Egypt deprived me, for some months, of the services of my A.D.C., Major Holbech, King's Royal Rifle Corps, who left Canada to join his Battalion on active service, and had the good fortune to be Brigade-Major to General Graham's Brigade, the leading one of the First Division, at the decisive battle of Tel-el-Kebir, and it affords me much pleasure to record that, during his absence, the duties of A.D.C. have been most efficiently performed by Major H. R. Smith, 47th Battalion.

The reports of the Deputy Adjutants-General commanding Districts, of the Inspectors of Artillery, &c., are forwarded, to which I have, as last year, attached notes in such cases as I have thought necessary. These reports contain particulars regarding the various Camps this year.

I beg to thank, very sincerely, the whole Staff for their assistance to me in all ways, which, as far as they are concerned, has rendered my duties a pleasure.

While mentioning the Staff, I think it my duty to bring to notice what I consider the inadequacy of their pay, now that they may expect the expense of a move of quarters every five years, and that there is a fixed age for compulsory retirement.

I am in favor of both these rules—but to make them without increase of pay or giving a retiring allowance, sufficient to admit of an old officer living in comfort after retirement, is treatment that I consider nothing less than cruel, and I feel sure could not have been the intention of the Government, or of the Generous People of Canada. It can, I think, only have been by an oversight that, when these rules were made, the officers of the Military branch were not put on the same footing, as regards retiring pensions, as are the members of the Civil Service of Canada.

There are two Districts also, viz.: Manitoba and British Columbia, where, in consequence of the expense of living, the Staff officers should receive increased pay, as also should all ranks of the Militia in those Districts when called out on duty.

---

*Royal Schools of Gunnery.*

In consequence of the retirement of Major General Strange, (regarding whose long service with the Militia of Canada, I had satisfaction in publishing a General Order, dated 17th March, 1882,) promotions have taken place in the Schools of Gunnery.

Lieutenant-Colonel Irwin, R.A., Inspector of Artillery, has been removed from Quebec to Headquarters, Ottawa, and the commands of the Schools of Gunnery have devolved on Lieutenant-Colonels Montizambert and Cotton, and that of "A" and "B" Batteries, on Majors Holmes and Short. This appears to me a favorable opportunity for establishing thorough uniformity of system in the two schools, by forming the two Batteries into one Brigade, with the Officers on one list for promotion, thus securing a matter of great importance, viz., that Certificates obtained by Officers attending courses of instruction may be of the same value from whichever School they may be granted.

The School of Gunnery, at Kingston, has had, I much regret to say, to bear the loss of a gallant young officer, a subaltern in the Battery, Major Hébert, who, in his anxiety to learn his duty in the very best school, viz., active service, obtained leave to volunteer for the Campaign in Egypt, and, though he had not the good fortune to arrive in time for the actual fighting, by a very few days, has, none the less gallantly, lost his life, from fever, in the service of his country.

The vacancy will afford an opportunity for the appointment of a Graduate from the Royal Military College of Canada.

I have the honor to be, Sir,

Your most obedient servant,

R. G. A. LUARD,

*Major-General Commanding the Militia.*

## APPENDIX No. I.

## MILITARY DISTRICT No. 1.

DEPUTY ADJUTANT-GENERAL'S OFFICE,  
LONDON, ONT., 2nd December, 1882.

SIR,—I have the honor to submit, for the information of the Major-General Commanding, this my Annual Report on the state of the Militia in Military District No. 1, together with "Tabular Inspection Report," which, in accordance with instructions contained in your "Circular" of July 7th, 1882, gives a information relating to the several corps, and to which I would respectfully refer.

The authorized established strength of existing Corps of Active Militia in this District is as follows (45 per company of cavalry, rifles and infantry), viz:—

*Cavalry.*

	Officers and Men.
1st Regiment, Lieut.-Col. J. Cole, 4 troops.....	207

*Artillery.*

The London Field Battery, Major John Peters, 1 Battery....	85
1st Provisional Brigade Field Artillery, Guelph, Lieut.-Col. Macdonald, 2 Batteries.....	197
Sarnia Battery of Garrison Artillery, Capt. Ellis, 1 Battery..	45

*Infantry and Rifles.*

7th Batt. "Fusiliers," London, Lieut.-Col. Walker.....7 Co's	352
22nd Batt. Oxford Rifles, Woodstock, Lieut.-Col. Cowan. 8	397
24th "Kent" Batt. of Inf., Chatham, " Baxter...7	349
25th "Elgin" " " St. Thomas, " O'Malley7	349
26th "Middlesex" Batt. of Inf., London, Lieut.-Col. English .....	8 " 397
27th "Lambton" Batt. of Inf., Sarnia, Lieut.-Col. Campbell .....	6 " 301
28th "Perth" Batt. of Inf., Stratford, Lieut.-Col. Scott. 6	301
29th "Waterloo" " " Berlin, Lieut.-Col. Hespeler. 6	301
30th "Wellington" Batt. of Rifles, Guelph, Lieut.-Col. Clarke.....	10 " 493
32nd "Bruce" Batt. of Inf., Walkerton, Lieut.-Col. Cooper.....	8 " 397
33rd "Huron" Batt. of Inf., Goderich, Lieut.-Col. Ross. 9	445
Total in District as at present organized, 45 per Co. 90	4,616

If original strength of 58 officers and men per company were allowed, 5,628 would be the number.

*Drill Companies.*

Dufferin College, London.....	1 Co. 40
Collegiate Institute, London .....	1 " 40
" " St. Thomas .....	1 " 40
High School, Mount Forest.....	1 " 40
Total Dr Companies.....	4 160

Number of Active Militia authorized to perform drill, 1882-83 :—

	Officers and Men.
In camp.....	2,191
At headquarters .....	368
Total.....	2,559
The following Corps performed drill in camp :—	
1st Regiment of Cavalry, No. 4 Troop.....	(Troops) 1
1st Provisional Brigade of Field Artillery.....	Batteries. 2
London Field Battery of Artillery.....	" 1
24th " Kent " Battalion of Infantry.....	Companies 1
25th " Elgin " " " .....	" 1
26th " Middlesex " Battalion of Infantry.....	" 8
28th " Perth " Battalion of Infantry.....	" 6
29th " Waterloo " " " .....	" 5
30th " Wellington " Battalion of Rifles.....	" 9
33rd " Huron " Battalion of Infantry.....	" 6
	40

The following corps performed drill at Local Headquarters :—

Sarnia Battery of Garrison Artillery.....	Batteries. 1
7th " Fusiliers," London .....	Companies 7
	8

The following corps were authorized to drill but failed to turn out :—

1st Regiment of Cavalry, No. 1 Troop,	
29th " Waterloo " Battalion of Infantry, No. 3 Company,	
30th " Wellington " " of Rifles, " 5 "	
33rd " Huron " " of Infantry, do 3, 6 and 9 Companies.	

The following corps were not authorized to drill :—

1st Regiment of Cavalry, Nos. 2 and 3 Troops. ....	2
22nd " Oxford " Battalion of Rifles, Companies.....	8
24th " Kent " " of Infantry, " .....	6
25th " Elgin " " " " .....	6
27th " Lambton " " " " .....	6
32nd " Bruce " " " " .....	8
	36

No. 1 Troop, 1st Regiment of Cavalry, has not drilled for three years, and although ordered to do so, both last year as well as this, has failed to turn out, and appears to be quite disorganized. The captain states that had it not been for the late harvest and the large quantity of winter wheat remaining to be sown at the time of camp, he would have turned out a troop this year, which I very much doubt, there not appearing to be an enlisted man connected with the corps. No good reason can be given against disbanding this troop. The whole regiment should be broken up, and the portion which may be retained be permitted to revert to independent corps.

No. 3 Company, 29th Battalion, failed to turn out, the lateness of the harvest being the excuse, but I believe the company has not been prospering under the provisionally appointed Lieutenant, who is in command, Lieut.-Col. Hespeler wishes to have the headquarters changed to New Hamburg.

No. 5 Company, 30th Battalion, failed to turn out, Lieut.-Col. Clarke reports that the Captain was in Winnipeg, and hurried home expecting to find his company in camp under the Lieutenant, but that officer stated "that as he could only take 25 men, he did not like to go with less than a full company." Lieut.-Col. Clarke

further reports Captain Winfield as an [excellent] officer, who has for twelve years always taken out a first class company.

Nos. 3, 6 and 9 Companies, 33rd Battalion, failed to turn out, Lieut.-Col. Ross reports as the cause, the late harvest, which necessitated the postponing of the fall ploughing and seeding to a late date, consequently, men could not be got to leave their work.

Adding to the above, the absentees of the various companies that performed drill, makes a deficiency of officers and men, who failed to attend, of 766.

#### BRIGADE CAMP AT LONDON.

On the 12th September, a Brigade Camp was formed on the Carling farm at London, composed of the corps previously mentioned, the following being the names of officers who served on the Brigade Staff: Lieut.-Col. Jackson, Deputy Adjutant-General, in Command; Lieut.-Col. Hon. M. Aylmer, Brigade-Major; Major Miller, 7th Fusiliers, Assistant Brigade-Major; Lieut.-Col. Baxter, 24th Battalion, Provost Officer; Captain and Quarter-Master J. B. Smyth, 7th Fusiliers, Supply Officer; Captain and Paymaster Reed, 24th Battalion, Camp Quarter-Master; Lieutenant S. F. Peters, 7th Fusiliers, Orderly Officer; Surgeon-Major Brown, London Field Battery, Principal Medical Officer.

We are again indebted to the municipal authorities of London for having laid down about three thousand feet of water pipes, with a hydrant for the use of each corps, giving an abundant supply of superior water. They also constructed the latrines.

To the Hon. John Carling we are again indebted for the use of his fine farm for camp and drill ground, which is admirably adapted for such purposes, and very conveniently situated.

I would refer to tabular inspection report, which contains information relating to the efficiency of the several corps, but may be permitted to make the following reference:—

#### *Cavalry.*

This arm is not up to the mark; organization and interior economy very defective, and drill indifferent. The troop in camp made fair progress, was composed of good men, but indifferent horses.

#### *Artillery.*

For efficiency of the field arm, I would refer to Report of the Inspector of Artillery, but I may say this branch of the service, which is composed of the London Field Battery and 1st Provisional Brigade, Field Artillery, always parade smart and creditable. I was very favorably impressed with the completeness of the organization and interior economy of the latter corps.

The Sarnia Battery of Garrison Artillery paraded in a highly creditable manner.

#### *7th Battalion, "Fusiliers."*

This fine corps always parades very creditably; but more out-door drill is required.

#### *26th Battalion.*

A fair corps, and kept well at drill, showing good progress, but discipline slack. Several companies acted very badly on day of breaking up camp.

#### *28th Battalion.*

Very weak; men not kept up to their work; discipline very slack; with the exception of No. 5 Company, Captain Paisey (and this company was small), the battalion was unsatisfactory.



*29th Battalion.*

Although this corps was weak, I was favorably impressed with the efforts made by the officers, resulting in steady progress. More attention is required to fitting accoutrements and knapsacks.

*30th Battalion.*

This is a really fine corps, well kept at work; particularly smart in appearance, and duties satisfactorily performed; but some of the men were inclined to refuse to work on day of breaking up camp.

*33rd Battalion.*

This is another really fine corps, drills very systematically carried out, and always smart and steady on parade. I was particularly impressed with the manner this battalion broke up camp, which was done expeditiously and satisfactorily.

No. 7 Company, 24th Battalion, Windsor, and No. 7 Company, 25th Battalion Leamington, which were attached for this drill to the 28th and 29th Battalions respectively, deserve especial mention for their appearance, drill and general efficiency.

On the 22nd September the Major-General Commanding visited and inspected the Camp, at the close of which he issued the following order:—

“The Major-General has much pleasure in requesting Lieut.-Col. Jackson, commanding the Camp at London, to express his satisfaction with what he has seen to-day.

“The whole camp, as well as the turn out of the men, displays what trouble must have been taken by all ranks to utilize the short time allowed to them for the attainment of military knowledge. He wishes to impress on all how necessary it is to maintain that chain of responsibility, without which it is impossible for bodies of troops to be in good order.

“He considers that No. 1 District is second to none in soldierly appearance.”

*Medicines.*

The surgeons complained of the scarceness of the medicines, and the difficulty under the present system of procuring remedies when required. The following extract from the report of one of the Surgeons of the day, is worthy of consideration:

“I do earnestly and particularly request that medicine chests of the same pattern as previously issued for the use of battalions be again issued and properly filled up with suitable medicines and surgical appliances.” (1.)

The present method, or rather the want of a proper method of issuing medicines, is very unsatisfactory, in fact, nearly useless for men in the field. The surgeons require medicines to be administered promptly in all sudden cases of illness, which frequently occur in the night.

It will be observed that the several corps in camp were very weak in numbers, only two companies, No. 7 of the 26th Battalion and No. 2 of the 28th Battalion, being full, some not having more than twelve non-commissioned officers and men. This is attributed to the impossibility of men turning out in the autumn, June being the proper month for drill in this District.

The average number of non-commissioned officers and men per company was as follows:—

26th Battalion, Lieut.-Col. Attwood.....	32.75
28th “ “ Scott.....	25.26
29th “ “ Hespeler.....	30.77
30th “ “ Clarke.....	35.66
33rd “ “ Ross.....	32.16

*Bands.*

Each battalion has what may be called an efficient band when performing independently (that of the 7th Fusiliers being highly efficient and of superior organization), but when brigaded they are not a success. Many of the instruments are not of the same pitch, and the music not being of the same arrangement, their performance of brigade music may be called a failure. Although all may be placed under one Instructor while in camp, the labor and time required to arrange the music, and the difficulty of getting the instruments to chord, prevent the attainment of any great success. The importance of good music in connection with military organizations cannot be over-estimated. I therefore venture to make the following recommendation, which, if carried out, will ensure all the bands in the Dominion being able to perform harmoniously together at all times when they assemble, and the expense to the Department for 100 bands would be less than 80c each. The proposition is that the Department provide for the use of each:—One tuning fork, two quick marches for marching past, one quickstep for trotting past, one slow march for salute, and “God Save the Queen.” (2.)

The estimated expense (which would be reduced by the trade discount) would be as follows:—

9 dozen tuning forks at \$2.00.....	\$18 00
15 plates at \$3.50 .....	52 50
300 sheets of paper at \$1.00.....	3 00
300 impressions at 40c.....	1 20
Card-board and mounting.....	3 00

Total for 100 bands.....\$77 70

As the plates would be Government property, subsequent editions would cost only price of paper and printing. But supposing the cost to be \$100, or one dollar each band, for this trifle most beneficial results may be expected. Of course, it would be necessary to issue an order requiring all instruments to be of the Government pitch.

Professor Clappe, instructor of the 27th Battalion band, who has had experience in the Imperial Service as well as the Canadian Militia, says this is a most practicable and comprehensive scheme, and I might add that, if the Department entrusted the arrangement of the pieces to him, his long experience and high attainments would insure a class of music that would be practicable and creditable. (3.)

*Drill Companies.*

The following Drill Companies still retain their organization, but owing to the many changes in the pupils at each term, no great efficiency can be attained beyond the preliminary drill, at the same time the boys acquire a military bearing and certain knowledge that will never be forgotten.

Dufferin College, London, 1 Company.  
 Collegiate Institute, “ 1 “  
 “ “ St. Thomas, 1 Company.  
 High School, Mount Forest, 1 “

An instructor from “B” battery has been supplied this year to all except the one at St. Thomas, that company not having applied for one.

*Care of Arms and Other Stores.*

While considerable improvement is noticeable in the condition of the stores and armouries, constant inspections are required to ensure even fair results, one Brigade-Major in a large district like this is not sufficient to maintain proper supervision over so many isolated companies.

The issue during the past year of various articles of equipment to make up deficiencies, has improved the brigade both in appearance and efficiency; many of these stores, however, are obsolete and of bad quality, the sticky knapsacks having destroyed hundreds of tunics.

*Qualified Officers.*

The difficulty of procuring qualified officers increases from year to year, and some more convenient method for imparting instruction to those anxious to qualify should be devised.

*Finally.*

On the whole, the operations of the year have been satisfactory (except as to numbers), and in attaining this result, I am indebted for their able assistance, to the permanent District Staff, to those officers who acted temporarily on the Brigade Staff, to the commanders of corps and other officers of the brigade, who as a rule, have endeavoured to carry out the regulations and orders, much progress in their respective corps being the result. To those few officers who appear to think annual drill means a "picnic," I would urge to calmly consider the subject, after which no doubt they will conclude the Department is entitled to their undivided attention to duty while under pay as if on actual service.

I have the honor to be, Sir,

Your most obedient servant,

W. H. JACKSON, Lieut.-Colonel,  
Deputy Adjutant-General, Military District No. 1.

The Adjutant-General of Militia,  
Ottawa.

- (1.) Recommended for consideration.
- (2.) These suggestions appear to me to be very practical and good.
- (3.) I recommend this for adoption.

MILITARY DISTRICT No. 2.

OLD FORT, TORONTO, 30th November, 1882.

SIR,—I have the honor to submit this, my Annual Report of the Militia in Military District No. 2.

I herewith forward inspection returns (tabular forms) of those corps which have performed annual drill.

Established strength of Active Militia in this District :

		Officers.	N.C.O and Men.
Cavalry .....	9 Troops .....	39 .....	378
Field Artillery.....	3 Batteries .....	18 .....	237
Garrison Artillery.....	3 " .....	9 .....	126
Mountain Artillery.....	1 Half-battery.....	1 .....	21
Infantry and Rifles.....	113 Companies... ..	454 .....	4,738
	129	521	5,500

Number authorized to perform annual drill .....3,573

Number authorized to drill in Camp .... 2,371

" " " Headquarters..... 1,230

Total..... 3,601

## Corps which performed drill in Camp:—

Toronto Field Battery,  
 Hamilton “ “  
 12th Battalion, Y. R.  
 34th “  
 35th “ S. F.  
 39th “  
 44th “  
 77th “

## Corps allowed to drill at local Headquarters:

Governor-General's Body Guard.  
 St. Catharine's Garrison Battery.  
 Demi-Battery Mountain Artillery, Sault Ste. Marie.  
 2nd Battalion, Q. O. R.  
 10th “ R. G.  
 13th “  
 Rifle Company, Sault Ste. Marie.

## Corps which did not perform annual drill:—

*Authorized.*

Welland Canal Field Battery.  
 Collingwood Garrison Artillery.  
 No. 6 Company, 12th Battalion, Y. R.  
 No. 2 “ 35th “ S. F.  
 No. 2 “ 44th “  
 No. 6 “ 44th “

*Not Authorized.*

Toronto Garrison Artillery.  
 2nd Regiment of Cavalry.  
 19th Battalion.  
 20th “ L.R.  
 31st “  
 36th “  
 37th “  
 38th “ D.R.

The Welland Canal Field Battery did not perform the annual drill this year, —the captain commanding having forwarded his resignation, and ceasing to take that interest in the battery necessary to prepare it for camp. As this officer's resignation has not been accepted, he is guilty of disobedience in not taking his battery to camp. An officer resigning should remember that he is not relieved of his command until after a transfer of his stores has been made and his resignation has been accepted by *Gazette*.

*Collingwood Garrison Artillery.*

The commanding officer being absent on leave, and the service roll, together with all other company papers, having been destroyed by fire during his absence, the corps was relieved from drill by order.

*No. 2 Company 12th Battalion, Y. R.*

Through the neglect of the captain commanding, this company did not proceed to camp as ordered.

All the papers, together with my opinion, respecting the conduct of this officer, I have forwarded to Headquarters at Ottawa.

*No. 2 Company, 35th Battalion, S. F.*

In consequence of a large portion of the town in which this company is situated having been destroyed by fire, and the services of every available man being required in rebuilding before the winter, the captain had to proceed to camp this year without his men.

*No. 2 Company, 44th Battalion.*

The officer commanding the battalion having reported that the absence from camp of this company was caused by the captain being unsuccessful in filling the ranks of the company, not being satisfied with this excuse, I ordered the captain to camp without his men. This order was not obeyed, the captain saying that his occupation prevented his coming to camp. This excuse proved to me that the fault he desired to put upon his men should rest with himself.

On the 11th November, I received from the Lieut.-Colonel Commanding, a communication from the captain, saying that for the want of proper clothing the company did not muster. This should not have been, the company having received a full issue of tunics, trowsers and forage caps in April, 1880, and an issue of great coats in July, 1882

*No. 6 Company, 44th Battalion.*

The headquarters of this company is at Clifton, and composed of railway men. I have never seen this company in camp, and understand that the men of the corps cannot drill from the local headquarters. This company should be required to drill with the battalion when ordered, and should there not be a sufficient number of men to keep up the company at Clifton irrespective of the railway employés, I would recommend that the headquarters be removed to another station within that county.

*Mountain Artillery, Sault Ste. Marie.*

The usefulness of this corps would be enhanced by allowing it to go into camp where there could be shot and shell practice. For the want of a sufficient and safe Range at Sault Ste. Marie the corps practice has been confined to blank.

I would recommend that the two sergeants of this corps be ordered to attend the next brigade camp, and be posted to a field battery for drill purposes.

*Drill at Camp Niagara.*

As many of the men attending being recruits it was necessary to devote the first week of the camp to squad and company drill, which drill was always under the direction of a Brigade Staff Officer. The brigade and other drills before the close of the camp denoted great improvement.

*Music.*

The music was very good, there being six full bands. These brigaded had a most beneficial effect upon the brigade march past.

*Governor General's Body Guard.*

This corps performed the annual drill at headquarters, going into the new garrison on the 28th August. I inspected them on the 2nd day of September. The march past at the walk and trot, together with the sword exercises and field movements, were well executed. This is a smart and well mounted corps.

*The Queen's Own Rifles, 10th Royal Grenadiers and 13th Battalion.*

These corps performed annual drill at local headquarters and were complimented by the Major-General, who inspected them. As the 13th Battalion had not completed their annual drill when the Major General saw them, I made my inspection after the completion of the drill. The arms, accoutrements and clothing were clean and the accoutrements properly put on.

The steadiness, together with the well executed battalion movements, proved that all ranks had profited by the instruction of their officers. This is the smartest infantry corps inspected in this District (1.)

*Target Practice.*

I would again recommend that the allowance of ball per annum be fired at Company Headquarters, the Militia Department giving a small sum to each Company to be divided into 1st, 2nd and 3rd Company prizes (officers not to compete). (2.)

*Horse Allowance.*

Between seed time and harvest, which in this District, is in the month of June, horses for the Active Militia may be procured at one dollar per day, but during the fall seeding (September), they cannot be had for that amount. The battery officers attending Camp Niagara in September last, had to pay the extra amount or disobey the order to take their batteries to camp. This hardship should not be allowed to exist. (3.)

*Hay and Oats.*

10 lbs. of oats and 15 lbs. hay is not sufficient for farm horses which have been accustomed to more feed. The officers commanding the field batteries, recommend that the allowance be increased to 12 lbs. of oats and 20 lbs. of hay. Upon enquiry, I learned that several of the owners of horses paid the contractor for extra hay and oats. (4.)

*Supplies.*

The contractors who provided the supplies to the camp, gave general satisfaction. Cost for ration per man, twenty cents.

The principal medical officers report that the sanitary condition of the men in camp was very satisfactory. He recommends that a pair of field panniers, (from which all the medicines to the whole camp may be dispensed should be supplied, also that means of instruction as to the method of using appliances for conveying sick or wounded, should at least be afforded to those connected with the hospital staff.

*Provost.*

The appointment of an officer to take command of the camp police, without selecting from corps in camp, was most satisfactory. I would recommend that the Provost to the camp become a standing order.

*Armourer.*

During the camp, the district armourer repaired one hundred and eleven rifles, which would otherwise have been sent to Toronto. I would recommend that he be required to attend all brigade camps. (5.)

*The Minister of Militia.*

The Hon. the Minister of Militia and Defence visited the camp, and was received with a salute from the brigade in line. After witnessing a brigade field day, he expressed to the Force the great satisfaction his visit to the camp had afforded him.

I enclose herewith the target practice returns of the corps performing annual drill, together with the Musketry Instructor's report, in which after alluding to the bad scores ordinarily made by volunteers in camp, he says: "It seems to me that this difficulty might be overcome if the allowance of ammunition were expended at company headquarters under the instruction and supervision of company officers after their return from camp."

I have the honor to be

Your most obedient servant,

ROBERT B. DENISON, Lieut.-Col.,  
Deputy Adjutant-General Military District No. 2.

The Adjutant-General of Militia.

#### NOTES BY MAJOR-GENERAL COMMANDING.

(1) A well drilled battalion, but the chain of responsibility by which non-commissioned officers are made responsible for their men to the subaltern officers of companies, and these to their captains, appears to me to be but indifferently carried out. I myself inspected this battalion and spoke on this subject to them.

(2) I agree entirely that officers ought not to compete, except among themselves, and that Government assistance should be given only on this understanding, and I think target practice should be at headquarters of companies, provided the Deputy Adjutant-General is satisfied that the Instructor is, in each case, a competent one.

(3) I agree with this, and think that when the camp is ordered at the seeding time, special allowance should be given to the officer commanding for this purpose.

(4) I think the food allowed ought, in fairness to the owners of horses, be ample.

(5) I recommend this to be ordered.

#### MILITARY DISTRICT No. 3.

DEPUTY ADJUTANT-GENERAL'S OFFICE,  
KINGSTON, 27th November, 1882.

SIR,—I have the honor of forwarding, for the information of the Major-General commanding, my Annual Report of the Militia, in the 3rd Military District:—

	Strength.
Cavalry (7 Troops) .....	329
Two Field Batteries.. .....	170
Two Garrison Batteries.....	90
Infantry and Rifles (60 Companies). .....	2,772
Total.....	<u>3,361</u>

Number of militiamen authorized for annual drill:—

In Camp.....	1511
At Headquarters.....	543
Total .....	<u>2,054</u>

Corps which performed drill in camp:—

4th Regiment of Cavalry.  
Kingston Field Battery.  
Durham Field Battery.  
40th Battalion.  
45th "  
49th "  
57th "

Corps authorized to perform annual drill at their headquarters:—

Cobourg Garrison Artillery.  
 Port Hope Garrison Artillery.  
 14th Prince of Wales Own Rifles.  
 15th Battalion.

Corps relieved from annual drill:—

3rd Regiment of Cavalry.  
 16th Battalion.  
 46th “  
 47th “

INSPECTING.

*14th Battalion.*

The annual inspection of the 14th Prince of Wales Own Rifles was made by me on the 11th July, the Major-General being absent on leave, and I can report most favorably of the soldierlike appearance and efficiency of this corps. The drill was well performed and consisted of battalion and skirmishing movements; most of the officers have gone through the Royal School of Gunnery, the consequence is that the men are well handled on parade.

The whole equipment belonging to the regiment is in perfect order, and reflects much credit on Lieut.-Col. Kerr and Quartermaster Spriggs, for the system enforced, viz., every article of Government property must be returned into the Quartermaster's store, before any pay is issued, the result is, that everything is forthcoming and ready for inspection at any time. (1.)

*15th Battalion.*

The 15th Battalion have not reported ready for inspection.

*Garrison Artillery Batteries.*

The Port Hope and Cobourg Artillery batteries were inspected by the Assistant Inspector of Artillery, *vide* his Report.

*Rifle Associations.*

There are ten Rifle Associations in this District; and all in good working order.

*Rural Armouries.*

The Rural Armouries, as far as inspected, were, as a general rule, in good condition.

*Camp Site.*

There is great difficulty in finding a suitable camping site in this District, within easy access to water; the land is so taken up by farms that it is hard to pitch on a spot large enough to accommodate a large body of men and horses.

*Cobourg Camp.*

The Camp of Exercise this year was formed near the town of Cobourg, and was the only suitable place that could be procured in that section of the District.

The Town Council placing at my disposal, free of cost, a large common, besides sinking three wells, building all necessary latrines, supply store, and also the site for the Rifle Range.

I am greatly indebted to Lieut.-Col. Graveley, Mayor of Cobourg, for his kind assistance in many ways, during the preparation for the camp, as also while the camp lasted.



On the 5th September, the troops detailed to form the camp, assembled, and consisted of those, as previously shown, of the three arms of the service.

Some of the corps came in weak in numbers, and the reason given by the commanding officers was on account of the late harvests and the high wages, and it was found impossible to take men out of the field, besides this drawback, about six-tenths of the men were raw recruits, which required a great deal of patience, perseverance and trouble to get them into anything like shipshape, especially having only twelve days to do it in; but I can safely say that both officers and men worked with a right good will, and gave every attention to their duties, the consequence was that each day showed an improvement.

#### *Guard Mounting*

Was made an important parade, each corps vieing with the other which would turn out the cleanest and smartest guard.

#### *Inspection of Corps.*

While in camp I made a thorough inspection of each battalion, and found the arms and accoutrements clean, many of the rifles required repairing.

#### *Cavalry.*

The Cavalry, under Lieut.-Col. Duff, turned out very well, and were well mounted. I would here recommend that no stallions be allowed to be brought to camp, as they are not only a nuisance but dangerous; also, to prevent as many injuries happening to cavalry or artillery horses by their kicking one another, I would strongly recommend the Department to issue proper heel-ropes, the same as used by the Indian Cavalry, by this means the Department would save a large amount yearly.

#### *Field Batteries.*

The Durham Field Battery have greatly improved since last year, and came into camp well horsed. *Vide* Inspector of Artillery's Report.

The Kingston Field Battery were weak in numbers and fairly horsed. *Vide* Inspector of Artillery's Report.

#### *Battalions.*

The four Battalions, viz.: the 40th, 45th, 49th and 57th, were very good, but I must give the palm to the 57th. The 49th came to camp, laboring under great disadvantages, having two newly organized companies, one from Madoc and the other from Trenton. The clothing of this battalion was much soiled, and a great scarcity of uniform trousers was very visible, the men having to wear civilian ones, which greatly disfigured the appearance of the corps. Notwithstanding all this, Lieut.-Col. Brown brought a fine body of men to camp.

#### *Rations.*

The rations were all of an excellent quality and gave general satisfaction. I was present at each issue—the daily cost per man being 20 cents.

#### *Muste Parade*

The several corps were mustered by the District Paymaster, in my presence, and all found correct.

*Good Conduct while in Camp.*

The conduct of the force while in camp was excellent, which gave great satisfaction not only to myself, but also to the citizens of Cobourg, so much so that the Mayor presented me with an address, stating the satisfaction it gave the people to have so orderly and well-behaved a set of men encamped near them. *Vide* copy of address. (A.)

*Health of Camp.*

The health of the men was very good.

*Divine Service.*

Divine Service was held on the parade ground, on Sunday morning, the 10th September, at 8.30 a. m.

*Y. M. C. A.*

The Young Men's Christian Association, of Cobourg, erected a large tent in camp for the use of the men, in which was provided all necessary writing materials, daily papers, &c., free; and in the evening religious service was held, and which was well attended. My thanks are due to Mr. Bickle, the President, and those connected with him, for all the trouble and expense they incurred in providing such a resort for the men.

*Major-General Luard's Inspection.*

On the 11th September, Major-General Luard inspected the force on parade. It was drawn up in line to receive him. After the march past, the troops went through a field day, attacking an imaginary enemy, at the conclusion of which the General expressed his satisfaction with the progress made, as also their good behaviour, and pointed out defects and irregularities that required attention and rectifying. (2.)

*Minister of Militia.*

On the 12th September, the Honorable the Minister of Militia visited the camp, and inspected the troops. After the march past he expressed himself as being well pleased with the fine appearance of the men, their progress in drill, and general good conduct, &c., &c., all of which gave great satisfaction.

*March Out.*

The force marched out, and made a fine appearance.

*Fine Weather.*

The weather throughout was most favorable, still I am of opinion that the month of September is risky. June is the month most suitable.

*Drill Instructors.*

I would strongly recommend that three or four good Drill Instructors from "A" or "B" Batteries be allowed each camp. It is impossible for the Brigade Sergeant-Major to perform all his various duties and attend each battalion at drill. (3.)

*Bugler Instructor.*

I would also recommend a Bugler Instructor be allowed, for the purpose of instructing regimental buglers. (4.) At Camps Picton and Cobourg the several regiments could not boast of a single one, and I had to impress a bandsman.

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*Camp Staff.*

The undermentioned officers acted on my Staff, and I have every reason to state my entire satisfaction with their valuable assistance, which added in no small degree to the success of the camp. Major Gordon I am particularly indebted to for his untiring zeal and attention to his many duties. Major Gordon, 14th P.W.O.R., Brigade Major; Lieut.-Col. H. C. Rogers, 3rd Cavalry, Assistant Brigade Major; Capt. Hodgins, 2nd Queen's Own, Orderly Officer; Major Ross, 16th Battalion, Supply Officer; Surgeon-Major Bristol, 4th Cavalry, P.M.O.; Paymaster King, 14th P.W.O.R., Camp Quartermaster; Lieut. MacNachtan, C.G.A., Musketry Instructor; Capt. Farley, "B" Battery, Provost Officer.

The camp broke up on Saturday, September 16th, and I believe every officer and man was well satisfied with his twelve days in camp.

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

H. V. VILLIERS, Lieut.-Col.,  
Deputy Adjutant-General, Military District No. 3.

The Adjutant-General of Militia.

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NOTES BY MAJOR-GENERAL COMMANDING.

- (1) A very good practical rule which should be adopted by all corps.
- (2) On the whole I was well pleased with what I saw in this encampment, reflecting credit on all concerned.
- (3) I recommend that a system of sending non-commissioned officers to the Schools, so as to become efficient sergeants, from each Battalion, should be adopted.
- (4) I find nearly everywhere how very necessary it is to have an Instructor for the buglers.

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(A.)

COBOURG, 15th September, 1882.

DEAR SIR,—I have much pleasure in communicating to you the following resolution, passed by the Town Council at a special meeting held on the 14th instant:—  
*Resolved*,—That this Council desires, on behalf of the inhabitants of Cobourg, to express to Lieut.-Col. Villiers, Deputy Adjutant-General and Commandant of the Camp of Militia located here, their appreciation of the efforts made by himself and the officers and men under his command, to maintain public peace and order, thus contributing largely to the success of the Camp; and they also desire to thank the Commandant for the march out of the Brigade through the streets, thereby enabling those of our citizens unable to visit the parade ground an opportunity of witnessing a splendid display of the force.

This Council would also thank the Commanding Officers of the several battalions for sending their regimental bands to town to serenade our citizens, by this means evidencing their kindly feeling towards us.

(Signed)

J. VANCE GRAVELEY,  
Mayor.

W. H. FLOYD,  
Town Clerk.

A true copy.

H. V. VILLIERS, Lieut.-Colonel,  
Deputy Adjutant-General.

## MILITARY DISTRICT No. 4.

## HEADQUARTERS,

OTTAWA, 15th November, 1882.

SIR,—In compliance with instructions, I have the honor to submit this, my Report on the state of the Militia of the District under my command, for the military year 1882-83.

## 1. The strength of the existing corps are:—

	Officers.	N.-C. Officers and Men.
Cavalry, Troops (two).....	6 ...	70
Field Artillery, Batteries (two).....	12 ...	150
Garrison Artillery, Battery (one).....	3 ...	42
Infantry and Rifles, Battalions (seven) and Companies (forty-four).....	188 ...	1,848
Total.....	209 ...	2,110

## Number of active militiamen authorized for annual drill:—

In camp.....	1,035
At headquarters.....	382
Total.....	1,417

## 3. Corps which performed drill in camp:—

*Cavalry.*

Staff.....	9 ...	7
Prescott Troop, Cavalry, Captain Raney.....	3 ...	32

*Field Artillery.*

Ottawa Field Battery, Captain Stewart.....	5 ...	60
Gananoque Field Battery, Bt. Major MacKenzie .	5 ...	67

*Infantry and Rifles.*

18th Prescott Battalion of Infantry, 3 companies, Lieut.-Col. Butterfield.....	8 ...	105
41st Battalion, "Brockville Rifles," six companies, Lieut.-Col. Cole.....	21 ...	138
42nd Battalion, Brockville Infantry, 5 companies, Lieut.-Col. Buell.....	16 ...	200
56th Battalion, "Lisgar Rifles," 5 companies, Lieut.-Col. Jessup. ....	15 ...	145
Total.....	82 ...	754

## 4. Corps which performed drill at headquarters:—

Princess Louise Dragoon Guards, Capt. Stewart.	2 ..	35
1st Battalion, Governor General's Foot Guards, Lieut.-Colonel Ross.....	26 ...	319
Total.....	28 ...	354

## 5. Corps which did not perform annual drill (1.) :—

*Garrison Artillery.*

	Officers.	N.-O. Officers and Men.
Prescott Garrison Battery, Captain Coughlin....	3 ...	42

*Infantry and Rifles.*

43rd Battalion, 6 companies, Lieut.-Col. White..	26 ...	252
59th Battalion, 7 companies, Lieut.-Col. Bergin.	29 ...	294

*Special Remarks on Corps and General Remarks.*

6. In my Annual Report, for 1831-82, written when my experience in District No. 4 was somewhat limited, I adverted generally to the organization of the Active Force under my command, pointing out the advantageous positions, from a strategic and tactical point of view, of the stations of the different corps, representing the three arms of the service, as well as directing attention to the general satisfactory state of things prevailing on my receiving over command from my predecessor, Lieut.-Colonel Jackson, D.A.G. I may now refer, more in detail, (1) to the steps taken, during the year 1882-83, towards the maintaining and securing efficiency; (2) to the difficulties in the path of officers commanding corps, in the maintenance of efficiency, and the manner, in my opinion, of overcoming such difficulties, and (3), I beg to submit some suggestions for further improvement.

*Brockville Brigade Camp.*

In selecting and detailing corps for the performance of the annual drill in camp in accordance with the General Orders, 27th June, 1882, to complete quota from amongst corps drilled in camp last year, all or nearly all having equal claims, I had to resort to drawing by lot; the following corps being ordered to assemble at Brockville on the 5th September last, under my command, with the undernamed staff :—

Lieut.-Col. Bacon.....	Brigade Major.
Captain F. Toller, G.G.F.G.....	Assistant Brigade Major.
Lieut.-Col. Macdonald, Militia Dept.....	Supply Officer.
Surgeon E. H. Merrick, Gananoque F. B.	Principal Medical Officer.
Major Walsh, 43rd Battalion.....	Musketry Instructor.
Lieut.-Col. White, 43rd Battalion.....	Camp Quartermaster.
Major Weatherley, G.G.F.G.....	Orderly Officer.
Major Breten, 59th Battalion.....	Provost Officer.

*Cavalry.*

Prescott Troop, Captain Raney.

*Artillery.*

Ottawa Field Battery, Captain Stewart.  
Gananoque Field Battery, Major Mackenzie.

*Infantry.*

18th Battalion, Prescott Infantry, Lieut.-Col. Butterfield.  
41st do Brockville Rifles, Lieut.-Col. Cole.  
42nd do do Infantry, Lieut.-Col. Buell.  
56th do Lisgar Rifles, Lieut.-Col. Jessup.

It will be observed that both the 41st (Lieut.-Colonel Cole) and 42nd (Lieut.-Colonel Buell) Battalions (corps drilled last year) were thus assembled in camp, and I cannot adduce a more favorable argument in favor of annual, instead of triennial drill, than the highly creditable state of efficiency of these corps (especially the latter), as commended by the Major General in command at his inspection.

Not only did these corps settle down at once to the successful working of their respective regimental systems, and the performance of daily drill in accordance with Brigade Orders, but, so satisfactory was their state of efficiency, they served, in a measure, as models to their less fortunate sister battalions, not drilled last year.

The camp was admirably situated on one of the most picturesque spots on the banks of the St. Lawrence, and the ground, available for drill and field manœuvres, is extensive and varied in its character, while the abundant pine forest near the camp afforded shelter from sun or storm, for men and horses. Lieut.-Colonel Bacon, B.M., with his usual forethought, placed a carefully prepared sketch of the camp at the disposal of every corps. And the excellent Camp Quartermaster (Lieut.-Colonel White, 43rd Battalion) was early on the ground, regulating the issue of camp equipment, and seeing that corps observed the general principles, as to the camp, shown in the sketch of the Brigade Major, and carrying out my instructions as to order of work to be done on arrival of corps. Lieut.-Colonel White has submitted some suggestions with the view to facilitate the issues of Government stores to, and receipts from, corps at the Brigade Camp.

I must say that the Mayor and Corporation of Brockville made ample and most liberal preparations for our arrival in camp; placing the ground at the disposal of the troops, building sheds for officers' horses, latrines, &c.; while the citizens generally did everything in their power to render our stay at Brockville pleasant. I may add that the Mayor kindly allowed us the use of his extensive and beautiful grounds, north of the town, for field manœuvres.

A noticeable feature of the assembly of corps in camp this year was the satisfaction afforded by the carrying out the recent General Order regarding the issue of a half ration per man, prior to arrival of corps in camp and before leaving camp, with the view to the Quartermaster, and one man per company who proceeded to camp in advance of their corps, having a meal cooked for their men on their arrival, and, in like manner, before their departure from camp.

The money allowed for this service in former years, was not, in all cases, expended with advantage, and too often the first meal in camp was on the morning of the day after arrival.

In consequence of an unusually late harvest succeeding a late seed time, and for other reasons, it was impossible to decide upon a convenient time in all cases for this year's training. Several corps in camp were under their authorized numerical strength. It is but just to state, however, that in obeying orders for assembly many of all ranks did so at much personal sacrifice, this being, too, an unusually busy season both in town and country.

My Brigade Orders regulating the duties in camp, based upon General Orders, differed in no important particular from those issued in 1881, and the same cheerful obedience of orders that characterised Camp Ottawa last year, were observed in Camp Brockville this year.

1st. Morning parade, for squad and company drill.

2nd. " " battalion drill.

3rd. Parade (afternoon), for brigade drill and field manœuvres when ready therefor.

I attach great importance to care and attention being given to the first morning parade by all, from officers in command downwards.

The work of imparting instruction goes on smoothly as a rule at the second morning and afternoon parades. But I have found, generally, that in proportion as the captain is zealous and efficient in personally conducting the instruction of his company at this early morning parade, in the same proportion will the company attain

proficiency and appear to advantage with the rest of the corps at the conclusion of the period of training.

Owing to the presence of two battalions (18th Battalion, Lieut.-Col. Butterfield and 56th Battalion, Lieut.-Col. Jessop,) much below their authorized strength, not drilled in camp last year, and in consequence unable to compare favorably in efficiency with other corps drilled last year, brigade drill was delayed until the 9th September, when the force was inspected by the Major General in command, who was unable to name a later day for his inspection.

Taking into consideration this circumstance, as well as the short time then in camp, the Major General expressed himself pleased at the progress being made, making special reference to the manner in which battalion drill was performed in the 42nd Battalion, under the efficient and painstaking commanding officer, Lieut.-Col. Buell—and the company drill of No. 2 Company, 41st Battalion, Lieut. Asselstine, was also commended. (2.)

I may add that both Lieut.-Cols. Buell and Cole left nothing undone for the good of their respective corps, and, being the senior local officers, they did much to ensure the success of the camp at Brockville. Lieut. Cochrane, R. M. C., again acted as Adjutant 42nd Battalion, with credit to himself and advantage to the corps. (3)

During the past year he has been appointed to an important position on the professorial staff of the Royal Military College, where his services will, no doubt, be duly appreciated.

Not far behind in value to the graduates of the Royal Military College, I found those officers who had gone through a course of instruction at the District Infantry School last winter, showing how useful those schools are towards the instruction of officers, and how desirable it is that there should be permanent Infantry Schools.

In carrying out the Major-General's orders respecting inspections as to cleanliness of arms, the correct fitting of accoutrements, and the manner in which guards and sentries perform their duties, there was a marked improvement as compared with inspections last year. In his inspection of guards and sentries, &c, the Brigade Major was ably assisted by Captain Toller, Governor General's Foot Guards.

By commencing preliminary drill and target practice on the second day in camp, the Instructor of Musketry (Major Walsh, 43rd Battalion, who proved himself as efficient at musketry as he unquestionably is as a regimental officer) was enabled to complete the course of practice at a sufficiently early day to allow the whole brigade to assemble for brigade drill and field manœuvres preparatory to final inspection.

The course of musketry instruction and target practice was this year for the first time regulated by General Orders, and it will now be interesting and instructive to compare the figure of merit of corps in this District with that of corps in other Districts of the Dominion.

Major Walsh has submitted some practical suggestions for future guidance on the subject of target practice.

The rifle range near the camp ground is an admirable one, and the butts and targets, erected according to Captain Costin's latest plan, gave great satisfaction.

Owing to the central position of this excellent range it is well adapted for use at the District Rifle Association matches.

#### *Prescott Troop of Cavalry.—Captain Raney.*

In no corps in camp did I observe more steady progress than in this, in proof of which progress it is but necessary to direct attention to the unfavorable report of the then Deputy Adjutant General of the General's inspection of this corps in October, 1880, and to say that, as a contrast, in camp at Brockville, the men of this corps (composed of an excellent class of young farmers with a good stamp of horses) were clean and soldier-like in their appearance, and, by strict attention to their duties, became as efficient as could reasonably be expected in the short period of the training. (4.)

It is but just to add that Captain Raney received valuable assistance in imparting instruction from Lieut. Gourdeau, P.L.D.G., who had himself but lately at-

tended a course of instruction whilst attached to the 7th Dragoon Guards at Aldershot.

#### ARTILLERY.

*Ottawa Field Battery.*—Captain Stewart.

*Gananoque Field Battery.*—Major Mackenzie.

In company with Lieut.-Col. Montizambert, Acting Inspector of Artillery, I witnessed the inspection of both batteries by that officer, and am glad to know that he is enabled to report favorably regarding the efficiency of both.

Shot and shell practice was carried out under the supervision of Lieut.-Col. Montizambert, with excellent results, as appears from the practice returns, the Ottawa Field Battery making the high score of 436.

I have already submitted a special report as to the accidental breaking of the axle of one of the gun carriages of the Ottawa Field Battery whilst at practice, and I directed attention to the promptitude and skill displayed by Captain Stewart in having the carriage temporarily repaired and ready for parade on the day following the accident. (5.)

*18th Battalion.*—Lieut.-Col. Butterfield.

*56th Battalion.*—Lieut.-Col. Jessop.

Having already referred to the high state of efficiency attained by the 41st and 42nd Battalions, I regret extremely I am unable to report as favorably respecting the above named corps.

In the case of the former, 18th Battalion, it was represented in camp, through no fault of its Lieut.-Colonel, by but three companies instead of six, which may be accounted for as follows:—No. 6 Company, Hawkesbury Mills, was relieved by special authority, it having been stated that to carry out the order for assembly of the company in camp would interfere with local industries. The absence of No. 2 Company, Vankleek Hill, requires further explanation, and, in the case of No. 4 Company, St. Eugene, the captain, suddenly resigned, and in the absence of captain and other company officers and there being insufficient time to fill their places, the company failed to assemble in camp.

The Lieut.-Colonel is now taking steps in the matter to prevent a recurrence of such want of efficiency of the corps, and, it must be added, no blame attaches to the officers and men of this battalion (representing the fine county of Prescott), who assembled in camp at some personal sacrifice, and zealously performed their duties.

*56th Battalion.*—Lieut.-Colonel Jessop.

As regards the 56th Battalion, this corps also assembled in camp under its authorized numerical strength. The captain of No. 7 Company, Metcalfe, has submitted an explanation regarding the absence of his company. No. 2 Company, Prescott, was relieved from the performance of the annual drill.

The unusually late harvest season prevented other companies from having their full strength in camp.

The battalion is composed of a fine body of men, and has a good record for past efficiency. The needful thing seems to be the acquisition of fresh blood—the presence of younger officers—amongst the staff, from the Lieut.-Colonel in command (who, with others, has done good service) downwards.

Efficient officers are not hard to be found amongst the company officers, for not only are there some captains of companies both efficient and energetic, but some of the subaltern officers, after a course of instruction at the Ottawa Infantry School, 1882, here gave valuable proofs of their ability to impart the knowledge there acquired, to others.



Steps are being taken to place this battalion on its former efficient footing.

On Sunday, the 10th September, the brigade assembled for divine service on the camp grounds, where the Rev. P. Crawford kindly officiated, bringing the choir of his church for the occasion. Many of the citizens of Brockville attended this service, there being a special steamboat to the camp.

The presence of the Young Men's Christian Association in camp was thoroughly appreciated; the agents of the Association, representing the Provinces both of Quebec and Ontario, were untiring in their efforts for the welfare of the soldiery by the establishment of an admirably arranged reading room, with recreation tent, &c.

The rations supplied by the different contractors were of the regulation quantity—which is ample—and excellent in quality—and, as at the Camp at Ottawa in 1881, the various duties connected with the supply department were satisfactorily performed, reflecting credit on the efficient Supply Officer Lieut.-Col. Macdonald.

There could be no question as to the quality or quantity of water for the troops at this camp, for not only had every corps the advantage of having its camp fronting on the river bank (no small advantage), but the corporation of Brockville liberally provided for the drawing of water daily to the different cooking places.

Thanks to the Post Office Inspector, Gilbert Griffin, Esq., a post office was opened in camp for the convenience of the troops.

The orders respecting muster parades was carried out, the accountant of the Militia Department, H. O'Meara, Esq., personally attending and affording great satisfaction by his prompt payment of all accounts.

All corps in camp having fully availed themselves of the time at their disposal towards becoming efficient, and the weather from the start being most favorable, the brigade was ready for inspection by the Honorable the Minister of Militia, on the 15th September, the last day of the training.

It was, on that day, marched in column of route to the grounds of the Mayor, north of the town of Brockville, where the Minister, accompanied by the Deputy Minister, was received by the troops in line, and, after the inspection and march past, the force was formed for attack facing the north.

Then followed some field manoeuvres in which it was desired to show the application of drill to tactics. The grounds were admirably suited for the purpose.

Before returning to camp, the Minister of Militia kindly distributed the prizes for target practice, and expressed his satisfaction at what he had seen and heard of the brigade, referring particularly to the good conduct of the troops. Indeed, so good was their conduct, that the duties of the efficient Provost Officer (Major Breden, 59th Battalion) were light, though the measures adopted by that officer to prevent misconduct are not the less appreciated.

As with the absence of misconduct, so there was an almost total absence of sickness in camp, and the duties of the principal medical officer were in like manner light in the extreme.

The last day in camp above referred to, was a "gala day" for Brockville, there were thousands of spectators at the Review, and the town looked its best on one of autumn's finest days.

The camp broke up on the following morning, and I regret having to report a long delay, on the part of the C. P. Railway authorities, in making up the train for the following corps, viz: Ottawa Field Battery, 18th Battalion, detachments 41st, 42nd, 56th. This force was kept waiting at the railway station at Brockville, from 10 o'clock a.m. to 1 o'clock p.m., so good, however, was the conduct of the men on the occasion, and so well were they kept in hand by their officers, that I saw the above named corps marched in succession into the train in such a way as would have done credit to old soldiers. (6.)

I cannot close this report respecting the Brockville Camp, without expressing, in a special manner, my best thanks to the staff, and to officers commanding corps for their hearty co-operation and cordial support in the performance of my duties as Brigadier. (7.)

*Princess Louise Dragoon Guards.—Captain Stewart.*

I inspected this efficient troop at Aylmer, under command of Lieut. Gourdeau, on the 9th instant (November).

The Honorable the Minister of Militia was present at inspection.

I had previously seen the troop on several occasions since last Report, both on mounted and dismounted parades, and invariably found that no reasonable efforts are being spared by officers, non-commissioned officers and troopers to maintain the high state of efficiency it is desirable should be maintained, occupying, as this troop does, an important position as the Princess Louise Dragoon Guards at the Capital of the Dominion.

The troop is composed of an excellent class of young men, the stamp of horses is good, arms and accoutrements and equipment in good order, and the men soldierlike in appearance. Drill was well performed, and target practice carried out.

Lieutenant Gourdeau, in the absence of the efficient and energetic captain, exercised his command with ability (S.)

The Minister of Militia expressed himself pleased with what he had seen of the troop.

*1st Battalion Governor-General's Foot Guards.—Lieut.-Col. Ross.*

Inspection, July 1st, 1882. This corps was inspected by the Brigade-Major (Lieut.-Col. Bacon), in my absence on leave, and that officer's report is as follows:—

"Owing to the inclemency of the weather, the inspection was held in the Drill Hall.

"The regiment was formed up in column, and the reviewing officer was received with a general salute, after which the rolls of each company were called, &c.

"The regiment was then wheeled into line, and put through the manual and firing exercises by Major Macpherson.

"Movements were then gone through under command of Lieut.-Col. Ross.

"This corps mustered again on July 5th for out-door inspection, but the weather was again unfavorable. The strength at inspection will be found in tabulated report. The movements gone through were all performed with great precision.

"Besides the movements gone through on the 1st July, the corps went through the interesting and attractive practice of trooping the colors, which, taking into consideration the limited space (the Drill Hall, with a large concourse of spectators), was exceeding well performed."

NOTE BY THE D. A. G.—I have seen this fine battalion on parade more than once during this year, on church parades, and when furnishing guards of honor, &c., numerically strong. Great attention is paid by all ranks to the clean and soldierlike appearance of the men, to their steadiness in the ranks, as well as to their drill generally.

*Infantry School of Instruction.*

An Infantry School of Instruction for officers and non-commissioned officers, authorized in General Orders (24) of the 14th October, 1881, opened at Ottawa on the 8th February last, and was maintained for a period of over two months, with the following staff:—

Lieut.-Col. Maunsell, D.A.G., Commandant.

Lieut.-Col. Bacon, B.M., Adjutant.

Lieut. D. C. F. Bliss, O.F.B., Instructor.

Sergt.-Major Billman, "B" Battery, Instructor.

Twenty-three (23) officers and non-commissioned officers constituted the class under instruction, of whom twenty (20) obtained class certificates, as gazetted; and, besides, after a special course of instruction, eight (8) officers were subsequently examined by a Board of Officers, and obtained 1st class certificates.

Not only in the acquisition of knowledge in the subjects of instruction, but in acquiring company drill, these officers and non-commissioned officers under instruction for 2nd class certificates displayed much intelligence. It must be added, however, that at a school such as this it is impossible to impart practical knowledge of the internal economy of battalion in the absence of the regimental machinery. (9.)

I take this opportunity to thank Lieut.-Col. Bacon, for his zeal and ability in the performance of his duties as Adjutant. Thanks are also due to Lieut. Bliss and Sergt.-Major Billman for the manner in which they discharged their duties as Instructors, which did much to ensure the success of the school; themselves trained at "A" and "B" Batteries Royal Schools of Gunnery, evidently well trained, and with *esprit de corps* at heart, they showed clearly that they had so learnt infantry drill and practice as to be able to impart to others intelligently and with confidence.

#### EFFICIENT RIFLE ASSOCIATIONS.

Returns of the following Rifle Associations have been duly submitted. These returns speak for themselves as to the work done by each association:—

Brockville.  
Metropolitan (Ottawa.)  
Guards.  
18th Battalion (Co. of Prescott.)  
Prescott.  
Perth.  
Gananoque.  
Ramsay (Almonte.)  
County of Ottawa.

#### *Difficulties to be Overcome.*

In Canada, generally, where all ranks of the force display remarkable aptitude in acquiring military knowledge, and where all are desirous to become proficient, the chief difficulty seems to be the decreasing number of efficient officers, in spite of those annually trained at the Royal Military College, at the Royal Schools of Gunnery and at the temporary Infantry Schools.

This may be accounted for by the fact that many are now leaving our service who commenced their military career at the time when all large Canadian towns were stations for Her Majesty's Regular Troops (principally Infantry), and since the withdrawal of such troops there is an almost total absence of "models" in the Infantry arm of the service, "the fighting line."

To meet this difficulty, I am the more convinced that the time has arrived for carrying out my suggestions, often submitted, as to forming permanent Infantry Schools of Instruction on the basis of the Royal Schools of Gunnery at Kingston and Quebec.

And important though it be that all officers and non-commissioned officers should be properly instructed, it is of the greatest importance that the captain of each company, a man, as a rule, of local influence, should be qualified for his position, for, in the words of the French regulations: "The captain directs the instruction of his company within the limits of the orders of the chef de corps; he is responsible for it, he varies the object of the exercises in order to make them interesting; he exercises a personal and constant action over all parts of the training."

The thing to be desired, therefore, is to provide means of instruction and offer adequate inducements, viz., pay of rank in city corps, prizes for efficiency and rifle-shooting, and annual drill in camp, if possible, for all arms, to the captains of companies and their subordinates (from the captain to the private) to become proficient, and, I need hardly add, it is on no account to be considered that the proposed permanent Schools are to become substitutes for the Active Militia Force, "the only force for the protection of life and property in Canada;" on the contrary, they are

proposed with the view to that force being placed on a more efficient footing and to its being annually trained in a systematic manner, for a longer period and on a settled principle.

*Recommendations.*

Having served as President of the Board of Officers assembled at Ottawa in March last, to consider the future uniform and equipment of the Militia of Canada, my recommendations on this important subject (Report, 1881) and others are embodied in the proceedings of that Board. I need, therefore, but direct attention to them. It is only necessary to pursue the same course with respect to suggestions more recently submitted in view of the revising and consolidating of the Regulations and Orders.

The remaining important subject to which I must revert has been, it is true already, in part, favorably considered, and for the first time general regulations in full for conducting target practice have been published in General Orders. Authority for carrying out the following recommendation, however, is still required, viz., that increased importance be attached to the target practice of troops, batteries, battalions and companies by giving prizes for marksmanship in the annual course of target practice.

In my Report for 1880, I directed attention to what I conceive the two important features in all rifle training, viz: 1st. The utility of turning out in every corps the greatest possible number of good shots, and 2nd the training of each soldier in acquiring skill in the use of his individual weapon. (10.)

The different Rifle Associations (Dominion, Provincial, District and County) have, I consider, done, and are doing much good, limited though that good may be to the attainment of a high degree of skill amongst comparatively few marksmen, the necessity however, is becoming annually more and more apparent for carrying out my recommendation as above shown.

It matters little whether the badges and other prizes for regimental and company efficiency in rifle shooting to which I refer be granted by and through the Dominion Rifle Association and Dominion Artillery Association, or directly by the Department of Militia, but one important step towards general efficiency will undoubtedly be taken on granting these prizes.

This Report would be incomplete were I to omit to express my acknowledgments to the efficient Brigade-Major (Lieut.-Col. Bacon), for his valuable assistance and support.

Not only are his services most valuable on the District Staff, but, owing to his knowledge and experience, it is, I think of great importance that they be more than ever utilized by the Department of Militia at headquarters.

I have the honor to be, Sir,  
Your most obedient servant,

GEO. J. MAUNSELL, Lieut.-Col.,  
Deputy Adjutant-General, Military District No. 4.

The Adjutant-General of Militia,  
Ottawa.

NOTES BY MAJOR-GENERAL COMMANDING.

- (1) Out of a total of 2,319, there were as many as 902 men not drilled—or about 39 per cent. not drilled.
- (2) And this company of the 41st under a subaltern, drilled very creditably.
- (3) I noticed this smart young officer once more this year, as I did last year.
- (4) I am glad to say that I noticed decided improvement in this troop of cavalry since 1880.
- (5) This battery appeared in a creditable state, as also did the Ganancque Field Battery. The Inspector of Artillery reported on them.

(6) Very creditable.

(7) The Brockville Camp afforded me much satisfaction and displayed strongly the great advantages obtained by annual drill over drill bi-ennially, the 41st and 42nd having both drilled last year. The camp was in so delightful a position that I recommend the site for future encampments.

(8) I am glad to receive so good a report of this corps.

(9) I quite concur in this opinion that permanent schools can alone teach interior economy and discipline

(10) I quite concur in this, I consider it of more importance to have many good shots of fair quality than a small number of first class shots in a company, and therefore that shooting squad against squad should be encouraged, thus to improve all, rather than a few picked men.

### MILITARY DISTRICT, No. 5.

HEADQUARTERS, Montreal, 4th December, 1882.

SIR,—I have the honor to transmit herewith the Inspection Reports of the Brigade-Major, Lt.-Col. Worsley, who has been performing the duties of my office for the past six months, in consequence of my illness from the breaking out again of an old wound received in action many years ago in India, and which compelled me to apply for leave of absence, on medical certificate.

I have the honor to be, Sir,  
Your most obedient servant,

B. VAN STRAUBENZEE, Lieut.-Colonel,  
Deputy Adjutant-General, Military District No. 5.

The Adjutant-General,  
Headquarters, Ottawa.

BRIGADE OFFICE, MONTREAL, 30th November, 1882.

SIR,—I have the honor to transmit you my Report on the state of the Militia in Military District No. 5, for the information of the Major-General commanding :—

	Strength.	No. of existing Corps.
Cavalry .....	415 .....	9 Troops.
Field Artillery .....	245 .....	3 Batteries.
Garrison do .....	323 .....	7 do
Engineers .....	86 .....	1 Company.
Infantry and Rifles .....	4,154 .....	90 Companies.
Independent Company .....	44 .....	1 Company.

5,267

Active Militia authorized for annual drill in Military District No. 5 :—

In camp .....	1,755
At Headquarters .....	1,485

3,240

Corps which performed drill in camp :—

Montreal Field Battery,  
Richmond do  
5th Provisional Regiment Cavalry,  
53rd Battalion Infantry,  
54th do do  
58th do do  
79th do do

Corps which performed drill at Headquarters:—

No. 1 Troop 6th Provisional Regiment Cavalry,  
 Montreal Garrison Artillery,  
 St. John's do do  
 Montreal Engineers,  
 1st Prince of Wales Rifles,  
 3rd Victoria Rifles of Canada,  
 5th Royal Scots Fusiliers,  
 6th Fusiliers.

Corps which did not perform annual drill though authorized:—  
 Shefford Battery of Field Artillery.

Corps which were not authorized:—

6th Provisional Regiment Cavalry, 2, 3 and 4 Troops,  
 11th Battalion Infantry,  
 50th do do  
 51st do do  
 52nd do do  
 60th do do  
 St. George's and St. Sebastien Independent Company.

#### *The Cavalry.*

The 5th Regiment, 5 Troops, Lieut.-Col. Taylor, turned out very nearly full strength, at Camp Richmond. They were fairly horsed. The saddlery equipment, generally, in fair condition, and the men good specimens of the agricultural district. The tethering of the horses is worthy of more attention in this arm of the service, considerable time was lost in arranging this. Notwithstanding the constant wet weather, the force improved much under an instructor from the 4th Dragoon Guards. No. 1 Troop, 6th Regiment, paraded for my inspection, on the Champ de Mars, on the 23rd August, it was very wet and the troop turned out rather weak. The drill was, however, fair; saddlery and their equipment in excellent order.

#### *Field Batteries.*

The Montreal Field Battery, Lieut. Green in command, was inspected by Lieut.-Col. Irwin, and is, I understand, in good order. I can answer for their equipment and stores, which could not be better.

The Richmond Field Battery, Major Aylmer, in Camp Richmond, did excellent work, and worked their heavy and obsolete weapons (which I trust the Department will soon be able to change), with a desire to excel, though they turned out weak and in consequence the work was heavy. Lieut.-Col. Cotton, "A" Battery, inspected and complimented them.

#### *Garrison Artillery.*

The Montreal Brigade of Garrison Artillery, Lieut.-Col. Oswald, went into camp on St. Helen's Island, on the 19th August, for 12 days. I do not approve in any way of the drill being put in in this manner by city corps, but this corps had no opportunity of working the guns in the drill shed, therefore I recommended it. They put in a portion of their annual target practice at camp, but owing to the increased traffic, it was considered dangerous and the detachment went to Quebec to conclude. The Brigade has greatly improved under its present command. I saw them at Kingston on the 24th May, when they made a most creditable display. Lieut.-Col. Irwin inspected, and will, no doubt, report.

The Hon. A. Caron, Minister of Militia, went over to St. Helen's Island to see them, and expressed to me his entire satisfaction.

The St. John's Garrison Battery performed drill at local headquarters and were inspected by Lieut.-Col. Cotton.

*Engineers.*

The Engineer Company—Major Kennedy—was inspected by Major Walker, R.E., and I am aware that he was much pleased with the amount of practical work done.

Lieut.-Col. Straubenzee last year in his Report drew attention to the fact, that owing to the loss sustained by all ranks, a better rate of pay should be allowed this corps. I repeat this recommendation, and trust that it may be allowed, otherwise this branch of the Service will die of starvation and thereby become extinct.

*1st Prince of Wales' Regiment.*

This corps, Lieut.-Col. Bond in command, was inspected by the Major-General commanding, on the Champ de Mars, on the 14th October. The clothing and equipment was in fair order and very clean. The drill was well done, including skirmishing and the attack formation. The Major-General complimented them on their appearance and drill. (1.)

*3rd Battalion "Victoria Rifles of Canada."*

The Victoria Rifles, Lieut.-Col. Whitehead, were inspected on the Champ de Mars by myself. Battalion drill, fair; marching, good; manual and firing exercise, fair; attack formation the battalion had little opportunity of trying, owing to the small space in the armory.

They were remarkably neat and clean in both clothing and equipment. No water bottles. The band good and very strong. One hundred recruits in the ranks.

*5th Battalion "Royal Scots Fusiliers."*

This battalion was inspected by the Major-General in the Skating Rink. No. 1 Company in kilts, the remainder in trews. All had new tunics and made a showy appearance. The equipment was clean. Great coats folded on the back and water bottles.

The Major General complimented them on looking like Scotchmen, and those who were not, he said, were no doubt proud to wear the dress of Scotchmen. (2.)

*6th Battalion "Fusiliers."*

I inspected this battalion on the Champ de Mars on the 7th October. They paraded with great coats folded on the back, with straps; no water bottles. In my twelve years service in the militia of Canada I have never inspected so well drilled or clean a battalion. Clothing good, equipment clean. Battalion drill excellent; also manual, firing and bayonet exercises, also skirmishing. Full strength on parade. I also inspected battalion, company and officers' books. All in excellent order. The Major General also inspected them the week after in the Skating Rink, and endorsed my encomiums on them. They are a credit to the great city of Montreal. (3.)

*Camps.*

The District Camp was formed about three miles from Richmond, P.Q., on the St. Francis River (4) on the 12th September, and consisted of the 5th Cavalry, Richmond Field Battery, 54th and 79th Battalions. The town gave the ground free of charge and built two excellent butts, on the Bland principle, with platforms up to 500 yards, besides taking down all fences on the two farms on which our tents were pitched; in fact, Mr. Hart, the Mayor, offered to do anything I suggested. I never was on a better ground, dry with a perfect sod and good water, and notwithstanding

the very wet weather we were able to drill as soon as it ceased raining. The corps, owing to the late season for harvest, turned out weak (with the exception of the 5th Cavalry, all farmers, who turned out nearly full strength), the 54th particularly so. The 79th Highlanders, with the exception of No. 5 Company, which did not turn out, showed at once when they came in, the benefit of last year's training at St. John's. The musketry was carried out according to General Orders. I forward return. All fired their twenty rounds, and 2,000 more could easily have concluded their practice had they been present. I found a great want of efficient buglers, having really only one efficient. I should recommend that next year a Brigade Bugler be attached to Headquarters Staff. The clothing in this camp was in good order, but the accoutrements and equipment want a thorough overhauling, as also the rifles, and the rifles of the country corps sent in company by company to District Headquarters. The health of the troops was good, although we had two cases of scarlet fever. The men were at once sent to their homes and the clothing packed up, marked and sent to Headquarters. When the town is distant as far as this camp there is no need of a Provost Officer. I employed mine to superintend infantry drill. A canteen was established for the sale of small articles, soda water, &c., and the conduct of the men was excellent. I received an address from the Mayor of the town, couched in complimentary terms, on this head. I regret that the Shefford Field Battery did not make its appearance when ordered, and, in consequence, was not allowed to drill this year. The camp was inspected by the Major General on the 20th September, who was pleased to issue an order showing his approval of the progress made. (5.) The rations were excellent in quality, costing  $18\frac{1}{2}$ c. without fuel,  $19\frac{1}{2}$ c. with fuel; forage,  $27\frac{1}{2}$ c.

I would recommend that the cavalry be allowed to bring in seven dismounted men per troop, to be employed as cooks, police, &c., then the horses would all be on parade which is not so now; also that the uniform of the cavalry be altered, to prevent the necessity of a volunteer being obliged to use pipe clay and yellow ochre, which he has no idea of how to use.

The 53rd and 58th battalions were ordered to go into camp at Sherbrooke on the 26th September, and I being ordered, after reaching Montreal, to immediately proceed to that place and command the camp assembled there. The camp ground at that point had some recommendations, principal among them was the beautiful view, but in a military point of view it had none—water scarce, ground hilly, rough, and too confined for a camp of even two battalions, ranges same distance and only two of them. The town had, I understand, promised to improve the water supply, and to build butts, but they did not do it, and therefore the commanding officer asked permission from headquarters not to do their target practice, which was allowed, as it took up so much time. The 58th turned out strong and were a fine body of men, and did their drill faithfully and well. The 53rd, in my opinion, *cannot go* into camp, and must if they are to do any good become a city battalion. This camp was allowed to provide rations, 25c. per man being allowed in lieu thereof to commanding officers, losing much in this way of providing valuable instruction. The camp was very neatly kept, and the behavior of the men excellent, but I think all should come into one district camp, and that in June. (6.) September and October, in my opinion, do not answer so well in this country; on the whole, I was pleased with the increased desire of all ranks to keep their equipment together, and at the district camp the 79th Battalion showed in several cases very good kits, and turned out with credit in marching order. But the knapsacks are now worn out, and I feel sure if the new equipment as recommended, or even part of it was purchased by the Government, it would be taken care of and the force would be more available for service. The several corps were mustered by the District Paymaster in my presence and the rolls carefully checked over and found correct. The proprietors of the various newspapers were most liberal in sending copies of their papers for distribution in camp, which was much appreciated.



*General Remarks.*

The Montreal force, is, in my opinion, in better order now than it has ever been before. Some of the battalions are weak, which is not surprising owing to the high price of labor, but it is a complete brigade, and can turn out clean, and neat, and as fairly drilled for six dollars per man, as a grateful public can expect, and I have seen a good deal of this force for upwards of twenty years. When the drill shed is completed, I look forward with pleasure to a still greater amount of efficiency. All armories and stores are now admirably clean and well kept, particularly the field battery. The bands in the city battalion are, as a rule, too strong for the number of companies; in the rural battalions they have great difficulty in keeping up any at all. (7.) The rifle practice here is not carried out in a systematic manner as part of the training, a great deal of rifle practice goes on amongst the best shots, but the district orders on this head are not carried out, and in future I think the target practice registers should be given at the inspection, otherwise the battalion should not be considered efficient. The offices of the staff should, I think, be in the drill shed, (8) the post office authorities are already getting cramped for room, and I think it would be advisable for the authorities now to think of this. The Montreal force, with the exception of the 5th Royal Scots, turned out for a brigade field day during the Dominion Exhibition here, under Lieut.-Col. Maunsell, D.A.G., Military District No. 4, who, in the absence of Lieut.-Col. Harwood and myself in camp, was sent down to command. The weather unfortunately turned out very stormy and they had to return to quarters after a few movements had been done, which I understand from the reviewing officer were well performed. The rifle associations of this district, 17 in number, are in a flourishing condition.

During the absence on sick leave of Lieut.-Col. Straubenzee, D.A.G. I received every assistance from Lieut.-Col. Mattice, Brigade Major, and from the other members of my staff at the district camp, who were on parade or about the camp from day light to dark.

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

PENNYMAN W. WORSLEY, Lieut.-Colonel,  
Acting Deputy Adjutant-General Military District No. 5.

The Deputy Adjutant-General,  
of Militia M. D. No. 5,  
Montreal.

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NOTES BY MAJOR-GENERAL COMMANDING.

- (1) I was much pleased with this battalion.
  - (2) I was pleased with this battalion.
  - (3) I quite agree with this opinion.
  - (4) An admirable situation for a camp; targets, water, drill ground, all quite close to the camp, and a very pretty country.
  - (5) I was pleased with all I saw in this camp and it did credit to Lieut.-Col. Worsley, the Commandant.
  - (6) I quite agree with this opinion.
  - (7) I agree with this remark about the bands. In one battalion I saw 42 musicians to 122 rank and file.
  - (8) A good suggestion in my opinion.
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## MILITARY DISTRICT No. 6.

HEADQUARTERS, Montreal, 1st December, 1882.

SIR,—I have the honor to report, for the information of the Major-General Commanding, that the full quota allowed to the District under my command (see Adjutant-General's Militia Report, 31st December, 1870) is *five thousand, seven hundred and nineteen militiamen.*

That the present "established strength" in the District is as follows:

*Rifles.*

	Officers, N.C.O. and Men.
64th Voltigeurs de Beauharnois .....	278
65th Mount Royal Rifles .....	368
76th Voltigeurs de Chateauguay .....	278

*Infantry.*

80th Nicolet Battalion .....	278
83rd Joliette Battalion .....	278
84th St. Hyacinthe Battalion.....	278
85th Battalion.....	278
86th Three Rivers Battalion.....	278
	2,314

That the above mentioned corps are in existence.

That the District, as seen by the above, is *far from* the "quota" assigned to it.

That I, at divers times, offered to raise corps of artillery, cavalry and infantry, but have been refused at Headquarters.

That the number of active militiamen authorized for annual drill this year, in District No. 6, were :

In Camp.....	1,017
At Headquarters .....	368
Total.....	1,385

That the corps which performed drill in camp were :

- 83rd Battalion (Lt.-Col. Shepherd).
- 84th Battalion (Lt.-Col. Doherty).
- 86th Battalion (Lt.-Col. F. Houde.)

That on the 4th August last, four companies of the 64th Battalion, *i.e.*, Companies Number one, three, four, six were at the Brigade Office here, in the presence of the Lieut.-Col. of the Battalion (Lieut.-Col. J. M. Prudhomme), selected by ballot to drill at the Berthier (*en haut*), camp, on the 19th September last.

That the aforesaid Lieut.-Col. Prudhomme, then and there, in the presence of the Brigade Major and myself, declared himself well satisfied with the time and place for the camping of the above named four companies of the 64th Battalion.

That neither the said Lieut.-Col. Prudhomme nor any of the above-named four companies of the 64th Battalion came to the Berthier, (*en haut*), camp, although never relieved from that duty (1).

*Camp.*

That on the 19th September, 1882, a Brigade Camp of exercise for twelve days, for the corps above-named, and authorized to drill in camp at Berthier (*en haut*), was commenced with the following staff:—

- Deputy Adjutant-General, in Command.
- Lieut.-Col. Lamontagne, Brigade-Major.

Lieut.-Col. E. De Foy, 80th Batt., Musketry Instructor.  
 Capt. D'Amour, 76th Batt., Supply Officer.  
 Capt. J.-Bte. A. Rousseau, 80th Batt., Camp Quartermaster.  
 Capt. Gagnier, 76th Batt., Provost Officer.  
 Capt. Globensky, 65th Batt., Orderly Officer.  
 Capt. Prevost, 65th Batt., Assistant Brigade-Major.  
 Surgeon. Ant. M. Rivard, 83rd Battalion, Principal Medical Officer.

That during the first week in camp the weather was very damp and cold, especially at night, but fortunately there was no very serious case of sickness.

I am happy to be able to report that no grave accident happened during camp, and that the conduct of the troops was good. (2)

That the corps which performed annual drill at local headquarters were the 65th Battalion, officers, N.C.O. and men 368.

That on the 19th September, last at 8 o'clock in the morning (just before my departure for Berthier camp, which commenced that day), the 65th battalion were on the *Champ de Mars* here, ready for my annual inspection.

But just as the inspection began, a terrific gale accompanied by rain, lightning and thunder burst upon us, and we were forced to proceed to the Boncours Market Hall, where I was obliged to go on with the inspection.

The officers and men were thoroughly drenched, and the only battalion movements possible in such a small place were gone through, and that with credit to the corps. I sincerely regret this *contretemps*, but it could not be helped.

That the corps authorized to drill for this year were:—

Four companies of the 64th Battalion.  
 The 65th Battalion.  
 The 83rd Battalion, Joliette.  
 The 84th Battalion, St. Hyacinthe.  
 The 86th Battalion, Three Rivers.

That the corps not authorized to drill were:—

Two companies of the 65th Battalion.  
 The 76th Battalion.  
 The 80th Battalion.  
 The 84th Battalion.

That owing to the lateness of the season only four hundred and thirty-nine attended camp, instead of the 1,017 selected. (3)

That the only proper time for camping in this district is from the end of June to the beginning of July, each year.

That, nevertheless, if my suggestions contained in my letter of the 12th July last, reducing each company to twenty-three men including the company officers and staff, had been listened to, I could have selected men from all the corps in my district, and would have had in camp the number of militia men detailed in General Order, for the Berthier (*en haut*), camp.

#### 83rd Battalion.

Lieut.-Col. Sheppard, commanding this battalion, is a very good and energetic officer, but his battalion was deplorably weak in numbers at this camp. (4)

#### 84th Battalion.

This was by far the strongest of the three battalions in camp. The men were well clothed, well equipped and looked remarkably well. Lieut.-Col. Doherty deserves a great deal of praise for the manner in which he turned out his battalion for this camp. This battalion had a very good band. (5)

*86th Battalion.*

I was far from being satisfied with this battalion. The companies were not only weak, but two companies, numbers one and four, were absent from camp altogether. The commander, Lieut.-Col. F. Houde, is a most zealous and praiseworthy officer, but he does not receive from some of his officers the aid he is entitled to.

*French Drill Books.*

The french speaking Militiamen are under a very great disadvantage when learning the drill, they should have a French version of the drill book, a thing long ago promised them, but it is still only a promise. (6)

*Riding Masters.*

I think that some means should be reached of teaching the mounted officers to ride properly. (7)

I have seen officers who knew their drill very well, and who were positively useless when on horseback—all their endeavours being to try to stick to the saddle and keep their spurs from entering the flanks of their horses.

If a good riding master attended each brigade camp, it would more than thrice repay the disbursements. (8)

*Buglers.*

Good and proper buglers are wanted in each battalion. A good bugler from battery "A" or "B" should be sent to these brigade camps, in order to teach the different company buglers the principal and most necessary bugle calls.

*Rifle Associations.*

I regret to say that only two Rifle Associations, in this District, have had matches this year: the 65th Battalion, Lieut.-Col. A. Ouimet, President, and the 83rd Battalion, Lieut.-Col. J. Sheppard, President. The returns are forwarded with this report.

*Drill Shed.*

I trust that this indispensable building—now that it belongs to the Government—will soon be properly restored and turned over to the Militia force here. (9)

I beg to be allowed to again thank Lieut.-Col. E. Lamontagne, the Brigade Major of this District, for the very efficient and always willing aid he has constantly afforded me, both in camp and at the office during the present year.

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

A. C. de LOTBINIERE-HARWOOD, Lieut.-Colonel,  
Deputy Adjutant-General, Military District No. 6.

To the Adjutant-General of Militia.

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 NOTES BY MAJOR-GENERAL COMMANDING.

(1) It appears to me that example should be made of these companies, and that they should be disbanded.

(2) I inspected the camp at Berthier (*en haut*) and found a willing set of men, as fairly drilled as could be expected from such wretchedly weak companies.

I saw some recruits who were mere boys, and one or two old men. I believe the lateness of the time of year at which the camp was held was the cause of such sparse attendance, and I would urge the necessity of having the camp at the time most convenient to the men of the battalions.

(3) That out of 1,017 ordered into camp only 439 came, speaks for itself, and shews how very inefficient must be this brigade.

(4) I can vouch for the deplorable weakness of this battalion. One company, besides the officers had only 7 men in camp!!

(5) A credible rural battalion.

(6) Could not the D.A.G.'s. of Nos. 6 and 7 Districts together, draw up and submit such a book?

(7) Could they not be sent to "A" Battery.

(8) I do not agree to this. I think the Field Officers should take riding lessons at other times than camp, they are then wanted for other purposes.

(9) Strongly recommended.

### MILITARY DISTRICT No. 7.

QUEBEC, November 20th, 1882.

SIR,—In compliance with instructions contained in General Order, 27th June, 1882, I have to submit this, my Report upon the state of the Militia in the District under my command for 1881-82 and 1882-83.

The established strength of the Active Militia in my District is as follows, viz.:—

	Officers, N.C.O. and Men.
Cavalry (2 Troops) .....	96
Field Battery.....	81
Garrison Artillery (6 Batteries).....	270
Infantry and Rifles (75 Companies).....	3,574

The authorized number of Active Militiamen, authorized for drill, is as follows:—

	Officers, N.C.O. and Men.
In Camp.....	1,257
At Headquarters.....	1,036

The corps which performed drill in camp were the following, viz.:—

	Officers, N.C.O. and Men.
Quebec Field Battery.....	65
17th Battalion, Léves (8 Companies).....	179
23rd " Beauce (4 " ).....	164
81th " Co. Quebec (6 Companies).....	127
Dorchester Battalion (4 Companies).....	117
Staff.....	14

The following are the corps which performed drill at Headquarters, viz.:—

	Officers, N.C.O. and Men.
Quebec Garrison Artillery (3 Batteries), inspected by the Assistant Inspector of Artillery .....	.....
70th Battalion (6 Companies) .....	180
Charlevoix Battalion (3 Companies).....	89

Corps which are allowed to perform drill during the winter months, viz.:—

	Officers, N.C.O. and Men.
Cavalry (2 Troops) .....	81
Quebec Garrison Artillery (3 Batteries).....	135
8th Royal Rifles (6 Companies).....	275
9th Voltigeurs (8 " ).....	365

## Corps which did not perform annual drill and was

Officers,  
N.-C. O. and Men.

## Authorized:

Rimouski Battalion (4 Companies)..... 180

## Not authorized:

55th Battalion (6 Companies).....	275
61st " (5 " ).....	252
81st " (7 " ).....	275
Kamouraska Battalion (4 Companies).....	180
Temiscouata " (4 " ).....	180

## GENERAL REMARKS.

*Lévis Brigade Camp.*

In accordance with General Order, 27th June, 1882, the following corps assembled in camp, at Lévis, Engineer's Park, for annual drill, under my command, with the following Staff:—Lieut.-Col. d'Orsonnens, Brigade-Major; Lieut. J. D. Hudon, No. 1 Battery, Q.G.A., Assistant Brigade-Major; Lieut.-Col. Forrest, Camp Quartermaster; Capt. G. S. Vien, No. 2 Battery Lévis G. A., Supply Officer; Surgeon F. E. Roy, 9th Battalion, Principal Medical Officer; Major L. D. Hudon, Temiscouata Battalion, Orderly Officer; Lieut.-Col. Evanturel, Provost Officer.

*Artillery.*

Quebec Field Battery, Capt. Lindsay.

*Infantry.*

17th Battalion, Lévis, Lieut.-Col. Blanchet.  
23rd " Beauce, Lieut.-Col. Duchesnay.  
87th " County of Quebec, Lieut.-Col. Laurin.  
Dorchester Battalion, Major Genest.

The Quebec Field Battery arrived in camp, marched from Quebec, and arrived at Lévis about 10 o'clock a.m. This corps was well equipped and horsed, and presented a soldierly appearance.

Owing to the unfavorable time of the season, the battalions did not muster as strongly as would have been the case had they been called out at the end of June or beginning of July. However, some of the country corps turned out with a fair number, in one instance, the 23rd Battalion, being nearly complete.

As in previous years, the number of recruits was considerable, and, in consequence, it was up hill work. Notwithstanding, every officer and man vied together to obtain as great an efficiency as possible.

The regulations prescribed in the General Orders of 27th June, 1882, were carried out to the letter, and the duties of guard-mounting and sentries particularly attended to, and were made an important parade every day. I was glad to notice a marked improvement on former years.

The arms in general were kept in good order, notwithstanding the constant bad weather experienced during camp.

Knapsacks and canteens were provided to the men, previous to assembling in camp, and at every afternoon parade, the men were practiced to fold their great coats and, to place them properly on the knapsacks. I must here remark, that the knapsacks issued are unserviceable, being covered with a coating of tar which

destroys the tunics of the men. Every means have been tried to remedy the evil, but without success. (1.)

The health of the camp was very good, and the medical arrangements properly carried out, under the superintendence of the principal medical officer, Surgeon Roy.

This year a provost officer was appointed, and I must state that his services, in keeping order in and out of the camp, have been very useful.

The articles of supply for the subsistence of the men, were of good quality, and I have not heard a single complaint. The addition of barley and cheese to the usual ration, was a great boon and duly appreciated by the force in camp. The cost of ration was a little over 19 cents per man per day.

The Major-General commanding inspected the camp before the breaking up, and expressed himself pleased with the arrangements and the appearance of the men.

Before closing my remarks, I beg to bring to your notice the necessity of Infantry Schools in Quebec, to qualify provisionally appointed officers. (2.)

#### *70th Battalion Camp.*

The 70th Battalion assembled in camp, at Ste. Geneviève, on the 9th of October last, under the command of Lieut.-Col. d'Orsonnens. I inspected them at the completion of their annual training, and was much satisfied with the camp arrangements and with the efficiency obtained. Lieut.-Col. d'Orsonnens was indefatigable in his efforts to impart to the officers and men, knowledge in drill.

#### *Quebec Field Battery.*

The Quebec Field Battery, under the command of Capt. Lindsay, was inspected on the 20th September last, by Lieut.-Col. Cotton, "A" Battery, Royal School Gunnery.

On the same day I mustered the battery and found 69 officers, non-commissioned officers and men and 31 horses.

I am happy here to state that while under my control in camp, I was able to testify to the good will, soldierly appearance and good conduct of the men.

The efficiency attained has been such that it may well be ranked as one of the best batteries in the Dominion.

Captain Lindsay and his officers are intelligent and hard working, and I beg to bring to the favorable notice of the Major-General Commanding the efficient state of this battery—drill and interior economy. (3)

#### *The Queen's Own Canadian Hussars.*

On the 28th May, 1882, the above corps was inspected by me on the Plains of Abraham, under the command of Lieut.-Col. Turnbull. The squadron marched past at a walk and trot, and general field movements.

The two troops were well horsed, but owing to the short period of training the horses were a little unsteady.

The whole movements performed before me showed that the officers and men had given great attention to the instruction. Voluntary drills were carried on during the winter months at which a good number of troops attended.

On Ascension Day the squadron left at 8 o'clock in the morning, on a reconnaissance to Lake St. Charles, a distance from Quebec of twelve miles. Patrols and vedettes were thrown out and proper regulations carried out, as in regular warfare. I had detailed Lieut.-Col. d'Orsonnens to accompany the squadron, and he reported very favorably upon the manner in which the reconnaissance was performed. Topographical sketches were handed to him on arrival, which showed that the officers in charge of the different parties sent out as *eclaireurs*, were well up to their work. One casualty occurred on arriving at Quebec, when one of the horses, at a walk at the time, broke his pastern bone and had to be shot. The squadron had ridden twenty-four miles, a severe test on untrained horses.

DRILL 1881-82.

*8th Royal Rifles.*

The 8th Royal Rifles, under the command of Major Erskine Scott, performed their annual drill during the winter months, and were inspected by me on the 3rd of May, 1882, in the drill shed, Grande Allée; when they were put through the manual, firing exercises and battalion movements. Owing to the limited space for drilling, I did not confine myself to a final inspection on that day, and on the 18th of the same month the battalion paraded on the Plains of Abraham and I was enabled to test their efficiency in battalion movements and the attack and defence. I can report very favorably on this corps, whose officers have been untiring in their endeavors to make it second to none in the Dominion. (4.)

The 8th Royal Rifles possess a very good band, brass and reed instruments, and also a bugle band.

My thanks are due to Lieut.-Col. d'Orsonneus, Brigade Major, and Lieut.-Col. Forrest, District Paymaster, and to the officers of my divisional camp at Lévis, for the cordial support they have given me in carrying out my orders and in their assistance in trying to make the active force of this District as efficient as possible.

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

T. J. DUCHESNAY, Lieut.-Colonel,  
Deputy-Adjutant General, Military District No. 7.

The Adjutant-General of Militia,  
Ottawa.

NOTES BY MAJOR-GENERAL COMMANDING.

- (1) This is the same as complained of in other Districts—this tarry substance spoils the tunics and disgusts the militiamen
- (2) I am glad that Lieut.-Col. Duchesnay has brought this forward, with which I quite agree.
- (3) I had the pleasure to see this battery this year, and to find it in the same satisfactory condition as when I last saw it. Captain Lindsay is, in my consideration, a first rate officer—and his battery does him and his officers and non-commissioned officers thorough credit.
- (4) It gives me pleasure to receive so good a report. I regret that I have not yet had an opportunity of seeing the corps.

MILITARY DISTRICT, No. 8.

DEPUTY ADJUTANT-GENERAL'S OFFICE,  
ST. JOHN, N.B., 4th December, 1882.

SIR,—I have the honor to forward, for submission to the Major-General Commanding the Militia, the tabular inspection return of No. 8 Military District, being the detail of annual drill performed by each corps in the District.

The following is the established strength of the Active Militia, by arms in the District.

Strength of existing corps was:—

	<i>Cavalry.</i>	Officers.]	N. C. Officers and Men.
8th Regiment, (7 Troops).....	29	.....	315
<i>Field Artillery.</i>			
Newcastle, } Woodstock, }	(2 Field Batteries).....	12	..... 158



*Garrison Artillery.*

	Officers.	N. C. Officers and Men.
N. B. Brigade, (7 Batteries).....	27	315

*Engineers.*

The Brighton, (1 Company).....	3	42
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*Infantry and Rifles.*

62nd Battalion Fusiliers, (6 Companies).....	25	272
67th " (9 Companies).....	35	398
71st " 7 " .....	28	314
73rd " 5 " .....	21	230
74th " 6 " .....	25	272
Independent 2 " .....	6	84

3. The number of active militiamen authorized for annual drill were:—

	Officers.	N. C. O. and Men.
In Camp.....	78	808
At Headquarters.....	50	546
Total.....	128	1,354

4. The corps which performed drill in camp (at Sussex) were :

*Cavalry.*

The 8th Regiment, Lieut.-Col. Domville, 3 Troops.

*Field Artillery.*

The Woodstock Field Battery, Capt. Dibblee.

*Engineers.*

The Brighton Company, Major Vince.

*Infantry and Rifles.*

73rd Battalion, Major McCulley, 5 Companies.

74th " Lieut.-Col. Beer, 6 "

The corps which performed drill at headquarters were :

*Field Artillery.*

The Newcastle Battery, Major R. R. Call.

*Garrison Artillery.*

New Brunswick Brigade, Nos. 1, 2, 7 and 10 Batteries, Lieut.-Col. Foster.

*Infantry.*

62nd Battalion, St. John Fusiliers, Lieut.-Col. Blaine, 6 Companies.  
No. 6 Company, 71st Battalion.

St. George Infantry Company.  
St. John Rifle Company.

5. Corps which did not perform annual drill :

Authorized to drill—

No. 4 Battery, New Brunswick Brigade, Garrison Artillery.

Not authorized to drill—

*Cavalry.*

Nos. 3, 5, 6 and 7 Troops of the 8th Regiment.

*Garrison Artillery.*

Nos. 3 and 8 Batteries, New Brunswick Brigade.

*Infantry and Rifles.*

67th Battalion.

71st “

SPECIAL REMARKS.

6. I understand the reason why the St. Andrew's Battery did not drill is because the Captain cannot spare time to keep his battery together.

Since the last Annual Report, the St. Stephen Independent Company has been joined to the 71st Battalion as No. 6 Company, and I was pleased with the fine company that turned out for my inspection.

The Deer Island Independent Company has had its headquarters moved to Fredericton and forms No. 7 Company, 71st Battalion, under command of Capt. H. A. Cropley.

There remain only two independent companies in the District, viz, the St. George Infantry and the St. John Rifle Company, which last named corps has been changed during the year from Engineers to Rifles. I inspected them on the 9th of November. They appeared very clean and smart on parade, and their movements at drill were satisfactory, with the exception that they had not been practiced in extended order as a rifle company should be.

I inspected the 62nd St. John Fusiliers, on the 9th October. This is a fine battalion and they turned out very creditably and drilled steadily. Their drill in extended order was well done. I thought them much improved since my last inspection. There is an excellent *esprit de corps* among both officers and men.

The brigade of rural corps which drilled at Camp Sussex from the 2nd to the 14th October were fortunate in having dry, though cold weather, but they certainly could, and did, drill much more than in a summer camp. They were provided with knapsacks and paraded with them on, in marching order, once every day.

The whole Brigade underwent a strict personal inspection by companies by the Major General commanding on the 12th October, and afterwards had a review, followed by a sham fight under his command.

I am glad to be able to give the following extract from Brigade Orders (by order of the General Officer Commanding) viz :—“ Major General Luard Commanding the Militia has much pleasure in recording his satisfaction with the appearance and cleanliness (with some exceptions) of the troops in camp at Sussex to-day. It has proved to him that exertion must have been made by all ranks to turn out in a “soldierlike manner.” (1.)

I cannot help recording the great improvement evident in the 73rd Battalion, highly creditable to Major McCulley and the whole corps, the appearance of No. 5 Company of this Battalion under Captain Cameron was especially noticeable.

The conduct of the troops in camp was remarkably orderly and good, which I believe may in a great measure be attributed to the strict orders I issued against

intoxicating liquors of any kind being sold, or even kept in the canteen. The Provost Officer Captain H. A. Cropley was active and determined in having these orders carried out, with the good result above mentioned.

#### SCHOOL OF MILITARY INSTRUCTION.

Last winter a School of Military Instruction was opened at St. John for two months, and was attended by 25 cadets, of whom 22 obtained certificates. I met several of them at camp afterwards where the knowledge gained at this school proved very valuable in enabling them to instruct their companies.

#### ST. JOHN SCHOOL DRILL COMPANY.

Since my last year's report the St. John School Drill Company has been formed here under command of Captain W. M. McLean and has proved very popular and successful.

At my late inspection I was glad to find how well they drilled, though the rifles issued are much too heavy and clumsy for them.

Captain T. McKenzie has taken much trouble instructing them twice every week and reports their progress as good, and that they take a great interest in learning their drill.

The arms and accoutrements issued for their use I found clean and well taken care of.

#### RIFLE ASSOCIATIONS.

The Provincial Rifle Association of this Province held their usual rifle matches this year at Sussex with very satisfactory results.

The County Rifle Associations also held their usual matches, the returns of which will be forwarded to headquarters when received. (2).

I have the honor to be, Sir,  
Your most obedient servant,

JOHN B. TAYLOR, Lieut-Colonel,  
Deputy Adjutant General,  
Military District No. 8.

The Adjutant General of Militia,  
Ottawa.

#### NOTES BY MAJOR-GENERAL COMMANDING.

(1) I was much pleased with all I saw in camp at Sussex, and especially so with the work done by Major Vince and his Company of Engineers, a most useful corps and one which should be encouraged in every way.

(2) I am glad to be able to say that the Militia in this District appear to me to have a most satisfactory spirit and as a rule try to do their best, and reflect credit on the Staff and Regimental officers of the District.

#### MILITARY DISTRICT No. 9.

DEPUTY ADJUTANT-GENERAL'S OFFICE,  
ST. JOHN, 5th December, 1882.

SIR,—I have the honor to forward, for submission to the Major-General Commanding, the tabular inspection return of Military District No. 9, being the details of drill performed by such corps in the District.

The following is the established strength of the Active Militia, by arms, in the District:—

The strength of the existing corps was :

<i>Cavalry.</i>		Officers.	N.-C. Officers and Men.
The King's Troop (1 Troop).....	3	.....	42
<i>Field Artillery.</i>			
Halifax Field Battery (1 Battery).....	5	.....	100
<i>Garrison Artillery.</i>			
1st Halifax Brigade (6 Batteries).....	25	.....	272
2nd " " (6 Batteries) .....	25	.....	272
Digby Battery (1 Battery).....	3	.....	42
Lunenburg Battery (1 Battery).....	3	.....	42
Mahone Bay Battery (1 Battery).....	3	.....	42
Pictou Battery (1 Battery).....	3	.....	42
Yarmouth Battery (1 Battery).....	3	.....	42
<i>Infantry and Rifles.</i>			
63rd "Halifax Rifles" (6 Companies).....	25	.....	272
66th "Princess Louise Fusiliers" (8 Companies)	32	.....	356
68th Battalion (9 Companies) .....	35	.....	398
69th " (9 " ).....	35	.....	398
72nd " (6 " ).....	25	.....	272
75th " (6 " ).....	25	.....	272
78th " "Highlanders" (7 Companies).	28	.....	314
Cumberland Provisional Battalion (5 Companies)	20	.....	230
Victoria Provisional Battalion (5 Companies).	20	.....	230

3. The number of active militiamen authorized for annual drill were:—

	Officers.	N. O. Officers and Men.
In Camp.....	101	1,040
At Headquarters.....	99	1,030
Total.....	<u>200</u>	<u>2,070</u>

4. The corps which performed drill in camp—at Aldershot—were:—

*Cavalry.*

The King's Troop, Capt. Ryan..... 1 Troop

*Infantry.*

The 68th Battalion, Lieut.-Col. Chipman, 9 Companies.  
 The 69th " " Starratt, 9 "  
 The 72nd " " Parker, 6 "  
 No. 6 Company, 75th Battalion, 1 Company.

The corps which performed drill at headquarters, were :—

*Artillery.*

Halifax Field Battery, Major Graham, 1 Battery.

The 1st Halifax Brigade Garrison Artillery, Lieut.-Col. Mowbray, 6 Batteries.

*Infantry and Rifles.*

The 63rd Halifax Rifles, Lieut.-Col. Mackintosh, 6 Companies.

The 66th Princess Louise Fusiliers, Lieut.-Col. Bremner, 8 Companies.

The 75th Battalion, Lieut.-Col. Kaulbach, 5 Companies.

Yarmouth Garrison Battery without pay, not being authorized to drill.

5. The following corps did not perform annual drill.

Authorized to drill—

None.

Not authorized to drill—

*Artillery.*

2nd Halifax Brigade Garrison Artillery.

The Digby, Lunenburg, Pictou.

And Mahone Bay Garrison Batteries.

*Infantry.*

The 78th Battalion.

The Cumberland Provisional Battalion.

The Victoria Provisional Battalion.

SPECIAL REMARKS.

The 68th, 69th and 72nd Battalions, with No. 6 Company 75th Battalion, drilled in a Brigade Camp at Aldershot, (1.) from the 11th to the 23rd September; unfortunately the weather was remarkably rainy, more than half of the time in camp being wet, but every possible advantage was taken of the fine days, and considering that the corps had not been in Brigade Camp for several years, they went through the movements of a field day and sham fight, at the end of the camp, in a manner that did them great credit.

I regret that I cannot report the general conduct of the troops in this camp to have been as creditable as is usually the case, for although some were very good, the disorderly conduct of others was such as to bring discredit to the whole camp.

The Major-General commanding inspected the force in camp on the 15th, but the weather being very unfavorable he could only see the troops by companies between the showers.

The camp ground at Aldershot appears to me to possess the most conveniences and to be the most suitable ground for a large camp of any in the Maritime Provinces.

I must note that there were an unusually large proportion of recruits in the camp at Aldershot, but this difficulty appeared to bring forth more than usual energy and zeal on the part of Battalion officers of all ranks.

I inspected the 63rd Halifax Rifles, and the 66th Princess Louise Fusiliers, at Halifax, on the 23rd November; both Battalions turned out in good strength; their appearance on parade, cleanliness of accoutrements, which was correctly fitted on (I was glad to find that every man cleaned his own belts, which is an exceptional thing for city corps), and general soldierlike bearing, in the ranks, struck me as being the

pattern corps, which they ought to be considering the advantages they possess in having the regular troops quartered among them.

I much regret these Battalions were not permitted to attend for a day at Camp Aldershot, for I feel sure the rural corps in camp would have benefitted much by their example.

The 75th Battalion, (5 Companies), which drilled at their local headquarters, were inspected by the Brigade Major, who reports his inspection as "very satisfactory," the uniform and accoutrements complete, and the arms in good condition, and their drilling, manual and firing exercise "all very steadily," the blank ammunition was so much rusted at the rim it could not be used.

The Artillery were inspected by Lieut.-Col. Cotton, Assistant Inspector of Artillery, who will make his own report. I may here notice that Lieut.-Col. Mowbray, commanding 1st Halifax Brigade Garrison Artillery, represented very strongly to me the difficulties under which his officers labor by not having some School of Gunnery in the Province; and that considering the Maritime Provinces have 32 Batteries of Artillery and Companies of Engineers, while Ontario and Quebec have only 17 each, it appears only reasonable their request may receive that consideration which the preponderance of Artillery in the Maritime Provinces brings forward so strongly (2).

During the past year, the Halifax Gun and Drill Shed has been floored and other repairs made which were very much needed; on going round the armouries, I could not help being struck with the very limited space allowed for the arms and stores of each company; complaints have been made of losses and deficiencies taking place in consequence, which I fear are to be expected until some more commodious and convenient armouries are built.

A new wire fence has been constructed around the Bedford Rifle Range, the former wooden fences being broken down and useless.

I forward the annual returns of the Provincial Rifle Association of Nova Scotia and those of the Counties. A great deal of interest appears to be taken in rifle practice and with very satisfactory results; the usual Provincial and County matches have been well attended.

All the rifles in the district except those of one battalion having been repaired and browned at the Militia Stores, Halifax, those of No. 8 and 12 Districts will now be sent in for repairs.

I have the honor to be, Sir,  
Your most obedient servant,

JOHN B. TAYLOR, Lieut.-Col.,  
Deputy Adjutant-General, Military District No. 9.

The Adjutant-General Militia.

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NOTES BY MAJOR-GENERAL COMMANDING.

(1) I visited this camp and was pleased with what I saw, but the weather was so unfortunate that I had not much opportunity of seeing what the men could do.

(2) *Note.*—The following memorandum on this subject has been received from the Inspector of Artillery:—  
As transport to and from the Schools of Gunnery is free, all the Provinces are practically on a par as regards the advantages to be derived from attendance thereat, and it is only to residents at Quebec or Kingston, that any special advantage as regards locality may be said to exist. The expedient recommended in my last Annual Report, viz. that of sending an officer and detachment of men from the School of Gunnery for four months to such places as St John, Halifax, Montreal, &c., to form local schools and hold short courses of instruction thereat, is, in my opinion, the best means of getting over the difficulty caused by many active volunteers being unable to leave their local employment.

## MILITARY DISTRICT No. 10.

FORT OSBORNE, WINNIPEG, December, 1882.

SIR,—I have the honor to forward the tabular inspection report of the District under my command, and regret not having been able to do so at an earlier date, for the reasons already explained by letter.

The established strength of the existing corps were:—

	No. of Cos.	Officers. N. C. O. & men.
Cavalry .....	1	45
Field Artillery .....	1	85
Mounted Infantry.....	3	135
Infantry.....	7	315
Total.....	12	580

Number of Active Militia authorized for Annual Drill were:—

In Camp.....	85
At Headquarters.....	365

(1) Total..... 450

Corps which drilled in Camp.—Winnipeg Field Battery; 76 officers and men.

Corps which drilled at Headquarters.—None.

Corps which did not perform Annual Drill:—

Authorized to drill—

	No.
Winnipeg Cavalry (Troop).....	1 Troop.
“ Infantry (Company).....	1 Company.
Kildonan “ “ .....	1 “
Emerson “ “ .....	1 “
St. Boniface “ “ .....	1 “
St. Jean Baptiste Infantry (Company).....	1 “
Total (365 officers and men).....	6

Not authorized to drill—

Prince Albert Mounted Rifles.....	2 Companies.
Duck Lake “ “ .....	1 Company.
Prince Albert Infantry.....	1 “
Battleford “ .....	1 “

Total (225 officers and men)..... 5

Total No. of Companies not drilled (590 officers and men)... 11

The Winnipeg Field Battery being the only corps in this District authorized for training in camp, was the only one that performed drill. They went under canvas on the 20th June, under command of Lieut.-Col. W. N. Kennedy, and were mustered in my presence on the 1st July.

They were afterwards, on the same day, inspected by the Hon. Minister of Militia, who was pleased to express himself well satisfied with the appearance of the corps on parade, as also with the manner in which the subsequent manoeuvres were executed in the very limited space available in the vicinity of Fort Osborne Barracks.

For details of movements see tabular Report.

The guns were well horsed and both gunners and drivers showed a marked improvement in proficiency during the course of training in camp.

The rifles, accoutrements, &c., in charge of the battery were inspected by me on the 2nd July and also on the 2nd inst., and found in good order.

*The Winnipeg Cavalry Troop.*

Under the command of Capt. Knight, though authorized to do so at headquarters, performed no drill this year, the difficulty of obtaining horses for three hour drills and the want of a Drill Shed being the principal reasons assigned.

Capt. Knight also complains of the difficulty of re-organizing his troop with old worn-out uniforms and unsuitable accoutrements. I forwarded a communication on this subject to headquarters on the 22nd June last, and another on the 15th July, referring to the same subject, to neither of which any reply has been received.

An application was made by Capt. Knight in July last (28th), for permission to perform his authorized twelve days drill in six days in camp at double hours, without any additional expense to the Government. This I strongly recommended, but as permission was not granted the troop did not drill at all.

I inspected the arms, accoutrements and saddlery of the troops on the 2nd inst., and found everything in the armoury in good order.

*The Winnipeg Infantry Company.*

Under command of Captain Mackeand, likewise performed no drill, though authorized.

The want of a Drill Shed is the principal reason assigned by the captain, as the men were too busy during the day time to attend drills and had no place to drill in the evenings.

He also complains of the same difficulty as Captain Knight, in the matter of re-organizing with old uniforms.

I inspected the arms, &c., of this Company on the 4th December, and found them clean and in good order, although the armoury in which they were stored was quite unfit for that purpose, being so damp that except for inspection the arms have to be kept covered with a thick coating of grease.

*The Kildonan Infantry Company.*

Under the command of Captain Rolph, appears to have broken up almost completely, owing, I am given to understand, to most of the members of the corps having left the neighbourhood. The captain and other officers reside in Winnipeg, six miles from the headquarters of the corps, and the men are scattered all over the country, the majority having gone west.

I have been unable to inspect the arms, &c., of this Company since they were seen by Captain Street in March last.

I had appointed the 2nd inst. for that purpose, but was prevented by a blizzard, and have not since been able to arrange another day with Captain Rolph who has been either absent or too busy to attend to the armoury.

*The St. Boniface Infantry Company.*

Under the command of Captain Prud'homme, did not perform any drill for the same reason as the others, namely, over-press of business of both officers and men during the day time and no Drill Shed for night use.

I inspected his armoury on the 11th instant, and found his arms and accoutrements in good condition.



*The Emerson Infantry Company.*

Under command of Capt. Nash, has performed no drills for two years, or since the expiration of their first term of service. It may, therefore, be regarded as thoroughly disorganized at the present moment.

Capt. Nash made an attempt to reorganize this past summer, but failed, principally in consequence of the excessive business demands on the men's time at that place, but also in a great measure owing to the generally experienced difficulty of getting new men to accept the old clothing of their predecessors.

He will endeavour to reorganize next spring, and feels confident of success if promised a new issue of clothing.

*The St. Jean Baptiste Infantry Company.*

Under command of Capt. Thibault, has performed no drill, owing to the absence of the captain, who until very recently has been residing and doing business in Winnipeg, and none of the other officers of his Company being qualified to instruct in drill. Capt. Thibault was duly notified to have his armoury inspected on the 1st December, but wrote stating he could not be ready by that date. Consequently his arms have not yet been inspected, but I purpose doing so some time in January, should the weather not be too unfavorable.

*The North-West Corps.*

Consisting of three Mounted Infantry and two Infantry Companies, have never been inspected since their first organization in October, 1879.

In consequence of not yet having received any uniforms, they were relieved from drill this year, by order of the Adjutant-General, dated August 10th.

A copy of this letter, including reference to the inspection of arms, was forwarded to each officer commanding a company in the North-West on the 1st September, but up to the present date replies have only been received from Capt. Scott, commanding the Battleford Infantry Company, and Capt. Hughes, commanding the Duck Lake Mounted Rifle Company, both of whom report the arms, &c., in their charge as complete and in good order.

In reference to these corps I may state that it is hardly to be expected that they will give up much of their valuable time and supply their own horses for drilling purposes, or even regard themselves in the light of a properly organized body of militia, until after they have been furnished with uniforms of some pattern or denomination.

*General Remarks.*

During the year 1882, there has been such a press of business thrown upon the shoulders of every member of the community in Manitoba and the North-West Territories, and salaries and wages have been so high, and business of every kind so remunerative, it was hardly possible to expect that either officers or men would or could devote the busy hours of the day to drilling, especially in such uninterestingly small numbers as the present militia organization of the Province of Manitoba would be able to afford; at the same time I have the officers, particularly those connected with the city corps of Winnipeg, and I am myself fully satisfied that were the infantry increased to a six company battalion and a suitable drill shed erected in a central position in the city, with armouries, &c., attached, as in other cities in Canada of far less importance than Winnipeg, there would be no difficulty whatever in recruiting and keeping up one of the finest battalions in Canada, as there is no finer material in any portion of the Dominion than is to be found at the present time in this city and the North-West generally.

If any amount of proficiency is to be expected from the cavalry it certainly must be either obtained in camp or all the members of the corps must own their own

horses, as it is quite impossible to make anything of horses hired for the day from some livery stable, and most probably let out to a different rider for each drill.

The aspect of the North-West and Manitoba has so altered since the first organization of a militia here, that I strongly recommend the reconstruction of the whole force, the necessity for which course cannot but be apparent to all, when the immense increase of population of the last three years is taken into consideration. (2)

*Manitoba Rifle Association.*

The annual prize meeting of the Provincial Rifle Association was held on the Point Douglas Range on the 22nd August and three following days.

The shooting was very fair considering the class and condition of the rifles at present in the hands of the militia here, they being the same that were brought up by the first and second "Red River Expeditions" in 1871 and 1872, and have never since been even overhauled by an armourer.

There was upwards of \$2,000 distributed in prizes at that meeting, which was in every respect a successful one, and promises well for the future.

The regulations relative to pay lists (G. O., 9, 5th May, 1880) have been strictly carried out, and no discrepancies have been found to exist.

I have the honor to be, Sir,

Your obedient servant,

C. F. HOUGHTON, Lieut.-Col.,

Deputy Adjutant-General Military District No. 10.

The Adjutant-General,  
Headquarters, Ottawa.

NOTES BY MAJOR-GENERAL COMMANDING.

(1) It would seem that of a total established strength of 580—and of 450 authorized to drill—only the strength of the Winnipeg Field Battery, 76, actually drilled.

(2) It appears clear to me that this District is in an unsatisfactory condition—but without seeing it for myself, and conversing with the officers and others connected with the Militia of the District, I do not feel justified in making recommendations for its improvement. A visit to Manitoba would, I hope, enable me to make suggestions of a practical nature for the benefit of the Force.

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MILITARY DISTRICT No. 11.

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VICTORIA, B.C., 12th December, 1882.

SIR,—I have the honor to report upon the state of the Militia in this Military District as follows:—

The established strength of the force in this district is:—

	Officers.	N.-C. Officers and Men.
Garrison Artillery (1 double strength battery)..	6	85
“ “ (1 half “ “ )..	2	30
Infantry (4 companies).....	12	168
Total..	20	283

Number of active militiamen authorized for annual drill:—

In camp .....	none
At headquarters.....	300

Corps' which performed drill at headquarters:—

*Strength at Inspection.*

	Officers.	N.-C. Officers and Men.
Victoria Battery Garrison Artillery .....	4	29
Seymour “ “ “ .....	2	15
No. 2 Company Victoria Rifles.. .....	2	15
New Westminster Rifle Company.....	2	20
Nanaimo Rifle Company.....	1	16
Total.....	11	95

Corps which did not perform annual drill (1).

Authorized to drill:—

No. 1 Company Victoria Rifles.

INSPECTION REPORT OF CORPS.

*Victoria Garrison Artillery.*—(Present, 4 Officers, 29 Men.)

The inspection of the Victoria Battery Garrison Artillery, was held at 10.30 a.m., on the 2nd December, at Finlayson Point Battery. The inspection had been fixed for an earlier day and postponed on account of the state of the weather, and was finally held under very unfavorable circumstances for a strong muster.

As well as that the inspection was in the day time, when it is more difficult for men to attend than in the evening, until nearly noon, rain was falling and the weather otherwise was very unfavorable for gun practice, causing doubt in the minds of many of the men as to whether there would not be another postponement, resulting in their non-attendance, they being unwilling to sacrifice a day's wages, at the high rates in this Province, in the uncertainty as to their being required. There were present at the inspection, 4 officers and 29 non-commissioned officers and gunners. Shortly after noon, His Excellency the Governor General arrived at the Battery, and remained for a considerable time witnessing competitive shot and shell practice.

Before his departure the men were addressed by the Governor General, when His Excellency was pleased to compliment them upon their practice and the manner in which they had discharged other duties that had come under his observation.

The target was originally anchored at 1,400 yards distance and was very difficult to see, being merely a barrel with a small flag. The strength of the tide caused it to drift until the distance exceeded 2,000 yards.

A high wind, causing considerable sea, also prevailed, making the target at times invisible and causing delay; allowing for which difficulties, the practice was very good.

A detachment of the battery, during the season of drill, dismounted a 64-pounder gun at Victoria Battery, and removed it, together with carriage and traversing platform, to the drill shed, re-mounting it there, having thus not only valuable practical drill, but providing for drill purposes at the shed, a gun mounted on the same description of carriages as those they have to work at Finlayson Point Battery.

In consequence of myself acting as Deputy Adjutant-General, the battery has this season been under command of Lieutenant Jones, who has been very zealous in discharging his duties.

*Seymour Half Battery of Artillery.*—(Present, 2 Officers, 15 Men.)

Inspected this battery, under command of Captain Pittendreigh, at the Drill Shed, New Westminster, on the evening of the 25th November. There were present 2 officers and 15 men in the ranks.

This battery labors under great disadvantages in not having guns available for practice or even for drill purposes. Captain Pittendreigh strengthened the rotten carriages of his two howitzers sufficient to fire a salute on the arrival, at New Westminster, of His Excellency the Governor General and Her Royal Highness the Princess Louise, but no practice is possible, and no pride or interest can be aroused in the corps in such an armament.

*New Westminster Rifles.*—(Present, 2 Officers, 20 Men.)

Inspected at Drill Shed, New Westminster, under command of Captain Peele, on the evening of the 25th November, when 2 officers and 20 men were present.

There was also present, during the inspection of this company and the Seymour Artillery, a band of 18 performers, of whom 10 are returned by Captain Peele as enrolled members of his corps, and 8 by Captain Pittendreigh as enrolled in his battery.

This band is under the management of a competent and experienced bandmaster, and is in a very efficient state. It received the first prize at the Provincial Agricultural Society's band competition. It is not desirable that the existing strength of the corps at New Westminster should be weakened by such a number being drawn from them for musicians, but as a band is of great value in the Militia, and this band is so well organized, I would respectfully recommend that the formation of a band of 15 performers be sanctioned in addition to the authorized strength of the corps.

*No. 2 Company Victoria Rifles.*—(Present, 2 Officers, 15 Men.)

Inspected at Drill Shed, Victoria, under command of Captain Fletcher, on the evening of the 30th November, when there were present 2 officers and 15 men.

Manual, firing and bayonet exercises were gone through creditably.

*Nanaimo Rifle Company.*—(Present, 1 Officer, 16 Men.)

Inspected at Nanaimo, under command of Lieutenant Harvey, on the evening of the 12th of December, when 1 officer and 16 men were present. As well as the other corps, the muster of this company was regrettably small, but the manner in which a

number of infantry movements, including extended order, and the manual and firing exercises were gone through with, was very satisfactory, and evidenced that much attention had been paid to drill.

#### GENERAL REMARKS.

During the visit to this Province of His Excellency the Governor General, and Her Royal Highness the Princess Louise, guards of honor were furnished on four occasions at Victoria, and once at New Westminster and Nanaimo.

A permanent guard of two non-commissioned officers and four men was also maintained at Government House, from the 20th September to the 26th October, drawn from Victoria Battery, and Nos. 1 and 2 companies Rifles alternately.

His Excellency, by a letter from His Military Secretary, Lieut.-Col. de Winton, R. A., C.M.G., was pleased to express his satisfaction with the manner in which these duties were performed.

Royal salutes were fired by the Victoria Battery at eight in the morning of arrival of His Excellency and Her Royal Highness, upon their landing at Esquimalt, and again upon their departure. And a Royal salute was fired by the Seymour Artillery, upon the arrival at New Westminster of His Excellency and Her Royal Highness.

#### *Batteries.*

The sum of \$600 has this year been expended in revetting Macaulay Point and Finlayson Point Batteries (2). The work has been well done under the supervision of the Assistant Engineer of the Department of Public Works at this place—but the grant of \$600 was not sufficient to complete the work, and there still remains unrevetted, and in a very unsightly condition at Macaulay Point Battery, the rear part of battery and the shelter trenches of magazine. There is a large amount of material in the way of cedar posts on hand, leaving little more than the labor to be provided for to complete the work. Mr. Gamble, the Assistant Engineer, estimates that \$150 will suffice to finish this work. Unless this is done the shelter trenches will soon be filled up, and also the material on hand will be wasted or gradually carried away or burned by Indians and others.

Would strongly recommended that authority to expend the additional sum of \$150 be granted (3).

#### *Armament in position.*

The guns in position are in good order, but should next spring be freshly lacquered, and the carriages be painted. The stores from Macaulay Point and Brother's Island Batteries, have been removed for their better preservation to the drill shed, the store rooms at these batteries being very damp, and having also (as reported at the time) been twice broken into and certain articles stolen.

#### *Arms and Clothing.*

I inspected the armouries of the several corps that paraded for inspection, and found the arms clean and well cared for, and the clothing in good order, allowance being made for fair usage.

The Artillery clothing, which has now been in use for four seasons, has suffered most from the nature of the duties of artillerymen, and will need to be renewed by next season.

It would be economy to furnish, in addition to the cloth tunics and trousers, a suit of serge to each man (4), as working at heavy guns and tackles, carrying projectiles, &c., is destructive to clothing.

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*Ammunition.*

There remain in the magazine only 10 boxes (4,200 rounds), of Snider-Enfield ball cartridge, and this is all that there is in the Province. Her Majesty's Navy being armed with the Martini-Henry Rifle, no Snider-Enfield ammunition is kept at the dock yard (5).

It has been impossible to supply the rifle associations, or even to expend in class firing by the Militia the regulation allowance, and should an emergency occur requiring the services of the Militia, the present short supply of ammunition might be a serious inconvenience.

I would respectfully recommend that as expeditiously as possible a fresh supply be sent. Sixty thousand rounds of Martini-Henry ammunition have recently been received by the Militia Storekeeper of this District, presumably intended for the 25 Martini-Henry rifles applied for some time since by the Provincial Rifle Association, and in respect to which the President of that Association received an intimation that they would be sent. They have not yet been received.

*Drill Shed.*

This building requires important repairs, delay in respect to which will involve in the end a much heavier outlay (6). A special report on this subject will be sent in.

I have the honor to be, Sir,

Your obedient servant,

C. T. DUPONT, Captain,

Acting Deputy Adjutant-General, Military District No. 11.

The Adjutant-General of Militia,  
Ottawa.

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NOTES BY MAJOR-GENERAL COMMANDING.

- (1) The weakness of these corps is remarkable.—Out of a total of 20 officers and 283 non-commissioned officers and men, there appeared at inspection only 11 officers and 95 men; showing how necessary it is that steps be taken to increase the interest of the men in their duty.
  - (2) At the suggestion of the Inspector of Artillery of the Dominion, I beg to recommend that the rear slope of the Battery—except that portion just in front of the Expense Magazine—be graded to a slope of 45°, which will not require revetting, and that the earth so obtained be used to strengthen the emplacements or the flanks of the Battery.
  - (3) Recommended.
  - (4) Recommended.
  - (5) For these reasons I recommend that Snider rifles be withdrawn from the Militia Corps of District No. 11, and in their stead that Martini-Henry rifles be issued to them; so that the ammunition for the Militia may be the same as that used by the Royal Navy and Royal Marines, thus removing all chance of confusion which might occur by the use of two descriptions of ammunition in case of active service of any sort.
  - (6) Delay in doing necessary repairs is bad economy.
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## MILITARY DISTRICT No. 12.

DEPUTY ADJUTANT-GENERAL'S OFFICE,  
ST. JOHN, N.B., 5th December, 1882.

SIR,—I have the honor to forward for submission to the Major-General Commanding, the tabular inspection return of Military District No. 12, being the details of the Annual Drill performed by each corps in the District.

2. The following is the established strength of the Active Militia, by arms, in the District:—

The strength of the existing corps was:—

*Garrison Artillery.*

	Officers.	N.-C. Officers and Men.
"Prince Edward Island Provisional Brigade," (3 Batteries).....	14 .....	126

*Engineers.*

"Charlottetown," (1 Company).....	3 .....	42
-----------------------------------	---------	----

*Infantry.*

82nd Battalion, (6 Companies).....	25 .....	272
"King's Co." Provisional Battalion, (2 Com- panies).....	6 .....	84
"Prince Co." Provisional Battalion, (2 Com- panies).....	6 .....	84

3. The number of active militiamen authorized for annual drill were:—

	Officers.	N.-C. Officers and Men.
In Camp.....	nil .....	nil
At Headquarters.....	33 .....	420

4. The corps which performed drill at headquarters were:—

*Artillery, Garrison.*

The "Prince Edward Island Provisional Brigade," Major Irving, 3 Batteries.

*Engineers.*

"Charlottetown," Company, Major Doherty, 1 Company.

*Infantry.*

82nd Battalion, Lieut.-Col. Beer, 4 Companies.  
No. 1 Company, King's Co. Battalion, 1 Company.  
No. 2 Company, Prince Co. Battalion, 1 Company.

5. Corps which did not perform annual drill were:—  
Authorized to Drill.—Nil.

Not authorized to Drill :—

*Infantry.*

Nos. 2 and 6 Companies 82nd Battalion.  
No. 2 Company, King's Co. Battalion.  
No. 1 Company, Prince Co. Battalion.

SPECIAL REMARKS.

The corps in this District which were detailed for annual drill had instructions to perform it at their local headquarters.

The Artillery and Engineers were inspected by the Inspecting Officers of their respective branches of the service; the Infantry were inspected by the Brigade-Major, as soon as each company had completed its drill.

Major Freeland reports the drill of Nos. 3 and 4 Companies, 82nd Battalion, as being satisfactory, but that of the other 4 Companies who drilled, as "only fair."

I believe that no improvement can be expected so long as these companies are permitted to drill at their company headquarters.

I would respectfully suggest that next year, if the companies named for drill were formed into a temporary Provisional Battalion, and went through their annual drill together in camp under command of the Brigade-Major with one officer to assist him, the improvement of the companies would be very apparent—the transport expense for a camp in the island would be trifling, as they would travel by Government railway, and no other camp staff would be required. (1)

The Brigade-Major reports that "the formation of the three Independent Garrison Batteries into a Provisional Brigade of Artillery under command of Major Irving, has worked well, and the influence of that energetic officer has thereby been extended to the three batteries with excellent results." (2.)

"The arms and accoutrements are generally in a serviceable condition, orders have been issued to send all rifles that require repairs, to headquarters in order that they may be forwarded to Halifax for repairs."

"The Provincial and County Rifle Associations have held their annual meetings and are in a satisfactory condition."

I have the honor to be, Sir,  
Your most obedient servant,

JOHN B. TAYLOR, Lieut.-Colonel,  
Deputy Adjutant-General,  
Military District No. 12.

The Adjutant-General of Militia,  
Ottawa.

NOTES BY MAJOR-GENERAL COMMANDING.

(1) I recommend the plan for adoption.

(2) I have not seen the Prince Edward Island force, this year, but have a good opinion of their promise towards efficiency by what I saw last year, and they possess the advantage of an excellent staff officer, Major Freeland.



APPENDIX

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 1, Lieut.-Col. W. H. JACKSON, D.A.G.M.		Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.			
Battalion or Corps.	Companies. Commanding Officer and Head Quarters.	Corps.	Officers.	N.-C. O. and Men.	Corps.	Officers.	N.-C. O. and Men.		Place.	Date.	Number of days drill performed.	Miles.
Brigade Staff.....	Lt.-Col. Jackson, D.A.G. ....			8	6	London .....	Sept. 12	12	Camp.	.....		
1st Regiment of Cavalry .....	4 Lt.-Col. J. Cole, London.											
No. 4 Troop.....	2nd Lt. H. Wigle, Kingsville.....	3	42	1	29	London .....	Sept. 12	12	do		113	Marched 30, rail 93.
	Staff.....	6	5	3	2							
	Total .....	9	47	4	31							
London Field Battery.....	Major J. Peters, London .....	6	79	5	61	London .....	Sept. 12	12	do		14	Marched.

No. 2.

performed the Annual Drill for 1882-83.

No.	12 hours.	Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bonâ fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
										Number of Non-exercised Men, if any.	Ranges.			
do	18-07c. per man; 32c. per horse.			Good.										
	Generally good.			1 horse injured.										
do	No.													
Serviceable.	Serviceable; saddlery has been very much neglected.													
	Marched past at walk and trot; battery movements and field day. Inspected by General Luard and Inspector of Artillery.													
do	So reported.													
	*Shot and shell practice.			Not completed.										
											Sept. 22			
											Sept. 23			
														4 horses.
														3 horses. 30 horses. Men and horses nearly all new; many horses very poor. Men showed a desire to learn, and progress fair.
											Sept. 22			29 horses. Many recruits; progress good; smart on parade. *Superintended by Insp. of Artillery.

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 1—Continued.		Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Miles.	Distance the several Corps had to proceed to Muster, and mode of transport.
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Place.	Date.	Number of days drill performed.			
			Officers.	N - C. O. and Men.				Officers.	N - C. O. and Men.	
1st Prov. Brigade, Field Artillery.	2	Lt.-Colonel A. H. Macdonald, Guelph.....								
No. 1 Battery..		Capt. W. Nicoll, Guelph.....	6	79	3	59	Guelph.....	Sept. 18	12	
No. 2 do .....		Capt. G. B. Hood, Guelph.....	6	79	3	53	do .....	do 18	12	
		Staff.....	5	5	4	2				Camp.
		Total.....	17	163	10	114				14
										14
										Marched.
Sarnia Battery Gar. Artillery..		Capt. C. S. Ellis, Sarnia .....	3	42	2	40				Local Headquarters.
7th Battalion "Fusiliers" ....	7	Lt.-Col. Walker, London.								
No. 1 Company .....			3	42	2	42				do
No. 2 do .....			3	42	1	39				do
No. 3 do .....			3	42	1	42				do
No. 4 do .....			3	42	1	42				do
No. 5 do .....			3	42	1	42				do
No. 6 do .....			3	42	1	42				do
No. 7 do .....			3	42	2	42				do
		Staff.....	8	5	7	3				
		Band .....		24						
		Total.....	29	323	16	294				

performed the Annual Drill for 1882-83—Continued.

do	6 hours.		12 hours.		Time required to concentrate the Battalions or Corps.
	do	do	do	do	
			25c. per man, 36c. per horse.		Cost of rations per head, per diem, at encampment.
	do	Nil.	Good.		General Conduct of Corps.
		do	None reported.		If any, and what casualties.
Yes; 40 musicians; highly efficient.		do	No.		Whether in possession of Band. Number of Musicians and proficiency.
Tunics and trowsers new; many great coats and accoutrements deficient; clean.	Clothing moth eaten; arms, &c., clean.		Serviceable.		General State of Clothing, Arms and Accoutrements.
Company and battalion drill; space limited; men steady, smart and soldierly. Inspected by Major General Luard and mustered by the D. A. G.	Manual and company drill fairly; no big gun drill.		Marched past at walk and trot; brigade movements, sword exercise and signaling. Inspected by General Luard and Inspector of Artillery.		Nature of Movements at Inspection, and how performed.
do	do	do	So reported.		Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.
Not completed.	No practice.		*Shot and shell practice.		Number of Non-exercised Men, if any.
					Ranges.
					Target Practice.
					Figure of Merit.
					Battalion.
					Company.
Sept. 21 do 21 do 21 do 21 do 21 do 21 do 21		Oct. 6		Sept. 23 Sept. 23	Date of Inspection.
do 26 do 26 do 26 do 26 do 26 do 26 do 26		Oct. 6		Sept. 30 Sept. 30	Date when Drill was completed.
A very good battalion—a credit to the city as well as to Lieut.-Col. Walker and his officers.	A clean, smart, soldierly battery, well turned out.				REMARKS.
					*Superintended by Insp. of Artillery 27 horses.
					28 do 3 do Men and horses good, and well turned out; appear to be well organized.

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 1—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.		
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.	
			Officers.	N. C. O. and Men.	Officers.	N. C. O. and Men.							
26th Battalion Middlesex "Light Infantry".....	8	Lt.-Col. Attwood, London.....	8	5	8	.....	London	Sept. 12	12	In Camp.	Rail and Waggon.		
No. 1 Company		Captain Garnett, Delaware.....	3	42	2	41	do	do	12			12	13
No. 2 do		Capt. Lindsay, Strathroy.....	3	42	2	38	do	do	12			12	20
No. 3 do		Capt. J. F. Choates, Dorchester.....	3	42	1	25	do	do	12			12	9
No. 4 do		Capt. H. Dreaney, Dreaney's.....	3	42	1	33	do	do	12			12	6
No. 5 do		Capt. J. S. Thom, Lucan.....	3	42	1	17	do	do	12			12	37
No. 6 do		Capt. McRoberts, Park Hill.....	3	42	2	28	do	do	12			12	52
No. 7 do		Capt. J. Irwin, Strathroy.....	3	42	2	42	do	do	12			12	20
No. 8 do		Capt. T. Robson, Ilderton.....	3	42	1	38	do	do	12			12	11
		Band.....	.....	24	.....	.....							
		Total.....	32	365	20	262							
28th Battalion "Perth Infantry".....	7	Lieut.-Col. Scott, Stratford.....	8	5	8	.....	London	Sept. 12	12	do	Rail		
No. 1 Company		Capt. R. R. Lang, Stratford.....	3	42	2	34	do	do	12			12	33
No. 2 do		Capt. Hamilton, Stratford.....	3	42	3	42	do	do	12			12	32
No. 3 do		Captain Moscrip, St. Marys.....	3	42	1	21	do	do	12			12	22
No. 4 do		Capt. Harding, St. Mary's (not present).....	3	42	1	15	do	do	12			12	22
No. 5 do		Captain Paisey, Blanchard.....	3	42	2	16	do	do	12			12	34
No. 6 do		Capt. Gourley, Stratford.....	3	42	3	26	do	do	12			12	46
		Band.....	.....	24	.....	.....							
		Total.....	26	281	21	154							
No. 7 Company, 24th Battalion, attached.....		Capt. G. Cheyne, Windsor.....	3	42	3	34	do	do	12	12	*	do	

performed the Annual Drill for 1882-83—Continued.

Time required to concentrate the Battalion or Corps.		General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
Cost of rations per head, per diem. at encampment.	Number of Non-exercised Men, if any.							Figure of Merit.				
10 hours.	8 hours.						Ranges.	Battalion.	Company.			
do	Men, 18-07c. ; horses, 32c.	Generally good ; 1 man punished by Provost Officer and several by the Commanding Officer.	None reported.	Yes ; 24 musicians ; good.	Serviceable ; knapsacks sticky.	Marching past in column and quarter column, brigade movements and field day. Inspected by Major-General Luard.	So reported.					
do	Generally good ; 2 men punished by Provost Officer.	None, except sore feet and 2 injured legs and 1 eye	Yes ; 25 musicians ; instruments out of tune.				No range ; target practice not carried out.					4 horses.
do	do	do	do	do	do	do	No range ; target practice not carried out.					Very weak ; men not kept up to their work ; discipline very slack.
do	do	do	do	do	do	do	No range ; target practice not carried out.					No. 7 Co., 24th Batt., attached, deserve special mention for their smart, soldierly appearance and steady drill.
do	do	do	do	do	do	do	No range ; target practice not carried out.					*110 miles.
do	do	do	do	do	do	do	No range ; target practice not carried out.					5 horses.
do	do	do	do	do	do	do	No range ; target practice not carried out.					A fair battalion and kept well at drill, showing good progress, but discipline slack.

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 1—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.				
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.			
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.									
29th Waterloo Battalion of Infantry	7	Lt.-Col. Hespeler, Berlin	8	5	6	5	London	Sept. 12	12	In Camp.	67	W. 8. R. 29.			
No. 1 Company		Captain Pasmore, Conostoga	3	42	1	12	do	do	12						
No. 2 do		Capt. J.E. Cowan Galt	3	42	3	37	do	do	12						
No. 4 do		Capt. Beaumont, Galt	3	42	1	31	do	do	12						
No. 5 do		Capt. N. Ellis, Hespeler	3	42	2	34	do	do	12						
No. 6 do		Caot. Jas. Foot, Berlin	3	42	2	35	do	do	12						
		Band		24											
		Total	26	281	15	154									
No. 7 Company, 25th Battalion, attached		Capt. W. Ley, Leamington	3	42	2	38	do	do	12						W. 18. R. 84.
30th "Wellington" Bat. Rifles	10	Lt.-Col. Clarke, Guelph	8	5	6	6	London	Sept. 12	12				In Camp.	72	Rail do
No. 1 Company		Captain Mason, Harriston	3	42	3	35	do	do	12						
No. 2 do		Lt. Crowe, Guelph	3	42	2	33	do	do	12						
No. 3 do		Capt. J. Beattie, Fergus	3	42	2	37	do	do	12						
No. 4 do		Cap. Allen, Elora	3	42	2	40	do	do	12						
No. 6 do		Cap. J. Mutrie, Eramosa	3	42	2	37	do	do	12						
No. 7 do		Capt. McDowell, Erin	3	42	1	30	do	do	12						
No. 8 do		Capt. J.A. Spence, Whittington	3	42	1	33	do	do	12						
No. 9 do		Capt. Jno. Booth, Moorefield	3	42	2	33	do	do	12						
No. 10 do		Capt. W. White, Arthur	3	42	2	37	do	do	12						
		Band		30											
		Total	33	413	23	321									





INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 1—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.		
			Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.		Officers.	N. - C. O. and Men.	Officers.				N. - C. O. and Men.			
33rd "Huron" Battalion of Infantry	9	Lieut.-Col. A. M. Ross, Goderich.		8	5	7	.....	London	Sept. 12	12	In Camp.		
No. 1 Company	...	Capt. J. R. Miller, Goderich		3	42	3	37	do	do	12		73	Rail
No. 2 do	...	Capt. W. Elliott, Wingham		3	42	1	34	do	do	12		74	do
No. 4 do	...	Capt. Macwhirter, Clinton		3	42	3	32	do	do	12		50	do
No. 5 do	...	Capt. Jno. Leckie, Brussels		3	42	2	39	do	do	12		85	do
No. 7 do	...	Capt. McDonald, Porter's Hill		3	42	2	30	do	do	12		56	do
No. do	...	Capt. J. Kaines, Gorrie		3	42	2	24	do	do	12		84	do
No. 9 do	...	Captain James Mallough, Dunganon		3	42	.....	.....	do	do	12		75	do
	...	Band		.....	27	.....	.....						
		Total		29	326	20	196						

performed the Annual Drill for 1882-83—Continued.

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bonâ fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
								Number of Non-exercised Men, if any.	Ranges.			
								Battalion.	Company.			
12 hours.	Men, 18 07c; horses, 32c.	Generally good; 5 men punished by Provost Officer.	None reported.	Yes; 20 musicians; fair.	Clothing serviceable, but tunics much stained from the sticky knapsacks; arms and accoutrements serviceable; knapsacks unserviceable.	Marching past in column and quarter column, brigade movements and field day. Inspected by Major General Luard.	So reported.	Not carried out. No range.				
										Sept. 22	Sept. 23	5 horses.
										do 22	do 23	A good battalion, well kept up to their work; duties satisfactorily carried out; a credit to the County of Huron as well as to Lt-Col. Ross & his officers.
										do 22	do 23	
										do 22	do 23	
										do 22	do 23	
										do 22	do 23	

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT		Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.		
No. 2, Lieut.-Col. R. B. DENISON, D. A. G. M.			Corps.		Corps.						
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.	Place.	Date.	Number of days drill performed.	Miles	Mode.
Gov'r-General's Body Guard....	2	Lieut.-Col. G. T. Denison Toronto.									
"A" Troop ....		Bt-Maj. Denison, Toronto .....	3	42	2	42	Toronto .....	Aug. 28	12		
"B" Troop ....		Bt-Major Dunn, Toronto .....	3	42	2	40	do .....	do 28	12		
		Staff .....	3	.....	3	.....					
		Total .....	9	84	7	82					
Field Batteries: Toronto .....	2	Major Gray, Toronto .....	6	79	3	53	Niagara .....	Sept. 18	12	36	
Hamilton .....		Capt. McMahon, Hamilton .....	6	79	5	60	do .....	do 18	12	42	Steamer.
		Total .....	12	158	8	113					
Garrison Batteries: St. Catharines.	1	Capt. Wiley, St. Catharines .....	3	42	2	35	St Cath'ines	Sept. 5	12		Not in Camp.
2nd Battalion ....	10	Lt.-Col. Otter, Toronto.									
No. 1 Company ...		Captain Allan, Toronto .....	3	42	2	61	Toronto .....	July 1	12		
No. 2 do ...		Captain Brown, Toronto .....	3	42	2	60	do .....	do 1	12		
No. 3 do ...		Capt. Wilkinson, Toronto .....	3	42	2	59	do .....	do 1	12		
No. 4 do ...		Captain Miller, Toronto .....	3	42	1	67	do .....	do 1	12		
No. 5 do ...		Capt. Kesterman, Toronto .....	3	42	3	56	do .....	do 1	12		
No. 6 do ...		Capt. Hamilton, Toronto .....	3	42	3	62	do .....	do 1	12		
No. 7 do ...		Capt. Jennings, Toronto .....	3	42	3	52	do .....	do 1	12		
No. 8 do ...		Lieut. Sankey, Toronto .....	3	42	2	49	do .....	do 1	12		
No. 9 do ...		Capt. Hodgins, Toronto .....	3	42	3	56	do .....	do 1	12		
No. 10 do ...		Captain Baker, Toronto .....	3	42	3	61	do .....	do 1	12		
		Staff .....	8	.....	8	.....					
		Total .....	38	420	32	583					Nil.

performed the Annual Drill for 1882-83—Continued.

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.	
								Number of Non-exercised Men, if any.	Ranges.				
								Battalion.	Company.				
12 hours.		Good.	Nil.	Yes ; good.	Good.	Marching post, sword exercise and field and cavalry movements.	So reported.	200, 400 and 500 yards.	12-89	11-13	Sept. 2	Sept. 2	Inspected by the D.A.G. of the Division.
		Good.	Nil.		do		do	200, 400 and 500 yards.	.....	14-66	do	do	
		Good.	Nil.	Yes ; 40 ; very good.	do	Marching post, battalion and brigade movements.	do	200, 400 and 500 yards.	45-04	52-00	Nov. 9	Nov. 9	Inspected by Major-General Luard, Commanding the Militia.
		Nil.					do	200, 400 and 500 yards.	.....	38-00	do	do	
							do	200, 400 and 500 yards.	.....	54-00	do	do	
							do	200, 400 and 500 yards.	.....	52-69	do	do	
							do	200, 400 and 500 yards.	.....	39-88	do	do	
							do	200, 400 and 500 yards.	.....	31-03	do	do	
							do	200, 400 and 500 yards.	.....	52-00	do	do	
							do	200, 400 and 500 yards.	.....	37-76	do	do	
							do	200, 400 and 500 yards.	.....	44-96	do	do	
							do	200, 400 and 500 yards.	.....	48-17	do	do	
							do	200, 400 and 500 yards.			Oct. 3	Oct. 3	do do
							do	200, 400 and 500 yards.			.....	Sept. 29	Inspected by Lt.-Col. Montzambert, Inspector of Artillery.

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 2—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.						
10th Battalion....	8	Lt.-Col. Grasett, Toronto.										
No 1 Company ...		Captain Boomer, Toronto.....	3	42	6	48	Toronto .....	July 1	12 days.	Not in Camp.	Nil.	Nil.
No. 2 do ...		Capt. Robertson, Toronto.....	3	42	2	43	do .....	do 1				
No. 3 do ...		Captain Caston, Toronto.....	3	42	3	37	do .....	do 1				
No. 4 do ...		Captain Mason, Toronto.....	3	42	2	38	do .....	do 1				
No. 5 do ...		Capt. Anderson, Toronto.....	3	42	2	38	do .....	do 1				
No. 6 do ...		Capt. Appelbee, Toronto.....	3	42	2	38	do .....	do 1				
No. 7 do ...		Captain Bruce, Toronto.....	3	42	2	43	do .....	do 1				
No. 8 do ...		Captain Harrison, Toronto.....	3	42	2	42	do ... ..	do 1				
		Staff.....	8	.....	7	.....						
		Total.....	32	336	25	327						
12th Battalion....	8	L.-Col. Wyndham, Aurora.										
No. 1 Company ...		Captain Cooper, Scarboro'.....	3	42	3	39	Niagara .....	Sept. 18	12 days.	In Camp.	Steamer, railway and wagon.	36
No. 2 do ...		Captain Bruce, Aurora.....	3	42	2	42	do .....	do 18				
No. 3 do ...		Captain Smith, King.....	3	42	3	34	do .....	do 18				
No. 4 do ...		Captain Lloyd, Newmarket.....	3	42	2	40	do .....	do 18				
No. 5 do ...		Capt. Tremayne, Sutton.....	3	42	1	42	do .....	do 18				
No. 7 do ...		Capt. Moncrieff, Sharon.....	3	42	3	38	do .....	do 18				
No. 8 do ...		Captain Brooke, Yorkville.....	3	42	2	40	do .....	do 18				
		Staff.....	8	.....	8	.....						
		Total.....	29	294	24	275						



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 2—Continued.		Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
Commanding Officer and Head Quarters.		Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.						
13th Battalion....	5	Lt.-Col. Skinner, Hamilton.									
No 1 Company ...		Captain Adam, Hamilton. ....		3	42	2	41	Hamilton. ....	Sept. 7		
No. 2 do ...		Captain Barnard, Hamilton. ....		3	42	2	40	do .....	do 7		
No. 3 do ...		Captain Crockett, Hamilton. ....		3	42	2	38	do .....	do 7		
No. 4 do ...		Captain McLaren, Hamilton. ....		3	42	2	38	do .....	do 7		
No. 5 do ...		Capt. Stoneman, Hamilton. ....		3	42	2	39	do .....	do 7		
No. 6 do ...		Captain Stuart, Hamilton. ....		3	42	2	38	do .....	do 7		
		Staff .....		8	.....	6	.....				
		Total .....		24	252	18	234				
									12 days.		
										Not in Camp.	Nil. Nil.
34th Battalion....	7	Lt.-Cl. O'Donovan Whity.									
No. 1 Company ...		Lt. Brown, Whity .....		3	42	2	34	Niagara .....	Sept. 18	12	66
No. 2 do ...		Capt. Henderson, Greenwood.....		3	42	2	36	do .....	do 18	12	59
No. 3 do ...		Capt. McGill, Oshawa.....		3	42	2	31	do .....	do 18	12	70
No. 4 do ...		Capt. Davidson, Beaverton....		3	42	2	39	do .....	do 18	12	107
No. 5 do ...		Cpt. McGillivray, Uxbridge.....		3	42	2	33	do .....	do 18	12	77
No. 6 do ...		Capt. Brown, Brooklin.....		3	42	2	37	do .....	do 18	12	72
No. 7 do ...		Cpt. Hirschfelder, Cannington. ...		3	42	2	30	do .....	do 18	12	91
		Staff .....		8	.....	8	.....				
		Total .....		29	294	22	240				
											In Camp.
											Steamer and Railway.





INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 2—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
			Officers.	N - C. O. and Men.	Officers.	N - C. O. and Men.						
35th Battalion....	10	Lt.-Col. O'Brien, Barrie.										
No. 1 Company ...		Capt. Graham, Barrie.....	3	42	2	43	Niagara .....	Sept. 18	12			96
No. 3 do ...		Capt. Cook, Cookstown.....	3	42	2	42	do .....	do 18	12			130
No. 4 do ...		Capt. Ward, Vespra.....	3	42	1	43	do .....	do 18	12			110
No. 5 do ...		Capt. Powell, Barrie.....	3	42	3	39	do .....	do 18	12			100
No. 6 do ...		Capt. Rankin, Ivy .....	3	42	3	37	do .....	do 18	12			96
No. 7 do ...		Lt. O'Dell, Orillia	3	42	2	38	do .....	do 18	12			110
No. 8 do ...		Capt. Scott, Bond Head .....	3	42	1	42	do .....	do 18	12			115
No. 9 do ...		Capt. McLaren, Alliston.....	3	42	2	34	do .....	do 18	12			125
No. 10 do ...		Capt. Handley, Penetanguishene Staff .....	3	42	2	42	do .....	do 18	12			130
		Total .....	8	.....	8	.....						
		Total .....	35	378	26	360						
In Camp.												
39th Battalion ...	8	Lt.-Col. Mabee, Simcoe.										
No. 1 Company ...		Lieut. Ryerson, Simcoe ..	3	42	2	35	Niagara .....	Sept. 18				87
No. 2 do ...		Captain Charters, Villa Nova .....	3	42	2	31	do .....	do 18				95
No. 3 do ...		Captain Price, Port Rowan.....	3	42	2	37	do .....	do 18				102
No. 4 do ...		Captain Morgan, Walshingham..	3	42	2	30	do .....	do 18				104
No. 5 do ...		Captain Yerks, Waterford.....	3	42	3	37	do .....	do 18	12 days.			88
No. 6 do ...		Captain Wilson, Simcoe.....	3	42	3	31	do .....	do 18				80
No. 7 do ...		Captain Ansley, Port Dover.....	3	43	3	29	do .....	do 18				82
No. 8 do ...		Captain Snider, Fredricksburg .	3	42	3	20	do .....	do 18				88
		Staff .....	8	.....	8	.....						
		Total.....	32	336	27	260						
In Camp.												
Railway and wagon.												

Performed the Annual Drill for 1882-83—Continued.

A.	24 hours.	Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
										Number of Non-exercised Men, if any.	Ranges.			
do	20 cents.	Good.	Nil.	Yes, 22; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	17-76	15-27	Sept. 25	Sept. 29	Inspected by Maj.-General Luard, Command'g the Militia.	
do	Good.	Nil.	Yes; 20; very good.	do	do	do	do	200, 400 and 500 yards.	18-30	15-27	Sept. 25	Sept. 29		
do	do	do	do	do	do	do	do	200, 400 and 500 yards.	18-63	17-16	do 25	do 29		
do	do	do	do	do	do	do	do	200, 400 and 500 yards.	18-63	15-86	do 25	do 29		
do	do	do	do	do	do	do	do	200, 400 and 500 yards.	18-63	14-04	do 25	do 29		
do	do	do	do	do	do	do	do	200, 400 and 500 yards.	18-63	18-03	do 25	do 29		
do	do	do	do	do	do	do	do	200, 400 and 500 yards.	18-63	16-25	do 25	do 29		
do	do	do	do	do	do	do	do	200, 400 and 500 yards.	18-63	17-50	do 25	do 29		
do	do	do	do	do	do	do	do	200, 400 and 500 yards.	18-63	20-58	do 25	do 29		
do	do	do	do	do	do	do	do	200, 400 and 500 yards.	18-63	21-77	do 25	do 29		
do	do	do	do	do	do	do	do	200, 400 and 500 yards.	18-63	do	do 25	do 29	do	

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 2—Continued.		Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
		Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.		Officers.	N.-C. O. and Men.				Officers.		
44th Battalion ...	8	Lt.-Col. Morin, Clifton.									
No. 1 Company ...		Lieut. McMicking, Drummondville		3	42	2	34	Niagara .....	Sept. 18		14
No. 3 do ...		Capt. Greenwood, Chippewa .....		3	42	2	28	do .....	do 18		17
No. 4 do ...		Cpt. Newbigging, Fort Erie .....		3	42	2	31	do .....	do 18	12 days.	22
No. 5 do ...		Capt. Kennedy, Welland .....		3	42	2	27	do .....	do 18		30
No. 7 do ...		Captain Clarke, Stevensville .....		3	42	2	42	do .....	do 18		25
No. 8 do ...		Captain Barwell, Fenwick .....		3	42	2	38	do .....	do 18		48
		Staff .....		8		7					
		Total .....		26	252	19	263				
77th Battalion ...	6	Lt.-Col. Brown, Dundas.									
No. 1 Company ...		Captain Bertram, Dundas .....		3	42	2	43	Niagara .....	Sept. 18		48
No. 2 do ...		Lieutenant Lee, Waterdown .....		3	42	1	31	do .....	do 18		45
No. 3 do ...		Captain Fletcher, Binbrook .....		3	42	3	36	do .....	do 18	do	58
No. 4 do ...		Captain Walker, Rockton .....		3	42	3	38	do .....	do 18		51
No. 5 do ...		Capt. Carpenter, Saltfleet .....		3	42	2	38	do .....	do 18		50
No. 6 do ...		Captain Wells, Glanford .....		3	42	2	35	do .....	do 18		50
		Staff .....		8		6					
		Total .....		26	252	17	221				

performed the Annual Drill for 1882-83—*Continued.*

do	24 hours.	Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
										Number of Non-exercised Men, if any.	Ranges.			
do	20 cents.	Good.	Nil.	Yes; 24; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	18-83	20-64	Sept. 25	Sept. 29	Inspected by Maj.-General Luard, Command'g the Militia.	
do	20 cents.	Good.	Nil.	Yes; 24; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	14-03	24-36	Sept. 25	Sept. 29		
do	20 cents.	Good.	Nil.	Yes; 24; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	15-00	5-87	do 25	do 29		
do	20 cents.	Good.	Nil.	Yes; 24; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	11-06	14-38	do 25	do 29		
do	20 cents.	Good.	Nil.	Yes; 24; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	13-53	do 25	do 25	do 29		
do	20 cents.	Good.	Nil.	Yes; 24; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	18-83	20-17	do 25	do 29		
do	20 cents.	Good.	Nil.	Yes; 24; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	20-41	do 25	do 25	do 29		
do	20 cents.	Good.	Nil.	Yes; 24; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	21-44	do 25	do 25	do 29		
do	20 cents.	Good.	Nil.	Yes; 24; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	16-47	do 25	do 25	do 29		
do	20 cents.	Good.	Nil.	Yes; 24; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	18-83	20-64	Sept. 25	Sept. 29		
do	20 cents.	Good.	Nil.	Yes; 24; good.	Good.	Squad and company drill. Reviewed by the Hon. the Minister of Militia. Brigade movements.	So reported.	200, 400 and 500 yards.	14-03	24-36	Sept. 25	Sept. 29		

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 2—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise. Miles. Distance the several Corps had to proceed to Muster, and mode of transport. Mode.	
			Corps.		Corps.		Place.	Date.	Number of days drill performed.		
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Officers.	N. C. O. and Men.	Officers.	N. C. O. and Men.					
*Demi-Battery ...		Major Wilson, Sault Ste. Marie	2	21	1	21	Sault Ste. Marie ...	Sept. 18	12 days.	Not in Camp.	Nil.
†Rifle Company. ...		Lieut. Towers, Sault Ste. Marie	1	34	1	34	do ...	do 18			
		Total .....	3	55	2	55					

performed the Annual Drill for 1882-83—*Continued.*

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.		
								Number of Non-exercised Men, if any.	Figure of Merit.					
								Ranges.	Battalion.	Company.				
										Battalion.	Company.			
12 hours.														
Good.														
Nil.														
Yes; 12; good.														
Good.														
*Standing gun and field drill. †Manual and firing exercises and company drill.														
So reported.														
										Oct. 15 do 15	Nov. 24 do 24	Inspected by the D.A.G. of the District.		

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 3, Lieut.-Col. H. V. VILLIERS, D. A. G. M.		Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.			
Battalion or Corps.	Companies.	Corps.	Corps.		Place.	Date.	Number of days drill performed.		Miles	Mode.		
			Officers.	N - C. O. and Men.				Officers.			N - C. O. and Men.	
4th Provisional Regiment of Cavalry .....	4	Lt.-Col. J. Duff, Kingston. Captain Knight, Kingston..... Captain Perry, Napanee .....										
No. 1 Troop ...			3	42	2	35	Cobourg.....	Sept. 5	12	92	Rail.	
No. 2 do ...			3	42	2	37	do .....	do 5	12	66		
No. 3 do ...			3	42	2	37	do .....	do 5	12	92		
No. 4 do ...			3	42	2	28	do .....	do 5	12	62		
			7	.....	7	.....						
		Total.....	19	168	15	137						
Kingston Field Battery.....	1	Capt J. Wilmot, Kingston.....	6	79	5	57	Cobourg .....	Sept. 5	12	do	92	do
Durham Field Battery.....	1	Cpt. Wm. McLean, Port Hope. ....	6	79	4	65	Cobourg.....	Sept. 5	12	do	7	Marched.

performed the Annual Drill for 1882-83—Continued.

24 hours.	12 hours.	48 hours.	Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms, and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Number of Non-exercised Men, if any.	Ranges.	Target Practice.	Figure of Merit.	Battalion.	Company.	Date of Inspection.	Date when Drill was completed.	REMARKS.
do	do	20 cents.																	
Very good.	Very good.	Very good.																	
None.	None.	None.																	
do	do	No.																	
do	Good.	Arms, accoutrements and clothing in good order.																	
do	See report of Inspector of Artillery.	Marched past at walk in column and quarter column of troops; brigade field movements, attack on supposed enemy; all fairly performed.																	
do	do	Yes.																	
		Did not perform target practice.																	
Sept. 11	Sept. 11	Sept. 11																	
Sept. 16	Sept. 16	Sept. 16																	
do	do	do																	Inspected by Maj.-General Luard.



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 3—Continued.		Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
		Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Officers.	N. C. O. and Men.	Officers.				N. C. O. and Men.		
Cobourg Garrison Battery....	1	Capt. H. Dumble, Cobourg .....	3	42	3	42	Cobourg.....	Aug. ...	12		Battery Headquarters.
Port Hope Garrison Battery. ...	1	Bt.-Maj. Gurnsey, Port Hope.....	3	42	2	20	Port Hope...	Sept. ...	12	do	
14th Battalion, "P. W. O. Rifles".....	6	Lieut.-Col. John Kerr, Kingston									Performed their drill in the evening on the drill shed parade ground.
No. 1 Company		Captain Chown, Kingston.....	3	42	2	42	Kingston ...		12		
No. 2 do		Lieut. McDougall, Kingston.....	3	42	2	42	do .....		12		
No. 3 do		Captain Power, Kingston.....	3	42	2	42	do .....		12		
No. 4 do		Captain Morton, Kingston.....	3	42	2	42	do .....		12		
No. 5 do		Capt. Galloway, Kingston.....	3	42	2	42	do .....		12		
No. 6 do		Captain Sands, Kingston.....	3	42	2	42	do .....		12		
		Staff.....	8	.....	8	.....	do .....		12		
		Total.....	26	252	20	252					



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 3—Continued.			Establishment.		Actual strength present at inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.						
40th <sup>1</sup> Battalion, Northumberl'd	8	Lieut.-Col. Wm. Smith, Cobourg										
No. 1 Company	...	BtLt-Cl. Graveley Cobourg.....	3	42	2	36	Cobourg.....	Sept. 5	12			
No. 2 do	...	Captain Guillett, Cobourg.....	3	42	2	39	do .....	do 5	12			
No. 3 do	...	Cpt. Bonnycastle, Campbellford..	3	42	2	35	do .....	do 5	12			
No. 4 do	...	Captain Butler, Brighton.....	3	42	1	30	do .....	do 5	12			
No. 7 do	...	Capt. G. Duncan, Colborne.....	3	42	2	30	do .....	do 5	12			
No. 8 do	...	Capt. W. Duncan, Castleton.....	3	42	1	27	do .....	do 5	12			
No. 9 do	...	Captain Hurlbutt, Warkworth.....	3	42	2	36	do .....	do 5	12			
		Staff.....	8	.....	8	5						
		Total.....	29	294	20	238						
45th Battalion, West Durham.	6	Lt.-Col. F. Cubitt, Bowmanville...										
No. 1 Company	...	Lieut. Ferguson, Bowmanville...	3	42	1	35	Cobourg.....	Sept. 5	12			26
No. 2 do	...	Capt. McDonald, Fenelon Falls..	3	42	2	31	do .....	do 5	12			65
No. 3 do	...	Captain Hughes, Burton.....	3	42	1	40	do .....	do 5	12			46
No. 4 do	...	Lieut. Stanton, Omemee.....	3	42	2	21	do .....	do 5	12	do		40
No. 5 do	...	Captain Evans, Lindsay.....	3	42	1	8	do .....	do 5	12			51
No. 6 do	...	Captain Wallace, Kendall.....	3	42	1	34	do .....	do 5	12			29
		Staff.....	8	.....	7	.....						
		Total.....	26	252	15	169						



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 3—Continued.		Establishment.	Actual strength present at inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.		
			Corps.		Corps.				Miles.	Mode.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.	Place.	Date.	Number of days drill performed.		
49th Battalion, Hastings Rifles	6	Lt.-Col. J. Brown, Stirling.									
No. 1 Company	...	Captain Harrison, Belleville	3	42	2	42	Cobourg	Sept.	5	12	42
No. 2 do	...	Captain Fidler, Stirling	3	42	2	33	do	do	5	12	64
No. 3 do	...	Captain Graham, Sidney	3	42	1	35	do	do	5	12	44
No. 4 do	...	Captain Volume, Madoc	3	42	2	37	do	do	5	12	72
No. 5 do	...	Captain Lennox, Tyndanaga	3	42	2	35	do	do	5	12	58
No. 6 do	...	Captain Orr, Trenton	3	42	2	30	do	do	5	12	30
		Staff	8		8						
		Total	26	251	19	212					
57th Battalion, Peterboro' Rangers	6	Lt.-Col. J. Rogers, Peterboro'.									
No. 1 Company	...	Capt. Edwards, Peterboro'	3	42	2	35	Cobourg	Sept.	5	12	38
No. 2 do	...	Capt. Langford, Peterboro'	3	42	2	40	do	do	5	12	38
No. 3 do	...	Captain Rogers, Ashburnham	3	42	3	38	do	do	5	12	38
No. 4 do	...	Captain Birdsall, Keene	3	42	2	35	do	do	5	12	47
No. 5 do	...	Captain Burke, Norwood	3	42	2	28	do	do	5	12	70
No. 6 do	...	Captain Howard, Hastings	3	42	2	31	do	do	5	12	60
		Staff	8		7	3					
		Total	26	252	20	210					

Rail.

Rail and wagon.

performed the Annual Drill for 1882-83—Continued.

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bonâ fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.		
								Number of Non-exercised Men, if any.	Ranges.				Figure of Merit.	
													Battalion.	Company.
48 hours.	20 cents.	Very good.	None.	Yes; 18; good.	Tunics, good; trousers worn out; arms and accoutrements in good order.	Yes.	18	14-43	11-75	Sept. 11	Sept. 16	Inspected by Maj. - General Luard		
do	do	do	do	do	do	do	6	15-96	15-96	do 11	do 16			
do	do	do	do	do	do	do	10	22-47	22-47	do 11	do 16			
do	do	do	do	do	do	do	8	16-27	16-27	do 11	do 16			
do	do	do	do	do	do	do	11	9-54	9-54	do 11	do 16			
do	do	do	do	do	do	do	10	12-75	12-75	do 11	do 16			
do	do	do	do	do	do	do	200, 400 and 500 yards.	16-99	10-84	Sept. 11	Sept. 16			
do	do	do	do	do	do	do	do	15-21	15-21	do 11	do 16			
do	do	do	do	do	do	do	do	13-62	13-62	do 11	do 16			
do	do	do	do	do	do	do	do	19-23	19-23	do 11	do 16			
do	do	do	do	do	do	do	do	20-43	20-43	do 11	do 16			
do	do	do	do	do	do	do	do	21-58	21-58	do 11	do 16			
do	do	do	do	do	do	do	do	do	do	do	do	do		

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 4, Lieut.-Col. G. J. MAUNSELL, D. A. G. M.		Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Miles	Mode.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.	Corps.	Place.	Date.	Number of days drill performed.				
			Officers.	N.-C. O. and Men.				Officers.	N.-C. O. and Men.		
Princess Louise Dragoon Guards.....	1	Capt. J. Stewart, Ottawa.....	3	35	2	29	Aylmer.....	Nov. 9	12	Headquarters.	
Prescott Troop of Cavalry.....	1	Captain Raney, Prescott.....	3	35	3	32	Brockville...	Sept. 5	12	Camp	15 Marched.
Field Battery of Artillery.....	1	Captain Stewart, Ottawa.....	6	75	5	60	Brockville...	Sept. 5	12	do	75 Marched and Railway.

performed the Annual Drill for 1882-83—Continued.

6 hours.	1 day.	6 hours.	Time required to concentrate the Battalion or Corps.
do	Men, 18½ cents; horses, 33 cents.		Cost of rations per head, per diem, at encampment
Axle of gun carriage broken.	1 horse injured by a kick.		General Conduct of Corps. If any, and what casualties.
Field artillery drill and field manoeuvres; shot and shell practice. Reported on favorably by Inspector of Artillery.	Cavalry drill, mounted and dismounted, in troop and squadron; marked improvement.	Cavalry drill, mounted and dismounted, as reported on specially; very efficient.	Whether in possession of Band. Number of Musicians and proficiency. General State of Clothing, Arms and Accoutrements.
do	do	Yes.	Nature of movements at Inspection, and how performed.
	2	200, 300 and 400 yards.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.
	22 00		Number of Non-exercised Men, if any.
	9th Sept. by Major-General. 15th Sept. by Hon. the Minister of Militia.	Nov. 9	Ranges.
do	Sept. 16	Nov. 9	Figure of Merit.
do	Best shot, Sergt. Haton, 48.	By Hon. the Minister of Militia and D.A.G.	Battalion.
			Company.
			Date of Inspection.
			Date when Drill was completed.
			REMARKS.



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 4—Continued.			Establishment		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Miles.	Mode.
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.			
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.						
Field Battery of Artillery.....	1	Bt.-Mj. McKenzie, Gananoque....	6	75	5	67	Brockville...	Sept. 5	12	Camp.	30	Steamboat.
Gov-General's Foot Guards...	6	Lieut.-Col. Ross, Ottawa.....										
Company A....		Captain Todd, Ottawa.....	3	42	2	52	Ottawa....	July 1	12	Headquarters.		
do B....		Captain Toller, Ottawa.....	3	42	2	42						
do C....		Captain Aumond, Ottawa.....	3	42	2	43						
do D....		B.-M. Weatherley, Ottawa.....	3	42	2	41						
do E....		Captain White, Ottawa.....	3	42	3	44						
do F....		Captain Lee, Ottawa.....	3	42	2	48						
		Staff.....	8	.....	5	.....						
		Total .....	26	252	18	270						

Performed the Annual Drill for 1882-83—*Continued.*

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
							Number of Non-exercised Men, if any.	Ranges.	Figure of Merit.			
								Battalion.				
								Company.				
3 hours.	6 hours.	Men, 18¢ cents; horses, 33 cents.	Excellent.	Yes; 19 performers; very efficient.		Field artillery drill and field manoeuvres; shot and shell practice. Reported on favorably by Inspector of Artillery.	Yes.			9th September by Major-General. 15th September by Hon. the Minister of Militia.	Sept 16	
Brass band; 30 performers; excellent; 20 bugles and drums.							do					

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 4—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.		
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode	
			Officers.	N - C. O. and Men.	Officers.	N - C. O. and Men.							
18th Prescott Battalion of Infantry	5	Lt.-Cl. Butterfield, L'Orignal.....											
No. 1 Company		Capt. Higginson, Hawkesbury....	3	42	2	34	Brockville...	Sept.	5	12	Camp.	122	
No. 3 do		Opt. Huntington, L'Orignal.....	3	42	1	37	do ...	do	5	12			
No. 5 do		Capt. Johnson, Plantagenet....	3	42	1	34	do ...	do	5	12			
		Staff .....	8	.....	4	.....							
		Total .....	17	126	8	105							
41st Battalion, Brockville Rifles	6	Lieut.-Col. Cole, Brockville.											
No. 1 Company		Captain Cook, Brockville.....	3	42	3	28	Brockville...	Sept.	5	12	24	Marched, steamboat, wagon and railway.	
No. 2 do		Captain Cole, Gananoque....	3	42	2	36	do ...	do	5	12	30		
No. 3 do		Captain Day, Frankville.....	3	42	2	22	do ...	do	5	12	do		17
No. 4 do		Captain Merrick, Merrickville....	3	42	2	9	do ...	do	5	12	32		
No. 5 do		Captain Teskey, Carleton Place.	3	42	3	28	do ...	do	5	12	46		
No. 6 do		Captain Garvin, Munster.....	3	42	2	15	do ...	do	5	12	51		
		Staff .....	8	.....	7	.....							
		Total .....	26	252	21	138							

Performed the Annual Drill for 1882-83—Continued.

I day.	Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bonâ fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.		
									Number of Non-exercised Men, if any.	Ranges.				Figure of Merit.	
														Pattalion.	Company.
do	18½ cents.				Brass band; 12 performers.		Drill and field manoeuvres, as shown in report.	Yes.	1	16 05	18-17	9th Sept. by Major-General. 15th Sept. by the Hon. Minister of Militia.	Sept. 16	Stf.-Sgt. Saucier, best shot in battalion. Best in companies: Stf.-Sgt. Saucier, 58.	
do	None.							.....	3	14-23	15 74		do 16	Pte. Meried, 35.	
do									.....					do 16	Segt. McKay, 52.
do									7	18-07	15-85		Sept. 16	Best shot in camp: Sgt. McKeller, 58. Best in companies: Pte. Beecher, 39.	
do									5		25-67		do 16	Segt. McKeller, 58	
do									3		10-50		do 16	Pte. Irvine, 31.	
do									1		14-86		do 16	Pte. Wilson, 24.	
do									.....		20-07		do 16	Pte. Moffatt, 45.	
do									1		21-46		do 16	Segt. Stapleton, 38	

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 4—Continued.			Establishment.		Actual strength present at inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
			Officers.	N. C. O. and Men.	Officers.	N. C. O. and Men.						
42nd Battalion, Brockville Infantry .....	6	Lieut.-Col. Buell, Brockville.										
No. 1 Company ...		Capt. Macdonell, Almonte .....	3	42	2	35	Brockville ...	Sept. 5	12	Camp.	52	Railway and marched.
No. 2 do ...		Capt. Sparham, Brockville. ....	3	42	3	42	do ...	do 5	12		2½	
No. 3 do ...		Capt. Matheson, Perth. ....	3	42	2	42	do ...	do 5	12		40	
No. 4 do ...		Captain Cornett, Lansdowne.....	3	42	3	41	do ...	do 5	12		22	
No. 6 do ...		Ct. Hollingsworth, Pembroke.....	3	42	1	40	do ...	do 5	12		122	
		Staff .....	8		5							
		Total .....	33	210	16	200						
56th Battalion, Lisgar Rifles...	6	Lt.-Col. Jessup, Prescott.										
No. 1 Company ...		Captain Adams, Prescott .....	3	42	2	36	Brockville...	Sept. 5	12	do	15	Steamboat, wagon and railway.
No. 3 do ...		Capt. Campbell, Burritt's Rapids	3	42	1	14	do ...	do 5	12		49	
No. 4 do ...		Capt. Chambers, Kemptville.....	3	42	2	33	do ...	do 5	12		37	
No. 5 do ...		Capt. Checkley, North Augusta.	3	42	2	27	do ...	do 5	12		14	
No. 6 do ...		Capt. Carmichael, Spencerville. ...	3	42	2	35	do ...	do 5	12		24	
		Staff .....	8		6							
		Total.....	23	210	15	145						

performed the Annual Drill for 1882-83—Continued.

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.		
								Number of Non-exercised Men, if any.	Ranges.				Figure of Merit.	
													Battalion.	Company.
1 day.	18½ cents.	Excellent.	None.	Brass band; 24 performers; very good.		Drill and field manoeuvres, as shown in report.	Yes.	3	18 26	15 75	9th Sept. by Major-General. 15th Sept. by the Hon. Minister of Militia.	Best shot in battalion: Corp. Brown, 46. Best in companies: Pte. McArthur, 39.		
do	do	None.		Brass band; 16 performers; very good.				3	22 14	28 21		Best shot in battalion: Sgt. A. Tripp, 54. Best in companies: Sgt. Smith, 44.		
do	do	None.						1	16 15		do	Pte. Colborne, 39.		
do	do							3	18 60		do	Pte. Maxwell, 43.		
do	do							1	23 73		do	Corp. Landon, 43.		
do	do							4	24 00		do	Sgt. A. Tripp, 54.		
								200, 400 and 500 yards.						
								200, 400 and 500 yards.						

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 5, Lieut.-Col. B. VAN STRAUBENZEE, D. A. G. M.		Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies. Commanding Officer and Head Quarters.	Corps.	Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
		Officers. N. C. O. and Men.	Officers. N. C. O. and Men.	Place.				Date.	Number of days drill performed.	Whether in Camp or otherwise.
5th Provisional Regiment of Cavalry .....	5									
No. 1 Troop ...	Bvt. Lieut.-Col. Taylor, Cookshire. Captain Pope, Cookshire. ....	3	35	3	30	Richmond ...	Sept. 12	12	46	Railway and marched.
No. 2 do ...	Captain Morkill, Sherbrooke. ....	3	35	2	81	do ...	do 12	12	24	
No. 3 do ...	Captain Stanstead. ....	3	35	3	32	do ...	do 12	12	59	
No. 4 do ...	Captain Murray, Compton. ....	3	35	2	25	do ...	do 12	12	38	
No. 5 do ...	Capt. Sheppard, Sutton. ....	3	35	2	32	do ...	do 12	12	67	
	Staff .....	5	.....	5	.....					
	Total .....	20	175	17	153					
6th Provisional Regiment of Cavalry .....	4									
No. 1 Troop ...	Bvt. Lieut.-Col. Burwash, Montreal. Capt. McArthur, Montreal. ....	3	35	3	25	Montreal.....	Aug. 23	12		Headquarters.
Montreal Field Battery of Artillery.....	Lieutenant Green, Montreal .....	6	74	4	62	Montreal.....	Aug. 24	12		Camp.





INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 5—Continued.		Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.		
			Corps.	Corps.	Place.	Date.	Number of days drill performed.		Miles.	Mode.	
Battalion or Corps.	Companies. Commanding Officer and Head Quarters.	Officers. N.-C. O. and Men.	Officers. N.-C. O. and Men.	Officers. N.-C. O. and Men.							
Richmond Field Battery of Artillery.....	Major Hon. H. Aylmer, Richmond.....	6	74	2	38	Richmond...	Sept. 12	12	Camp.	4	Marched.
Montreal Garrison Artillery....	Lt.-Col. Oswald, Montreal.....	26	252	16	199	St. Helen's Island.....	Aug. 19	12	Battalion Camp.	3	Ferry.
St. John Garrison Battery of Artillery. ....	Major Drumm, St. Johns, Que.	3	42	2	39	St. Johns....	Sept. 12	12	Headquarters.		
Montreal Engineers.....	Major Kennedy, Montreal.....	3	84	3	35	Montreal.....		12	do		



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 5—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.						
1st Battalion, Prince of Wales Rifles. ....		Lieut.-Col. Bond, Montreal .....	26	252	14	212	Montreal.....	April 15	12	Headquarters.		
3rd Battalion, Victoria Rifles of Canada.....		Lt. Cl. Whitehead, Montreal .....	26	252	21	270	Montreal.....	July 1	12	do		
5th Battalion, Royal Scots Fusiliers .....		Lt.-Cl. Campbell, Montreal .....	25	252	16	223	Montreal.....	July 1	12	do		
6th Battalion Fusiliers .....	6	Lt.-Col. Gardner, Montreal .....	26	252	18	253	Montreal.....	.....	12	Headquarters.		



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 5—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.		Distance the several Corps had to proceed to Muster, and mode of transport.		
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.			Miles.	Mode.	
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.								
53rd Battalion ...	6	Lt.-Col. Felton, Sherbrooke.												
No. 1 Company ...		Capt. Blue, Sherbrooke .....	3	42	3	27	Sherbrooke..	Sept. 26	12			3		
No. 2 do ...		Capt. Hale, Sherbrooke .....	3	42	2	27	do ...	do 26	12			3		
No. 3 do ...		Capt. Brooks, Sherbrooke.....	3	42	2	23	do ...	do 26	12			3		
No. 4 do ...		Capt. Belanger, Sherbrooke.....	3	42	3	30	do ...	do 26	12			3		
No. 5 do ...		Capt. Phelan, Magog .....	3	42	2	20	do ...	do 26	12			20		
No. 6 do ...		Capt. Rolf, Ascot Corners .....	3	42	1	21	do ...	do 26	12			10		
		Staff .....	8	.....	6	5								
		Total.....	26	252	19	153								
In Camp.													Marched, waggon and rail.	
54th Battalion....	6	Lt - Col Rt. Hon. Lord Aylmer, Melbourne.												
No. 1 Company ...		Capt. Danville .....	3	42	2	21	Richmond ...	Sept. 12	12			12		
No. 2 do ...		Capt. McLean, Flodden .....	3	42	3	17	do ...	do 12	12			8		
No. 3 do ...		Capt. Aylmer, Richmond .....	3	42	.....	13	do ...	do 12	12			4		
No. 4 do ...		Capt. Morey, Windsor .....	3	42	2	14	do ...	do 12	12			10		
No. 5 do ...		Capt. Bothwell, South Durham	3	42	2	35	do ...	do 12	12			16		
No. 6 do ...		Capt. Watts, Drummondville	3	42	1	25	do ...	do 12	12			18		
		Staff .....	6	.....	5	4								
		Total .....	26	252	15	129								
Rail and waggon.														



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 5—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.						
58th Battalion ...	10	Lt.-Col. Pope, Cookshire.										
No. 1 Company ...		Capt. McIver, Bury .....	3	42	3	42	Sherbrooke..	Sept. 26	12			30
No. 2 do ...		Capt. Ross, Gould .....	3	42	2	42	do ...	do 26	12			30
No. 3 do ...		Cap. J. T. McIver, Marston.....	3	42	2	39	do ...	do 26	12			67
No. 4 do ...		Capt. Weyland, Marbleton.....	3	42	3	37	do ...	do 26	12			40
No. 5 do ...		Capt. _____, Lake Megantic.	2	42	3	35	do ...	do 26	12			70
No. 6 do ...		Capt. Cook, Hatley .....	3	42	2	31	do ...	do 26	12			21
No. 7 do ...		Capt. Trenholm, Coaticook .....	3	42	3	32	do ...	do 26	12			26
No. 8 do ...		Capt. Clarke, Beebe Plain....	3	42	3	30	do ...	do 26	12			26
No. 9 do ...		Capt. _____, Winslow .....	3	42	1	35	do ...	do 26	12			61
No. 10 do ...		Capt. Baker, Cookshire .....	3	42	2	35	do ...	do 26	12			21
		Staff .....	8		6	5						
		Total .....	38	420	30	360						
79th Battalion....	8	Lt.-Col. Cox, Granby.										
No. 1 Company ...		Capt. Seal, Granby .....	3	42	3	29	Richmond ...	Sept. 12	12			63
No. 2 do ...		Capt. Whitehead, Waterloo.....	3	42	3	27	do ...	do 12	12			49
No. 3. do ...		Capt. Bell, Waterloo.....	3	42	3	35	do ...	do 12	12			55
No. 4 do ...		Capt. Galbraith, South Roxton..	3	42	3	31	do ...	do 12	12			36
No. 5 do ...		Capt. Wood, Roxton Falls...	3	42			do ...	do 12	12		do	do
No. 6 do ...		Capt. Hackwell, Boscobel .....	3	42	2	25	do ...	do 12	12			28
No. 7 do ...		Capt. Brown, Lawrenceville..	3	42	3	20	do ...	do 12	12			49
No. 8 do ...		Capt. Brooks, Waterloo.....	3	42	3	20	do ...	do 12	12			49
		Staff .....	8		5	6						
		Total .....	32	336	25	193						





INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 6, Lieut.-Col. A. C. DeLOTBINIERE HARWOOD, D.A.G.M.			Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.		
			Officers.	N - C. O. and Men.	Officers.	N - C. O. and Men.			Miles	Mode.
65th Battalion ...	8	Lt-Col. Ouimet, Montreal.								
No. 1 Company ...		Captain Bédard, Montreal	3	42	3	42	Montreal.	Sept. 19	12	Headquarters.
No. 2 do ...		Captain Coursol, Montreal	3	42	3	42	do	do 19	12	
No. 3 do ...		Captain Colletet, Montreal	3	42	1	42	do	do 19	12	
No. 4 do ...		Captain A. Roy, Montreal	3	42	2	42	do	do 19	12	
No. 5 do ...		Cpt. LaRoyanne, Montreal	3	42	2	27	do	do 19	12	
No. 6 do ...		Captain Giroux, Montreal	3	42	1	42	do	do 19	12	
No. 7 do ...		Captain Prevost, Montreal		42	3	30	do	do 19	12	
No. 8 do ...		Capt. DesRivières, Montreal	3	42	2	39	do	do 19	12	
		Staff	8		8					
		Total	32	336	26	306				
83rd Battalion ...	6	Lt-Col. Sheppard, Joliette.								
No. 1 Company ...		Capt. Delfausse, Joliette	3	42	3	9	Berthier	Sept. 29	12	13
No. 2 do ...		Captain Granger, St. Jacques	3	42	2	15	do	do 29	12	22
No. 3 do ...		Captain Dostaler, Joliette	3	42	3	8	do	do 29	12	13
No. 4 do ...		Captain Guibault, St. Elizabeth	3	42	2	12	do	do 29	12	11
No. 5 do ...		Captain Blair, Rawdon	3	42	3	30	do	do ...	12	34
No. 6 do ...		Captain Sharpe, Rawdon	3	42	2	27	do	do ...	12	41
		Staff	8		6					
		Total	26	252	21	101				



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 6—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or oth rwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
			Officers	N.-C. O. and Men.	Officers.	N.-C. O. and Men.						
84th Battalion ...	6	Lt.-Col. Doherty, St Hyacinthe.										
No. 1 Company ...		Captain Chaput, St Hyacinthe.	3	42	3	38	Berthier .....	Sept. 29	12			47
No. 2 do ...		Captain Morin, St. Pie.....	3	42	1	28	do .....	do 29	12			59
No. 3 do ...		Captain Duhai me, St. Simon.....	3	42	1	20	do .....	do 29	12			38
No. 4 do ...		Capt. Johnston, Sorel.....	3	42	2	31	do .....	do 29	12			5
No. 5 do ...		Captain Benoit, St Hyacinthe.	3	42	3	32	do .....	do 29	12			47
No. 6 do ...		Lt. Beaucharme, Arthabaska.....	3	42	2	35	do .....	do 29	12			120
		Staff .....	8	.....	7	.....						
		Total. ....	26	252	21	184						
86th Battalion ...	6	Lt.-Col. Houde, Louiseville.										
No. 2 Company ...		Capt. Laffêche, Louiseville.....	3	42	2	26	Berthier .....	Sept. 29	12			24
No. 3 do ...		Capt. Laferrière, Berthier.....	3	42	2	15	do .....	do 29	12			.....
No. 5 do ...		Capt. Levesque, Berthier.....	2	42	3	20	do .....	do 29	12			.....
No. 6 do ...		Capt. Fauteux, St. Barthélemie	3	42	3	11	do .....	do 29	12			10
		Staff .....	8	.....	6	.....						
		Total. ....	26	252	16	72						

In Camp.

Rail and boat.

Rail.



## INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 7, Lient.-Col. T. J. DUCHESNAY, D. A. G. M.		Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.			Number of days drill performed.
			Officers.	N. - C. O. and Men.	Officers.	N. - C. O. and Men.			Miles.	Mode.	
Queen's Own Canadian Hussars.....	2	Lt.-Col. Forsyth, Quebec.....	12	84	.....	.....	Quebec .....	.....	12	Headquarters.	
A Troop.....	.....	Lt.-Col. Gray, Quebec.....	3	42	3	35	do .....	.....	12		
B Troop.....	.....	Lt. Col. Turnbull, Quebec.....	3	42	3	35	do .....	.....	12		
	.....	Staff .....	6	.....	5	.....	do .....	.....	12		
Quebec Field Battery.....	1	Capt. Lindsay, Quebec.....	6	74	.....	.....	Lévis .....	.....	12	In Camp.	Marched.
Lévis Garrison Artillery.....	2	.....	.....	.....	.....	.....	.....	.....	.....	Headquarters.	
No. 1 Battery.....	.....	Capt. Hamel, Lévis.....	3	42	2	31	Lévis.....	.....	12		
No. 2 do .....	.....	Capt. Vien, Lévis.	3	42	1	30	do .....	.....	12		
Gaspé Battery Gar. Artillery.	1	Maj. Slous, Gaspé Basin .....	3	42	2	36	Gaspé Basin.....	.....	12	do	

performed the Annual Drill for 1882-83—Continued.

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps. If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
							Number of Non-exercised Men, if any.	Figure of Merit.			
							Ranges.				
							Battalion.				
							Company.				
12 hours.											
19 cents.											
Very good.		None.	None.								
None.		None.	None.								
Good.		Good.	Good; arms in very good order.								
Good.		Good.	Marching past at a walk and trot; field movements; sword exercises, at a walk and at the halt; well done.			Yes.			May 27 do 27 do 27	May 18 do 18 do 18	Drill for 1881-82. Inspected by Lt.-Col. Duchesnay, D.A.G.
											Inspected by Lt.-Col. Cotton, com'ing "A" Battery, R.S.G.
											Inspected by Lt.-Col. Irwin, Dom. Inspector of Artillery.
											Inspected by Maj. Holmes, "A" Battery, R.S.G.

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 7—Continued.			Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.		Number of days drill performed.	Miles.
			Officers.	N - C. O. and Men.	Officers.	N - C. O. and Men.					
8th Royal Rifles.	6	Major Scott, Quebec.....	26	252	16	264	Quebec.....		12	Headquarters.	
No 1 Company	...	Captain Russell, Quebec.....	3	42			do.....		12		
No. 2 do	...	Captain Ray, Quebec.....	3	42			do.....		12		
No. 3 do	...	Captain LeSueur, Quebec.....	3	42			do.....		12		
No. 4 do	...	Captain Miller, Quebec.....	3	42			do.....		12		
No. 5 do	...	Captain Ahern, Quebec.....	3	42			do.....		12		
No. 6 do	...	Captain Gilmour, Quebec.....	3	42			do.....		12		
		Staff.....	8								
17th Battalion....	8	Lt.-Col. Blanchet, Lévis.....	32	336	15	159	Lévis.....		12	In Camp.	
No 1 Company	...	Captain Bourget, Village Lauzon	3	42	1	14	do.....		12		
No. 2 do	...	Capt. Lefrançois, Lévis.....	3	42	2	16	do.....		12		
No. 3 do	...	Major Demers, Lévis.....	3	42	2	21	do.....		12		
No. 4 do	...	Captain Bégin, Lévis.....	3	42	1	17	do.....		12		
No. 5 do	...	Captain Genest, St. Henri.....	3	42	3	32	do.....		12		
No. 6 do	...	Captain Gagné, St. Lambert....	3	42	2	24	do.....		12		
No. 7 do	...	Major Fontaine, St. Raphaël....	3	42	2	7	do.....		12		
No. 8 do	...	Captain Morin, St. Malachie....	3	42	2	28	do.....		12		
		Staff.....	8								





INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 7—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
			Officers.	N - C. O. and Men.	Officers.	N - C. O. and Men.						
23rd Battalion....	4	Lt.-Col. Duchesnay, St. Marie.										
No. 1 Company ...		Major Jalbert, St. Marie.....	3	42	3	37	Lévis.....	Sept. 20	12			33
No. 2 do ...		Major Paradis, Aylmer.....	3	42	2	41	do .....	do 20	12	In Camp.		92
No. 3 do ...		Capt. DeLéry, St. François.....	3	42	2	28	do .....	do 20	12			42
No. 4 do ...		Capt. L. Paradis, Aylmer.....	3	42	2	41	do .....	do 20	12			92
		Staff.....	6		6	5						
		Total.....	14	168	15	152						
87th Battalion....	6	Lt.-Col. Laurin, Ancienne, Lorette.										
No. 1 Company ...		Major Dorion, Charlebourg ...	3	42	2	20	Lévis.....	Sept. 20	12			
No. 2 do ...		Capt. Laurin, Anc., Lorette...	3	42	2	40	do .....	do 20	12			
No. 3 do ...		Major Genest, St. Ambroise.....	3	42	2	22	do .....	do 20	12			
No. 4 do ...		Capt. Routhier, Ste. Foye.....	3	42	1	12	do .....	do 20	12	In Camp		
No. 5 do ...		Capt. Brunet, St. Augustin .....	3	42	2	9	do .....	do 20	12			12
No. 6 do ...		Capt. Blou n, St. Jean, I. Orleans	3	42	1	8	do .....	do 20	12			15
		Staff.....	6		6							
		Total.....	24	252	16	111						

performed the Annual Drill for 1882-83—*Continued.*

Time required to concentrate the Battalion or Corps.		General Conduct of Corps.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
12 hours.	24 hours.						Number of Non-exercised Men, if any.	Ranges.			
Cost of rations per head, per diem, at encampment.		If any, and what casualties.					Battalion.	Company.			
19 cents.	19 cents.	Very good.	12 musicians, fair.	Clothing, new; arms in good order.	Manual and firing exercises; squad company and battalion drills; guard mounting and duties of sentries, very satisfactorily performed.	Yes.	200, 400 and 500 yards.	7-33	Sept. 19	Sept. 22	Inspected by Major Gen. Luard and the D.A.G.
Good.	Very good.	None.					10-17	do 19	do 22		
5 musicians, incomplete.							12-21	do 19	do 22		do
							7-30	do 19	do 22		
Good.							6-11	Sept. 19	Sept. 22		
None.							2-40	do 19	do 22		
5 musicians, incomplete.							7-21	do 19	do 22		
							18-10	do 19	do 22		
							10-10	do 19	do 22		
							11-06	do 19	do 22		

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 7—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.						
70th Battalion....	6	Lt.-Col. Massicotte, Ste. Geneviève.										
No. 1 Company ...		Capt. Trudel, Ste. Geneviève .....	3	42	3	33	Ste. Geneviève.....	Oct. 19	12			
No. 2 do ...		Capt. Cossette, St. Narcisse. ...	3	42	3	32	do ...	do 19	12			15
No. 3 do ...		Capt. T. Trudel, Ste. Geneviève .....	3	42	3	32	do ...	do 19	12			15
No. 4 do ...		Capt. Massicotte, St. Prosper.....	3	42	2	28	do ...	do 19	12			15
No. 5 do ...		Capt. L'Heureux, St. Tite.....	3	42	2	34	do ...	do 19	12			30
No. 6 do ...		Staff .....	8	.....	9	2						
		Total. ....	33	210	20	161						
Dorchester Battalion .....	4	Major Genest, St. Bernard.										
No. 1 Company ...		Capt. Fortin, Ste. Claire .....	3	42	1	30	Lévis.....	Sept. 20	12			27
No. 2 do ...		Capt. Turgeon, St. Isidore.....	3	42	2	21	do .....	do 20	12			24
No. 3 do ...		Capt. Genest, St. Isidore .....	3	42	2	21	do .....	do 20	12			24
No. 4 do ...		Capt. Mercier, Ste. Justine .....	3	42	2	34	do .....	do 20	12			60
		Staff .....	5	.....	5	5						
		Total. ....	17	168	12	111						

performed the Annual Drill for 1882-83—Continued.

24 hours.	24 hours.	Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
										Number of Non-exercised Men, if any.	Ranges.			
19 cents.	25 cents per officers and men.			Very good.										
Good.	Very good.													
None.	None.													
None.	24 musicians; very good.													
Good.	Clothing, new; arms in good order.													
Manual and firing exercises; squad company and battalion drill; guard mounting and duties of sentries, very satisfactorily performed.	Manual and firing exercises; company and battalion movements, performed very well.													
Yes.	Yes.													
200, 400 and 500 yards.	200, 400 and 500 yards.													
10-31	12-10													
20-09	9-14													
8-20	11-90													
17-28	.....													
	10-28													
Sept. 19	Oct. 19													
do 19	do 19													
do 19	do 19													
do 19	do 19													
Sept. 22	Oct. 20													
do 22	do 20													
do 22	do 20													
do 22	do 20													
														Inspected by Lt.-Col. Duchesnay, D.A.G.
														Inspected by Major Gen. Luard and the D.A.G.

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 7—Continued.			Establishment.		Actual strength present at inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.						
Charlevoix Battalion .....	3	Major Tremblay, Les Eboulements.										
No. 1 Company ...		Capt. Gauthier, Bay St. Paul...	3	42	2	40	Bay St. Paul	Aug. 4	12	Headquarters.		
No. 3 do ...		Capt. Cimon, Les Eboulements...	3	42	2	40	Les Eboulements .....	do	5			
No. 5 do ...		Capt. Lemieux, Chicoutimi.....	3	42	1	24	Chicoutimi..	Oct. 14	12			

performed the Annual Drill for 1882-83—*Continued.*

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
								Number of Non-exercised Men, if any.	Ranges.			
								Battalion.	Company.			
								Figure of Merit.				
					Good.		Yes.			Aug. 4	Aug. 4	Inspected by Lt.-Col. Duchesnay, D.A.G.
				Manual and firing exercises; squad and company drill; extended orders; well performed.						do 5	do 5	
										Oct. 14	Oct. 14	

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 8, Lieut.-Col. J. B. TAYLOR, D. A. G. M.		Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.			
		Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles	Mode.		
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.		Officers.	N.-C. O. and Men.				Officers.			N.-C. O. and Men.	
8th Regiment of Cavalry	3	Lt.-Col. Domville, Apohaqui		17	126	15	110	Sussex	Oct.	2	12	In Camp. Average 23 miles. Marched.	
No. 1 Troop		Capt. Otty, Hampton		3	42	2	38	do	do	2	12		
No. 2 do		Capt. Langstroth, Hammond River		3	42	3	34	do	do	2	12		
No. 4 do		Captain Fowler, Upham		3	42	3	38	do	do	2	12		
		Staff and Band, Apohaqui		8		7							
Newcastle Field Battery	1	Bt.-Major Call, Newcastle		6	79	5	74	Battery Headquarters.	Sept.	5	12	do	
Woodstock Field Battery	1	Captain Dibblee, Woodstock		6	79	3	64	Sussex	Oct.	2	12	do	170 Railroad.





INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 8—Continued.			Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Miles. Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.			Number of days drill performed.
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.					
<b>Brigade Garrison Artillery, N.B.</b>	5	Lt.-Col. Foster, St. John	23	210	.....	.....	Battery Headquarters.	Different dates.	12	Not in Camp.	
No. 1 Battery	.....	Captain Kane, St. John	3	42	2	28					12
No. 2 do	.....	Captain Ring, St. John	3	42	2	36					12
No. 7 do	.....	Bt.-Lt.-Col. Gillespie, Chatham	3	42	2	45					12
No. 10 do	.....	Capt. Armstrong, St. John	3	42	1	29					12
		Staff, St. John	8	.....	6	4					
<b>Brighton Engineers</b>	.....	Bt.-Major Vince, Woodstock	3	42	3	38	Sussex	Oct. 2	12	In Camp.	170 Railroad.
<b>62nd Battalion</b>	6	Lt.-Col. Blaine, St. John	25	252	24	243	St. John	.....	12	Not in Camp.	
No. 1 Company	.....	Captain Devlin, St. John	3	42	3	39	do	.....	12		
No. 2 do	.....	Captain Sturdee, St. John	3	42	3	39	do	.....	12		
No. 3 do	.....	Captain Blois, St. John	3	42	3	42	do	.....	12		
No. 4 do	.....	Capt. Magee, St. John	3	42	3	42	do	.....	12		
No. 5 do	.....	Capt. Sorrel, St. John	3	42	3	41	do	.....	12		
No. 6 do	.....	Capt. Hartt, St. John	3	42	2	40	do	.....	12		
		Staff and Band, St. John	7	.....	7	.....					



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 8—Continued.		Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.			Number of days drill performed.
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.					
<b>73rd Battalion ...</b>	5	Major McCulley, Chatham .....	21	210	14	183	Sussex. ....	Oct.	2 12	In Camp. Average 25 miles. Waggon and Railroad.	
No. 1 Company ...		Capt. Hutchinson, Buctouche.....	3	42	2	39	do ...	do	2 12		
No. 2 do ...		Capt. Fenton, Chatham.....	3	42	2	32	do ...	do	2 12		
No. 3 do ...		Capt. McKnight, Black Brook ...	3	42	2	41	do ...	do	2 12		
No. 4 do ...		Capt. McNaughton, Black River	3	42	2	37	do ...	do	2 12		
No. 5 do ...		Capt. Cameron, Bay du Vin.....	3	42	2	34	do ...	do	2 12		
		Staff and Band, Chatham.....	6	.....	4	.....					
<b>74th Battalion....</b>	6	Lt.-Col. Beer, Sussex.....	25	252	23	236	Sussex.....	Oct.	2 12	do Average 22 miles do	
No. 1 Company ...		Capt. Wetmore, Clifton.....	3	42	3	33	do ...	do	2 12		
No. 2 do ...		Capt. McPee, Petitcodiac.....	3	42	3	37	do ...	do	2 12		
No. 3 do ...		Capt. Arnold, Sussex.....	3	42	3	36	do ...	do	2 12		
No. 4 do ...		Capt. Murray, Murray Road ...	3	42	3	37	do ...	do	2 12		
No. 5 do ...		Capt. Baird, Sackville.....	3	42	2	39	do ...	do	2 12		
No. 6 do ...		Capt. Harper, Bay Verte .....	3	42	2	40	do ...	do	2 12		
		Staff and Band, Sussex.....	7	.....	7	14					



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 8—Continued.		Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
			Corps.	Corps.	Place.	Date.	Number of days drill performed.			
Battalion or Corps.	Companies. Commanding Officer and Head Quarters.	Officers	N.-C. O. and Men.	Officers				N.-C. O. and Men.		
St. John Rifle Co ...	Capt. Hartt, St. John.....	3	42	2	42	Company Headquarters.	Different dates.	12	Not in Camp.	
71st Battalion, No. 6 Company ...	Capt. McMullen, St. Stephen.....	3	42	3	39	do	do	12	do	
St. George Infantry Co. ....	Lieut. Mooney, St. George.....	3	42	1	39	do	Nov'r....	12	do	



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 9, Lieut.-Col. J. B. TAYLOR, D. A. G. M.		Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.		
		Corps.		Corps.		Place.	Date.	Number of days drill performed.				
		Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Officers.						N.-C. O. and Men.	Officers.
King's Troop Cavalry .....	1	Capt. Ryan, Kentville .....	3	42	3	36	Aldershot....	Sept. 11	12	In Camp.	19	Marched.
Halifax Field Battery .....	1	Captain Graham, Halifax.....	7	74	2	39	Halifax .....	Different dates.	12			
1st Halifax Brigade Garrison Artillery.....	6	Lt.-Col Mowbray, Halifax.....										
No. 1 Battery...		Captain Ronne, Halifax.....	3	42	2	26	Halifax .....		12			
No. 2 do ...		Captain Garrison, Halifax.....	3	42	2	27	do .....		12			
No. 3 do ...		Captain Curren, Halifax.....	3	42	2	42	do .....	do	12			
No. 4 do ...		Captain Oland, Halifax.....	3	42	2	42	do .....		12			
No. 5 do ...		Lieut Cogswell, Halifax.....	3	42	1	38	do .....		12			
No. 6 do ...		Captain Balcom, Halifax.....	3	42	1	30	do .....		12			
		Staff.....	6		6							
		Total.....	24	252	16	205						

Performed the Annual Drill for 1882-83—Continued.

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
								Number of Non-exercised Men, if any.	Ranges.			
								Battalion.	Company.			
	18½ cents.											
		Good.										
		None.										
Yes; 24 performers; good.					Good.	Outpost and skirmishing and troop drill, satisfactory.	Yes.					
									Not fired.			
										Sept. 21		
											Sept. 22	
										Oct. 31		Inspected by Lt.-Col. Cotton, Assistant Inspector of Artillery.
										Oct. 30		Inspection made by Lt.-Col. Cotton, Assist Inspector of Artillery.
										do 30		
										do 30		
										do 30		
										do 30		



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 9—Continued.		Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies. Commanding Officer and Head Quarters.	Corps.	Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
		Officers.	N.-C. O. and Men.	Officers.				N.-C. O. and Men.		
63rd Battalion, Rifles.....	6 Lt.-Col. Mackintosh, Halifax...									
No. 1 Company	Captain _____ Halifax.....	3	42	3	42	Halifax.....	Different dates.	12	Not in Camp.	
No. 2 do	Captain Hechler, Halifax.....	3	42	3	42	do .....				
No. 3 do	Capt. Cunningham, Halifax.....	3	42	3	42	do .....				
No. 4 do	Captain Fortune, Halifax.....	3	42	2	42	do .....				
No. 5 do	Capt. Egan, Halifax.....	3	42	2	42	do .....				
No. 6 do	Captain Milson, Halifax.....	3	42	2	42	do .....				
	Staff.....	8	.....	8	.....					
	Total.....	26	252	23	252					
66th Battalion, Princess Louise Fusiliers.....	8 Lt.-Col. Bremner, Halifax.....									
No. 1 Company	Captain Weston, Halifax.....	3	42	2	42	Halifax.....	do	12	do	
No. 2 do	Captain Hart, Halifax.....	3	42	3	38	do .....				
No. 3 do	Bt.-Major Watt, Halifax.....	3	42	2	42	do .....				
No. 4 do	Captain _____ Halifax.....	3	42	2	42	do .....				
No. 5 do	Captain _____ Halifax.....	3	42	2	30	do .....				
No. 6 do	Captain _____ Halifax.....	3	42	2	41	do .....				
No. 7 do	Capt. Humphrey, Halifax.....	3	42	3	42	do .....				
No. 8 do	Captain _____ Halifax.....	3	42	3	42	do .....				
	Staff.....	8	.....	8	.....					
	Total.....	32	336	27	319					



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 9—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
			Officers.	N - C. O. and Men.	Officers.	N - C. O. and Men.						
68th Battalion....	9	Lieut.-Col. Chipman, Kentville.	35	378	27	334						
No. 1 Company ...		Captain Dodge...	2	42	1	37	Aldershot ...	Sept 11	12		19	
No. 2 do ...		Captain Redden..	3	42	2	34	do ...	do 11	12		19	
No. 3 do ...		Capt. Steadman..	3	42	3	35	o ...	do 11	12		39	
No. 4 do ...		Captain Borden..	3	42	3	37	do ...	do 11	12		28	
No. 5 do ...		Captain Harris....	3	42	1	37	do ...	do 11	12		5	
No. 6 do ...		Captain Bill.....	3	42	2	32	do ..	do 11	12		25	
No. 7 do ...		Capt. Beckwith...	3	42	2	42	do ...	do 11	12		23	
No. 8 do ...		Capt. Ross, Ross Corner.....	3	42	3	34	do ...	do 11	12		12	
No. 10 do ...		Captain Foster....	3	42	3	41	do ...	do 11	12		5	
		Staff.....	8		7	5						
69th Battalion....	9	Lt.-Col. Starratt, Paradise .....	35	378	28	351						
No. 1 Company ...		Captain Turnbull	3	42	3	35	Aldersho ...	Sept. 11	12		63	
No. 2 do ...		Captain Harris...	3	42	2	39	do ...	do 11	12		63	
No. 3 do ...		Captain Morse....	3	42	3	39	do ...	do 11	12		27	
No. 4 do ...		Captain Wade....	3	42	3	39	do ...	do 11	12		54	
No. 5 do ...		Captain Charlton	3	42	2	35	do ...	do 11	12	do	52	do
No. 6 do ...		Captain Buckler..	3	42	2	39	do ...	do 11	12		46	
No. 7 do ...		Captain Nicholl..	3	42	2	42	do ...	do 11	12		63	
No. 8 do ...		Captain Whitman	3	42	2	38	do ...	do 11	12		36	
No. 9 do ...		Captain Marshall	3	42	2	40	do ...	do 11	12		25	
		Staff.....	8		7	5						



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 9—Continued.		Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.		
Battalion or Corps.	Companies. Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.	
		Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.							
72nd Battalion...	6 Lt.-Col. Parker, Wilmot .....	25	252	22	223	Aldershot ...	Sept. 11 12		In Brigade Camp.	18	Railway and Wagons.	
No. 1 Company ...	Captain Taylor...	3	42	3	35	do ...	do 11 12					
No. 2 do ...	Captain Phinney.	3	42	2	30	do ...	do 11 12					
No. 3 do ...	Captain Morse....	3	42	2	39	do ...	do 11 12					
No. 4 do ...	Captain Jacques.	3	42	2	36	do ...	do 11 12					
No. 5 do ...	Captain Baker....	3	42	3	39	do ...	do 11 12					
No. 6 do ...	Captain Roach....	3	42	3	39	do ...	do 11 12					
	Staff, Wilmot.....	7	.....	7	5							
75th Battalion...	6 Lt.-Cl Kaulbach, Lunenburg.....	25	252	.....	.....	Company's Headquarters.	Different dates.	12	Not in Camp		R. & W.	
No. 1 Company ...	Captain King, Lunenburg .....	3	42	2	39							12
No. 2 do ...	Capt. Curll, Lunenburg .....	3	42	3	38							12
No. 3 do ...	Captain Ross, Lunenburg .....	3	42	2	39							12
No. 4 do ...	Captain Ham, Mahone Bay.....	3	42	2	42							12
No. 5 do ...	Captain Langille, Martin's River..	3	42	2	39							12
No. 6 do ...	Captain Windrow	3	42	2	40			Aldershot ...				Sept. 11 12
	Staff, Lunenburg.....	.....	.....	.....	.....							



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 10, Lieut.-Col. C. F. HOUGHTON, D.A.G.M.			Establish- ment.	Actual strength present at Inspection.	Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.		
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.	Corps.	Place.	Date.	Number of days drill performed.		Miles.	Mode.	
			Officers. N - C. O. and Men.	Officers. N - C. O. and Men.							
Winnipeg Field Battery.....		Lt.-Col. W. N. Kennedy, Win- nipeg.....	2	79	5	71	Fort Osborne	July 1	12	In Camp.	.....

performed the Annual Drill for 1882-83—Continued.

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.			Date of Inspection.	Date when Drill was completed.	REMARKS.
								Number of Non-exercised Men, if any.	Ranges.	Figure of Merit.			
	25 cents allowed.	Good.	None.	Yes ; 21 musicians ; very good.	Good.	General field drill with blank firing ; marching past and firing Royal Salute ; very well performed.	Reported to be.	.....	.....	.....	July 1	July 1	Artillery practice carried out in accordance with General Orders (11), 27th June, 1882 ; Returns forwarded to Inspector of Artillery, at Kingston, by the Officer commanding battery. Inspected and highly complimented by the Hon. Minister of Militia.



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 11, Captain C. T. DUPONT, Acting D. A. G. M.		Establishment.	Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.	
Battalion or Corps.	Companies. Commanding Officer and Head Quarters.	Corps.	Corps.		Place.	Date.	Number of days drill performed.		Miles.	Mode.
		Officers.	N.-O. O. and Men.	Officers.				N.-O. O. and Men.		
Victoria Garrison Artillery.....	1 Captain Dupont, Victoria.....	6	85	4	29	Victoria.....	Dec. 2	12	Headquarters.	
No. 3 Company, Victoria Rifles.	1 Captain Fletcher, Victoria.....	3	42	2	15	do .....	Nov. 30	12	do	
Seymour Garrison Artillery...	1 Capt. Pittendrigh, New Westminster.....	2	30	2	15	New Westminster.	Nov. 25	12	do	



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 11—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.	Number of days drill performed.	Miles.	Mode.
			Officers.	N. - C. O. and Men.	Officers.	N. - C. O. and Men.					
New Westminster Rifles.....	1	Capt. Peele, New Westminster....	3	42	2	20	New Westminster.	Nov. 25	12	Headquarters.	
Nanaimo Rifles..	1	Lieut. Harvey, Nanaimo.....	3	42	1	16	Nanaimo.....	Dec. 12	12	do	



INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 12, Lieut.-Col. J. B. TAYLOR, D. A. G. M.		Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Distance the several Corps had to proceed to Muster, and mode of transport.
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Corps.		Corps.		Place.	Date.		
			Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.			Miles.	Mode.
Brigade Garrison Artillery.....	3	Major Irving, Charlottetown.	9	126	1	58	Charlottetown.	Different dates.	12	Not in Camp.
No. 1 Battery ...		Capt Passmore, Charlottetown.	3	42	2	29				
No. 2 do ...		Captain Moore, Charlottetown.	3	42	3	29				
Engineers.....	1	Major Dogherty, Charlottetown.	3	42	3	42	do			
22 Battalion .....	6	Lieut.-Col. Beer, Charlottetown.	19	168	10	135	Company Headquarters.	do	12	do
No. 1 Company ...		Capt. Dogherty, Charlottetown	3	42	3	32				
No. 3 do ...		Captain Stewart, Charlottetown.	3	42	3	36				
No. 4 do ...		Major M a b o u.	3	42	2	31				
No. 5 do ...		Little York.....	3	42	2	36				
		Captain McLeod, Hunter River ... Staff, Charlotte-town.....	7							

performed the Annual Drill for 1882-83—Continued.

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Number of Non-exercised Men, if any.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
									Ranges.	Figure of Merit.			
									Battalion.	Company.			
					Arms fairly kept and clean, clothing good, accoutrements old.		Yes.				Nov. 2 do 2	Nov. 2 do 2	Inspected by the Inspector of Artillery.
					do		do				Nov. 14 do 14	Nov. 14 do 14	Inspected by the Inspector of Engineers.
		Yes; 14 performers; fair.			do		do				Nov. 18 do 9 Oct. 28 Aug. 14	Nov. 18 do 9 Oct. 28 Aug. 14	Inspected by the Brigade Major.
					Manual and firing exercise and company drill. Nos. 3 and 4 Cos., good; Nos. 1 and 5 only fair.		do			35-83			

INSPECTION REPORT OF CORPS which have

MILITARY DISTRICT No. 12—Continued.			Establishment.		Actual strength present at Inspection.		Muster.			Whether in Camp or otherwise.	Miles.	Distance the several Corps had to proceed to Muster, and mode of transport.
			Corps.		Corps.		Place.	Date.	Number of days drill performed.			
Battalion or Corps.	Companies.	Commanding Officer and Head Quarters.	Officers.	N.-C. O. and Men.	Officers.	N.-C. O. and Men.						
King's County Provisional Battalion. No. 1 Company ...		Lieut. Fraser, Montague.....	3	42	2	29	Company Headquarters.	Different dates.	12			
Prince County Provisional Battalion. No. 2 Company ...		Capt. Ives, Tryon	3	42	2	34	do	do	12			

performed the Annual Drill for 1882-83—Continued.

Time required to concentrate the Battalion or Corps.	Cost of rations per head, per diem, at encampment.	General Conduct of Corps.	If any, and what casualties.	Whether in possession of Band. Number of Musicians and proficiency.	General State of Clothing, Arms and Accoutrements.	Nature of Movements at Inspection, and how performed.	Whether the Men of the several Corps were <i>bona fide</i> enrolled members thereof, according to the Militia Act.	Target Practice.		Date of Inspection.	Date when Drill was completed.	REMARKS.
								Number of Non-exercised Men, if any.	Figure of Merit.			
								Ranges.				
								Battalion.				
								Company.				
					Arms fairly kept and clean, clothing good, accoutrements old.		Yes.					
					Company drill, fair.							
									22-25	Oct. 25	Oct. 25	Inspected by the Brigade Major.
					do				Aug. 9	Aug. 9		do





## APPENDIX No. 3.

## REPORT OF THE INSPECTOR OF ARTILLERY.

OTTAWA, December, 1882.

SIR,—I have the honor to submit the following reports on the general condition and efficiency of the Batteries of Field and Garrison Artillery, which performed their annual drill during the past year, and which were inspected by me or by Lieut.-Colonels Montizambert and Cotton and by Major Holmes, "A" Battery.

The relative efficiency of each battery or brigade, according to the standard prescribed by the Dominion Artillery Association, in the efficiency competition for the prizes offered by His Excellency the Governor General, and by the Association, can be readily ascertained on reference to the annexed table (Pages 157, 158) of results of such competition, which includes all the batteries inspected, irrespective of their having entered, or not, for the above competition.

The general results as shewn by this table, can, however, be only taken as a tolerably accurate estimate of comparative efficiency, for it must be borne in mind that the batteries are in many cases armed with different descriptions of ordnance—practice under varying conditions of range, weather, &c., and have been inspected and reported on by different officers who may have different standards for comparison.

## MONTREAL FIELD BATTERY.

Inspected at local camp Montreal, Que., on 4th September.

Lieut. E. G. Green in command, in the absence of Lt.-Colonel Stevenson on leave in England.

Lieut. Hall.

Surgeon Fenwick. Vet.-Surg. M'Eachran.

General appearance of this battery was very good—the general physique of the men being good, their uniforms and accoutrements neat and clean. The drivers and mounted non-commissioned officers were provided with long boots, and the gubs, carriages and harness were extremely well cleaned and in very good order.

As regards camping arrangements, stabling and cover for harness, &c., this battery was exceptionally fortunate in being able to use the Exhibition grounds and sheds, &c., but so far as artillery exercises, field manoeuvres &c. were concerned, the fact that drill could only be carried on in the early mornings and late in the evenings when the men had returned from their days work in town, placed the battery at a great disadvantage with other corps who spend the whole of the twelve days in camp.

On the whole, however, the results of the inspection were very good and reflect great credit upon the zeal and energy of Lieuts. Green and Hall, the former of whom was in command for the first time. A detachment of the battery performed their annual gun practice at the Island of Orleans range at Quebec, with fair results. Sergt. Instructor King, "A" Battery, acted as instructor to the battery during their annual drill.

## NEWCASTLE FIELD BATTERY.

Inspected at local camp, Newcastle, N. B., 14th September.

Major Call in command.

Lieut. R. A. Lawlor.

" C. E. Fish.

Surgeon J. B. Freeman. Vet.-Surg. J. A. Brown.

The battery mustered full strength, general appearance and physique very good, but the uniforms were very much worn and looked shabby, and the harness and equipment generally, was not kept as clean, and in as good order as it might have been.

I inspected the battery at gun practice and was much pleased with the quiet steady manner in which it was conducted. The shooting was fair, but the range was a very difficult one, the results of the practice not being easily observed.

The battery was well horsed and the driving good, but owing to the want of a drill shed where officers and men could meet for voluntary drills and instruction, the general knowledge of gunnery or details of ammunition, &c., was not good.

#### WOODSTOCK FIELD BATTERY.

Inspected at Brigade Camp, Sussex, N.B., 11th and 12th October.

Captain Dibblee in command.

Lieut. T. Lynch.

“ J. Garden.

Surgeon Daniel. Vet.-Surg. Gillman.

The general appearance of this battery was not so good as on the previous year, there being a large number of recruits, and the uniforms being much worn and untidy. The harness and equipment was badly kept. The non-commissioned officers and men appeared to be very active and intelligent, and went cheerfully through a good deal of hard work, consequent upon the tiresome and circuitous journey from Woodstock to Sussex and return, by which four days were taken up, to the exclusion of drill instruction (*See Note 1.*)

I superintended the gun practice at a good range near camp, and am glad to report the general result as being better than on the previous year, but it was evident that much more preliminary drill was needed to enable the competitors to make the most of even the obsolete guns they have to use.

Both in this and the Newcastle Battery it was evident that all ranks seemed to feel keenly the disadvantage they were under as compared with other Field Batteries, in being obliged to use the obsolete smooth-bore guns, from which accurate shooting cannot be obtained, and where such energy, zeal and good material is available, I cannot urge too strongly the often repeated recommendation that if maintained at all, these and other Field Batteries similarly situated should be at least armed with efficient rifled guns (*See Note 2.*)

#### GARRISON ARTILLERY.

##### Quebec Garrison Artillery.

The three batteries composing the above force having received permission to postpone their annual drill for 1881 until after the close of the year, were not inspected until the 18th April, 1882, when I inspected the batteries as follows:—

No. 1 Battery—

Capt. Roy, Lieut. J. A. G. Hudon.....37 N.-C. officers and men.

No. 2 Battery—

Capt. Boulanger, Lieut. Lessard.....40 “ “

No. 3 Battery—

Lieut. Morgan.....22 “ “

Arms, accoutrements and clothing clean and in good order.

Marching past very good.

Manual and rifle exercise good.

A few simple battalion movements were performed, but from want of practice were not very successfully carried out.

A detachment from each battery was inspected at standing gun drill, but as only four or five drills of this nature had formed part of the annual drill, which seems to have been mostly squad drill and rifle exercises, very little efficiency, if any, was shewn; nor had any of the non-commissioned officers or men, with the exception of a few who had attended the School of Gunnery, received any instruction in gunnery, or ammunition, &c.

It is much to be regretted that at Quebec, where garrison artillery are so much required, the force should be numerically so weak and so inefficient, although all the officers have received Gunnery School certificates. An apparent want of energy seems to prevent the utilization of their knowledge in instructing their men. The latter do not seem to be of the best class for soldiers and very few attend voluntary drills, and I can only attribute this state of things to the superior advantages offered by infantry battalions, and the uncertainty which always seems to attend the calling out of the garrison artillery for annual drill.

No. 2 Battery performed its annual gun practice at the Island of Orleans during the autumn, with fair results.

*Montreal Brigade Garrison Artillery.*

Inspected at local camp, St. Helen's Island, Que., on 29th and 30th August.

Lieut.-Col. Oswald in command.

Major Forbes (acting).

Major Atkinson, Adjutant.

Surgeon, G. W. Major.

Asst. Surgeon, A. A. Brown.

No. 1 Battery—Capt. Trotter, Lieut. Arnton.....21 N.-C. officers and men.

2 " " McCallum, Lieut. Brush...22 " "

3 " " Lawrie, Lieut. Levin.....32 " "

4 " " Cole, Lieut. Lane.....18 " "

5 " " Turnbull, Lieut. Howard.. 30 " "

6 " Lieut. Stevenson.

The above batteries, with the exception of No. 6, which was only represented by one officer and a very few men, were encamped on St. Helen's Island for 12 days drill—the latter being accomplished between the hours of 4:30 to 5:30 a.m.—and 8 to 9:30 p.m. The officers and men being engaged at their usual avocations in the city during the daytime. My inspection took place in the evening under considerable disadvantages owing to want of light, the ground being only partially illuminated by electric light, and therefore artillery drills other than standing gun drill were not attempted.

The general results are shewn in the table of credits annexed, and are, I consider, very satisfactory when the disadvantages attending annual drill under such circumstances are considered.

The infantry drill was good, and the clothing, accoutrements and arms were very clean and in good order.

Standing gun drill, by selected detachments from each battery, was also very good, owing to the number of officers and non-commissioned officers who have taken certificates of qualification at special courses of instruction under instructors from the Royal School of Gunnery—Staff Sergeants Stroud and Mawhinney, "A" Battery. I have every reason to believe that, with the improved facilities for voluntary drills which will be afforded by the drill hall about to be constructed, the several batteries will rapidly become efficient as artillery corps.

Gun practice from the Island, firing towards Longueuil, was commenced a few days before my inspection, but owing to the constant interruptions of traffic, it became dangerous to proceed, and the practice was concluded with fair results at the Orleans range at Quebec, by detachments sent down for that purpose.

On the 11th December, at Montreal, I superintended the competitive trial of shifting ordnance, for His Excellency the Governor-General's prize, of detachments

from No. 3 and No. 5 Batteries, the latter performing the work in 3 minutes, 23 seconds—very good time when the difficulties of confined space and bad flooring are considered.

*Levis Garrison Artillery.*

Inspected at Engineer Camp, Levis, Que., on 8th Sept.

*No. 1 Battery.*

Major C. L. Hamel.  
Lieutenant R. S. Piton.  
29 non-commissioned officers and men.

*No. 2 Battery.*

Captain Vien.  
26 non-commissioned officers and men.

The general appearance of these batteries was not very good, some men in each being of very poor physique. The clothing was generally good, but the arms and accoutrements were not very clean, No. 1 Battery being especially deficient in this respect. These batteries had not drilled for 2 years, and in consequence were mainly composed of recruits. No voluntary drills had been practised, and in consequence not much proficiency was shewn in either infantry or artillery exercises, and only two detachments had been instructed in gun drill—and these subsequently went through their annual gun practice at the Island of Orleans.

*New Brunswick Brigade Garrison Artillery.*

Inspected at St. John, N. B., 20th and 21st September.  
Lieut.-Col. Foster in command.  
Lieut.-Col. Peters,  
Lieut.-Col. Underhill, Adjutant.  
Major Farmer, Quartermaster.  
Surgeon Daniel.

*No. 1 Battery.*

Captain Kane.  
Lieutenant Langan.  
27 non-commissioned officers and men.

*No. 2 Battery.*

Captain Ring.  
Lieutenant Estey.  
29 non-commissioned officers and men.

*No. 10 Battery.*

Lieutenant Stevens.  
Lieutenant Crawford.  
30 non-commissioned officers and men.

These batteries presented a very creditable appearance on parade. The men being of good physique; the non-commissioned officers appeared to be smart and intelligent, and the clothing and accoutrements were clean and in good order. The batteries were drilled as a battalion by Lieut.-Col. Peters—but through want of practice were only able to get through a few very simple manœuvres. They were subsequently exercised in company drill, and in manual and in firing exercises by their own officers, with very fair results. Standing gun drill was very well performed, shewing careful instruction, and I was especially pleased with the manner in which questions on artillery subjects, as previously arranged for the Dominion Artillery Association competition, were answered by the non-commissioned officers.

of Nos. 1 and 10 batteries, which latter were instructed by Sergt.-Major Hughes, late R. A.

Gun practice was carried out on the day following with very good results, from two 32-pr. guns at Fort Dufferin, sea range over 1,400 yards.

It is to be regretted that more officers of this brigade do not avail themselves of the opportunity for obtaining a knowledge of their duties, afforded by the short courses at the Royal School of Gunnery.

*Chatham Garrison Artillery.—No. 7 Battery, New Brunswick Brigade.*

Inspected at Chatham, 14th September.

Lieut.-Col. Gillespie.

Lieutenant Crummin.

38 non-commissioned officers and men.

A very fine looking lot of young men; very insufficiently drilled; clothing and accoutrements dirty; rifles very rusty. The want of instruction was partly accounted for by the fact that only about twelve days drill of about 1½ hours each had been completed, but the want of a competent drill instructor was very manifest, and I was glad to hear that several non-commissioned officers and men of the battery were about to join the School of Gunnery for a course of instruction. The battery provided one detachment of fairly well drilled men, who went through the annual gun practice during my inspection, and considering the gun (a 32-pr.) was not sighted, and the platform consisted of only a few loose planks, the shooting was good. If it is intended to keep this battery effective, its only gun should be properly sighted and mounted in some suitable locality commanding the entrance to the harbor, for drill and practice.

LIEUT.-COLONEL COTTON'S REPORT.

CITADEL, QUEBEC, 18th December, 1882.

SIR,—I have the honor to report that, in accordance with your instructions, I inspected the following Batteries of Artillery:—

Quebec Field Battery.

Richmond Field Battery.

St. John's Garrison Battery.

1st Brigade Halifax Garrison Artillery.

Halifax Field Battery.

Nos. 1 and 2 Batteries, [Charlottetown.

*Quebec Field Battery.*

Inspected in Brigade Camp Levis, on the 20th September.

Armament, 9-pounder R. M. L. gun.

Present in camp:—

Captain Crawford Lindsay in command.

Lieutenants—C. P. Dean, E. B. Garneau, C. F. Thibaudeau.

Veterinary Surgeon, W. B. Hall.

6 Sergeants.

1 Trumpeter.

55 Non-Commissioned Officers, Gunners and Drivers.

31 Horses.

\* 1 Lieutenant, owing to sickness, was unable to be present on day of my inspection.

This battery occupied the huts at the Engineer Park.

Owing to heavy and constant rain the instruction was much interrupted. There were 31 recruits out of the total strength present.

I was much pleased with the appearance and discipline of the battery. This battery still maintains its high state of efficiency (*See Note 3*).

I append credits given at inspection. (*Vide table.*)

*Richmond Field Battery.*

Inspected in Brigade Camp at Richmond, on the 21st September.

Armament, 24-pounder howitzer.

Present in camp:—

Captain (Brevet Major), Hon. H. Aylmer in command.

Lieutenant A. M. Beatty.

6 Sergeants.

4 Corporals.

27 Gunners.

25 Horses.

Three men taken sick during camp were sent home. Four horses were also sent away owing to the small number of men present in camp.

This battery was under canvas, and were considerably impeded in their instruction by the heavy and constant rains during the time of their training. Owing, I think, to the obsolete description of their equipment (24-pounder howitzer), there appears to be a lack of interest in the work as is shown in other batteries. The headquarters of this battery are at a strategically important place, and its armament ought to be the best and most complete (*See Note 4*).

Practice not carried out. I append credits given at inspection.

I consider that leggings, as recommended by Lieut.-Colonel (now Major-General) T. B. Strange, would be highly serviceable for mounted men of all field batteries.

*Halifax Field Battery.*

Inspected on parade ground, at Drill Shed, on 31st October.

Lieutenant Flowers in command. Lieut. W. T. Harris—

Present on parade:—

2 Officers.

8 Sergeants.

2 Trumpeters.

29 Rank and File.

12 Horses.

Armament:—6 Armstrong 6-pounder, B. L. Guns.

A fine intelligent body of men, but to call this a Field Battery is a misnomer.

None of the officers or non-commissioned officers were mounted and say they never were.

The horses were harnessed tandem. One in the shafts and one as leader.

Before the battery could move the leaders had to be taken out and eventually the shaft horses had to be unhooked. The horses were altogether untrained, and evidently obtained on hire for the day only.

I have declined recommending the annual allowance for horses. Field manœuvres were altogether out of the question. It would, I think, be advisable to do away with the horses and man the guns with drag ropes, or better still, return the equipment into store and make this another battery of the 1st Halifax Brigade Garrison Artillery (*See Note 5*). I am at a loss to understand how this Battery has for so long been reported as an efficient Field Battery. As at present constituted it is one only in name and by virtue of having a partial Field Battery equipment.

It would be more satisfactory for all concerned were some re-organization made.

The clothing, equipment, guns and harness were in good order.  
 Standing gun drill was well performed, and non-commissioned officers had a good knowledge of stores.  
 Very little of this obsolete ammunition remains in store.

## GENERAL REMARKS.

*Field Batteries.*

It is hoped that the proper establishment of six horses to every gun will be restored before the next annual drill. No Field Battery in the country could take the field for service at the present moment, should necessity arise, in an efficient state, for want of horses and wagons to carry men, and sufficient quantity of ammunition; and this without taking a reserve into consideration.

*1st Halifax Brigade, Garrison Artillery.*

Inspected on the parade ground of the Drill Shed, 30th October, Lieut.-Col. Mowbray in command. The muster was very small, and a poor attendance of officers; only 129 of all ranks on parade. The brigade wore white helmets provided, I understand, at their own expense. What clothing and accoutrements I saw were in good order. Some men wore their civilian trousers.

Battalion drill, fair:

Manual exercise, poor.

Garrison gun drill and other artillery exercises, good.

Very few of the officers and non-commissioned officers are qualified, and the commanding officer states that is impossible for any to attend the Royal Schools of Gunnery. There is a marked difference in the efficiency of some batteries. Three members of the Shoeburyness Artillery Team of 1881 were conspicuous for the knowledge of their work and soldierly bearing. The following drills were performed by detachments from the brigade in the Drill Shed:

Garrison gun drill, mortar and gun drills, and repository exercises.

*Parade State.*

				Total.	
Staff Officers.....	5	Band .....	22	.....	27
No. 1 Battery, officers.....	1	N.-C.O. & men.....	10	.....	11
“ 2 “ “ .....	1	“ “ .....	10	.....	11
“ 3 “ “ .....	1	“ “ .....	21	.....	22
“ 4 “ “ .....	1	“ “ .....	20	.....	21
“ 5 “ “ .....	0	“ “ .....	17	.....	17
“ 6 “ “ .....	1	“ “ .....	19	.....	20
Total.....					129

Some of the officers and men are good and efficient, but there appears to be a want of a proper system of instruction.

All six batteries lack their full complement of officers.

On the 25th, 26th and 27th October, I superintended the practice of the brigade at Point Pleasant Battery from the 32-pr. S.B. guns. No shrapnell shell were issued. It is stated there are none in Halifax.

Vent servers are badly needed.

Fuzes used of date 22.9.'55.

No surgeon was present on 25th or 26th, but arrived during the last round on 27th. A number of the competitors showed a want of knowledge in the correction of elevation and in the boring and fixing of fuzes, as well as in actual drill at the guns.



The Artillery of Halifax, both Field and Garrison, do not appear to have taken advantage of the opportunities offered by the Royal Schools of Gunnery, or of instruction no doubt easily available from the Royal Artillery. I am sanguine of a great improvement next year.

A suitable building ought to be provided the Halifax Garrison Artillery for the care of the stores at Point Pleasant Battery. The building now in use is most unsuitable. The rain comes through the roof in many places, and in the spring the floor is under water. This building also does duty as an expense magazine and shifting room.

During the practice the gun ammunition was stored here, and alongside on a dry gravel floor the shells were filled—it was impossible to prevent some loose powder from spilling on the ground. If this building is to be retained it ought to be extensively repaired, raised some two feet and a proper floor laid down. As it is at present it is anything but a credit to the Militia Department (*See Note 6*).

*St. John's (P.Q.) Garrison Battery.*

Inspected at St. John's on the 23rd September.

Present on parade :

Captain W. Drumm, in command.  
 1 Lieutenant A. J. Tenny.  
 3 Sergeants.  
 3 Corporals.  
 1 Bugler.  
 30 Rank and file.

Lieutenant Futvoje reported absent.

The arms, clothing and accoutrements of this battery were in perfect order.

Company drill, manual and firing exercises good (*See Note 7*).

Practice was carried out from 24-pr. gun at St. John's, but as the range was not properly laid out, no credits could be given.

Sergt. Eckhardt, of "A" Battery, instructed the battery during their annual drill.

I append credits given at instruction.

*Prince Edward Island Provisional Brigade.*

Inspected at Charlottetown on 2nd November, Major J. D. Irving in command.

*No. 1 Battery, Charlottetown.*

Captain Passmore.  
 Lieutenant Palmer.  
 3 Sergeants.  
 33 Rank and file.

*No. 2 Battery, Charlottetown.*

Captain Moore.  
 Lieutenant Hewson.  
 3 Sergeants.  
 33 Rank and file.

These two batteries are composed of a fine body of men. Arms, accoutrements and clothing in good order. March past and manual and firing exercises well performed. Company drill good. No. 1 Battery performed garrison gun drill very well, and the knowledge of the non-commissioned officers and men in their duties is above the average. I consider this battery highly efficient. No. 2 battery having been lately re-organized, did no gun drill, but next year will no doubt compete successfully with No. 1.

A battery commanding the approach to the harbor has been constructed this year, and on which the guns have been mounted.

Practice can only be carried out in winter (*See Note 5*).

W. H. COTTON, Lieut.-Colonel,  
Assistant Inspector of Artillery.

The Inspector of Artillery.  
Ottawa.

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### MAJOR HOLMES' REPORT.

CITADEL,  
QUEBEC, 27th Oct., 1882.

SIR,—I have the honor to report, for your information, that in accordance with your order I inspected the Gaspé Garrison Battery on the 28th September last. I found the battery in very good order, all the men being of a good class, active and intelligent, and able to perform their work as artillerymen very satisfactorily.

I superintended the gun practice. Score made was 180 points, the highest individual score being that of the officer commanding, Major Slous.

The inspection of the foot parade and infantry drills and muster was made by Lieut.-Col. D'Orsonnens, B.M.

I found the equipment in exactly the same state as last year, and would simply call attention to my last year's report with reference to it as well as to my suggestions regarding the Government property there, nothing having been done towards carrying them out.

I have the honor to be, Sir,  
Your obedient servant,  
J. G. HOLMES,  
Major C. A.

The Inspector of Artillery,  
Quebec.

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### LIEUT.-COLONEL MONTIZAMBERT'S REPORT.

TETE DU PONT BARRACKS,  
KINGSTON, 14th December, 1882.

SIR,—I have the honor to report that, in accordance with your orders, I have this year inspected the following Batteries of Field and Garrison Artillery, which were the only ones authorized to perform their annual drill in the Province of Ontario.

#### FIELD.

The Ottawa, Gananoque, Kingston, Durham, London, Nos. 1 and 2 of Provisional Brigade Guelph, Toronto and Hamilton.

#### GARRISON.

Cobourg, Port Hope and St. Catharines.

The scale of credits for the prizes given by His Excellency the Governor-General for general efficiency to be competed for, under the terms laid down in the D.A.A. Circular, No. 49, is submitted herewith; as also parade states of batteries.

#### OTTAWA FIELD BATTERY.

Captain J. Stewart, Commanding.  
Inspected in Brigade Camp at Brockville, Lieut.-Col. Maunsell, D.A.G., Military District No. 4, commanding, 13th September.

## Officers present :—

Captain J. Stewart.  
 Lieutenant Thos. Evans, (R.S.G. 1st.)  
 Lieutenant D. C. F. Bliss, (R.S.G. 3rd.)  
 Surgeon P. B. Bentley, M.D.  
 Vet. Surgeon James Harris.

The annual gun practice was performed on the following day under myself as umpire and Major Taschereau, "B" Battery Range Officer, Surgeon V. H. Moore, 41st Battalion, acting as time keeper.

The unavoidable absence of Lieutenant L. W. Coutlee, seriously affected the competitions for His Excellency's prize. The harness has been in use since 1855, and the state in which it is reflects great credit on the officer commanding. Field and gun drill very good, non-commissioned officers well up in their work. Horses fair; new clothing should be issued next spring. Equipment still not completed.

## GANANOQUE FIELD BATTERY.

## Officers present :—

Bt.-Major Mackenzie, (G.S. 1st.,) commanding.  
 Lieutenant and Captain C. E. Britton, (G.S. 1st.)  
 Lieutenant G. Gillies, (G.S. 1st.)  
 Lieutenant Shields.  
 Surgeon E. H. Merrick.  
 Veterinary Surgeon John Waldie.

Inspected in Brigade Camp at Brockville, 13th September. Annual gun practice performed the following day under my supervision: Range Officer, Major Taschereau, "B" Battery, Royal School of Gunnery; Time-keeper, Surgeon Wm. Irving, 18th Battalion.

A very fine body of men, clean and smart, horses good, and harness well taken care of. Field manoeuvres fair and gun drill very good. On the 24th May last, a division of this battery marched to Kingston (18 miles), to take part in the review. On that day, an unfortunate and very regrettable accident happened, owing to the fall of a horse in the gallop past, by which Corporal Dempster lost his life. The range that these two batteries fired on was a difficult one.

## KINGSTON FIELD BATTERY.

This corps performed their annual drill in Brigade Camp at Cobourg. Lieut.-Col. H. V. Villiers, D.A.G., Military District No 3, commanding, and were inspected by me on the 15th September. Gun practice the following day at Port Hope, where they marched for that purpose. I superintended the practice; Major Taschereau, "B" Battery, Royal School of Gunnery, Range Officer; Surgeon Saunders, Kingston Field Battery, Time-keeper.

## Officers present :—

Captain John Wilmot, (G.S. 1st.)  
 Lieutenant P. G. Wilmot, (G.S. 2nd.)  
 Lieutenant J. A. Wilmot.  
 Surgeon H. J. Saunders.

A fine soldierlike lot of men, well up in their work. Field manoeuvres and gun drill good. Uniforms and accoutrements smart, and in good order. I have to repeat my remarks of last year as to equipment. The carriages, harness, &c., were in worse order even than then; very little care seems to be taken of the valuable articles in charge of the battery. They have had their harness since 1866, but with the little use it gets and common care, it ought to be still in good order (*See Note 9*). Horses very good. Sergeant Instructor A. Lyndon, "B" Battery, Royal School of Gunnery, instructed during part of training.

## DURHAM FIELD BATTERY.

Inspected in camp at Cobourg on the 15th September.

Officers present:—

Captain W. McLean, (G. S. 1st.)  
Lieutenant Benson.  
Lieutenant E. Sanderson.  
Surgeon T. H. Brent, M.D.

Annual gun practice under my supervision on the 16th at Port Hope: Major Taschereau, "B" Battery, Royal School of Gunnery, Range Officer; Surgeon Saunders, Kingston Field Battery, Time-keeper.

A very efficient battery, clean, smart and well up in all their work. Horses very good, field manœuvres very good, gun drill very good.

A detachment of this battery came from Peterboro', and seem to have been ably instructed at voluntary drills by Lieut. Sanderson, all the year round. That officer is one of the best swordsmen I have seen in Canada outside of the Royal Schools of Gunnery. Sergt. H. Strange, "B" Battery Royal School of Gunnery, instructed during training (*See Note 10*).

## LONDON FIELD BATTERY.

Inspected in Brigade Camp at London, Lt.-Colonel Jackson, Deputy Adjutant-General Military District No. 1, commanding, on 19th September.

Officers present:—

Brevet-Major John Peters, (G. S. 1st.)  
Lieutenant and Captain John F. Williams, late R. A.  
Lieutenant Fairbanks, late R. A. and Royal Military College.  
Lieutenant Hesketh, late Royal Military College.  
Surgeon Vesey A. Brown, M.D.  
Veterinary Surgeon James Tennet.

Annual gun practice on 20th September, under myself, with Major Taschereau, "B" Battery, Royal School of Gunnery, as Range Officer; Major Heskett, Time-keeper.

A fine and very smart battery in every respect. Their field manœuvres were very highly creditable, as also gun drill and answers to questions. The men were of exceptionally fine physique. Harness very old but well kept (*See Note 11*). The want of foot-rests for axle seats, nose bags and range table plates to go on the trails has been frequently reported by Lieut.-Col. Strange, Major Holmes and other inspecting officers.

The range table plates have been imported since my inspection by the officer commanding.

Uniforms in very good order. They looked almost new, but the fitting might be better. Horses large and powerful, but much galled and harness worn. This, however, was no doubt owing to the heavy farm work just finished at this time of year.

## 1ST PROVISIONAL BRIGADE FIELD ARTILLERY, GUELPH.

Lieut.-Colonel A. H. MacDonald in command.

Officers present:—

*No. 1 Battery.*

Captain W. Nicoll, (G. S. 1st.)  
Lieutenant A. Murchison, (G. S. 2nd.)  
Lieutenant J. Davidson, (G. S. 1st.)  
Lieutenant J. Crowe.

*No. 2 Battery.*

Captain G. B. Hood, (G. S. 1st.)  
 Lieutenant W. Macdonald, (G. S. 1st.)  
 Lieutenant Tuck.  
 Surgeon H. Howitt, M.D.  
 Veterinary Surgeon Reed.

Inspected both batteries in camp at Guelph, on the 23rd September, and the Major-General commanding previously reviewed them and saw them at field work, fighting positions and manœuvres, after a very close inspection of men, guns, horses and kits.

The batteries of this brigade are exceedingly good. The officers and non-commissioned officers show a great amount of zeal, and the untiring energy of their commander has brought all ranks up to a high state of efficiency.

Horses very good in both batteries, harness well put on and very well kept. It is only fair to say, however, that this brigade camped this year in the Exhibition grounds, and had the advantage of the sheds to stable their horses and cover their appointments and harness.

Uniform in good order, and equipment generally very complete.

No. 2 Battery has the old 9 Pr. S. B. guns and carriages. It was difficult to move them on the soft ground of the parade with 4 horses only. As already recommended by General Strange, I think they ought to be supplied with the new 13 pr. M.L.R. gun.

Brigade Sergeant-Major Clark, late Royal Artillery and "A" Royal School of Gunnery, acted very efficiently as assistant gunnery instructor. The annual gun practice of these batteries was carried on subsequently at a range at Woodbine Park at Toronto, under my supervision: Major Taschereau acting as range officer; Surgeon Howitt kindly acted as Time-keeper. This brigade has a very efficient signal corps, which worked on this occasion, before the Major-General (*See Note 12*).

## TORONTO AND HAMILTON FIELD BATTERIES.

Inspected in Brigade Camp at Niagara.

Lieut.-Colonel Denison, Deputy Adjutant General, Military District No. 2, commanding.

*Toronto Field Battery.*

26th September—Officers present:

Brevet-Major John Gray (G. S. 1st), commanding.  
 Lieutenant J. H. Mead (G. S. 2nd).  
 Lieutenant J. P. Beaty (G.S. 1st).

*Hamilton Field Battery.*

Captain W. F. McMahon (G. S. 1st), commanding.  
 Lieut. H. P. Van Wagner (G. S. 1st).  
 Lieut. S. G. Treble.

The two batteries were brigaded together under Major Gray, who handled them ably. They took part in a review before the Minister of Militia. Their marching past was good, and general turn out very smart.

I also inspected each battery separately, and have to report very favorably.

With their men, horses, harness, harnessing, clothing and general equipment there was little to find fault, as far as was in their power; except the Hamilton Battery's harness—not in good order. Camp arrangements and discipline excellent. There are buildings at this splendid camping ground that are now out of repair, which could at a very small expense be made available for stables, and I strongly recommend that this should be done.

Gun practice was performed on the following day under my supervision: Major Tascherau, "B" Battery, Royal School of Gunnery, acting as Range Officer; Surgeon H. S. Griffin performing the duties of Time-keeper.

Staff Sergeant Kerley, "B" Battery, Royal School of Gunnery, during the camp and for some time before, acted as instructor to the Hamilton Field Battery, and Captain McMahon reported most favorably to me of the manner in which that non-commissioned officer performed his duties.

The Hamilton Battery performed the feat of firing a round, dismounting gun and carriage, remounting, and firing another round, in the almost incredible time of 1 minute, 10 seconds.

Major-General Luard, commanding Canadian Militia, saw these batteries in camp (*See Note 13*).

The fine Toronto Battery, with all Gunnery School officers, declined to enter for the Governor-General's efficiency prize.

#### GARRISON ARTILLERY.

##### *Cobourg Garrison Battery.*

Inspected at Cobourg on 16th September.

Officers present—

Captain Dumble commanding.

Lieutenant MacNaughton, (G. S. 1st).

Lieutenant E. B. MacNachtan.

This fine battery paraded full strength—*vide* general parade state—very smart and soldierlike. Manual and firing exercise good; company drill not so good.

Gun drill good. Firing practice, under myself as umpire, and Major Tascherau, range officer, from a 18-Pr., on a travelling carriage, could hardly have been better.

The 24-pr. in their charge has no platform and no sights. This has been previously reported. Handspikes and other side arms very much worn. This was the only Garrison Battery in Ontario that competed for the Governor-General's prize for efficiency.

Lieutenant David MacNaughton, (G. S. 1st), had evidently given the battery able instruction (*See Note 14*).

##### *Port Hope Garrison Battery.*

Brevet-Major Guernsey, commanding.

Inspected at Port Hope on the 1st of October.

Gun practice on same day, from 32-pr., which I superintended: Lieut. Imlah acting as Range Officer; Major Robert Dingwall, 46th Battalion, Time-keeper.

Officers present:—

Brevet-Major Forbes W. Guernsey.

Lieutenant A. A. Adams.

Battery very weak. Clothing, arms and accoutrements of the men in good order. They seem to be well kept, in the store-rooms attached to the drill-shed, by an efficient caretaker.

Infantry drill, very indifferent; gun drill very good, as also answers to questions on theory.

The practice was done on the lake shore from a gun on a platform near some houses. I have recommended that this gun and platform should be shifted about fifty yards to its left front. This battery did not compete this year for the Governor-General's efficiency prize.

Bombardier O'Connor, "B" Battery, Royal School of Gunnery, acted as instructor, and was favorably reported on by Major Guernsey.

*St. Catharine's Battery Garrison Artillery.*

Capt. W. Wiley (G. S., 1st) commanding.

Lieut. A. Bruce Clendenning (G. S., 2nd).

Inspected October 13th, in the drill shed; clothing in good order; rifles (long), clean and well kept, no slings; one gyn with fittings complete, with the exception of the hook swivel and bolt of the triple block, which makes the whole thing utterly useless.

Infantry movements, as far as done, very good indeed. Manual and firing exercises very good. The gun practice was carried out from an 18-pounder on travelling carriage, on the lake shore, under my supervision; Lieut. Imlah acting as Range Officer; Surgeon Dougan, 19th Battalion, Time-keeper.

The men of this battery are of very fine physique. They have helmets, which, however, are the property of the battery.

Armament, 1 32-pounder, no hind sight; 1 24-pounder, no sights at all. No platform for either of them. 2 18-pounders, almost all stores deficient, and what there are unserviceable (*See Note 15*).

I reported this last year, and find nothing has been done this year. This battery has been ably instructed by Lieut. A. B. Clendenning, who took a course in "A" Battery, and is a very good officer in every respect.

The battery again declined to compete for the Governor General's prize for efficiency.

*Forts at Kingston.*

Forts Henry and Frederick require some repairs, as also do some buildings in the Tête-de-Pont Barracks. A riding school is much required. Estimates for these things have been asked for and will be sent in.

*Armaments.*

The armaments and warlike stores in artillery charge, are in good order, and are regularly inspected. We have lately received an addition of a 40-pounder siege gun, with carriages and stores complete.

General parade state of all the batteries, and scale of credits for Governor General's efficiency prize, are annexed, as also report on "B" Battery, Royal School of Gunnery.

I strongly recommend six horses to a gun for field batteries, and also waggons. Without the latter they can only carry half their men and less than half their stores.

At present these batteries do well on parade, but could not take the field in serviceable order, as they stand at present.

## REMARKS.

I beg to submit that were it possible to assemble the squads of the different batteries (only 16 men each), for a few days at the best available range in their Province, it would make the gun practice competitions very much fairer. It is not possible to have a fair test of the gun practice when almost every battery fires under different conditions—such as different length of range, up hill, down hill, or level. The extra expense would be small. Payments for use of many ranges would be saved, as also the travelling expenses of the Range Officer.

The guns of the battery at the place selected might be used and transport saved.

The meeting of the officers and men of the different artillery corps in this way would be a good feature. I would suggest that these days of practice should be allowed outside of the days of annual training, which are much too short.

There are splendid ranges at the Woodbine Park, Toronto, and at the Island of Orleans, Quebec.

The time of year chosen this year for the camps was unfavorable for strong musters of men and horses of the artillery.

I was very generally told that the month of June would be preferred to any other time.

Clothing in most batteries was indifferently fitted. Boots did not exist, and fancy laced shoes or gaiters with high heels were the rule.

There was an almost total absence of spurs and sword-knots.

I must record my high appreciation of the efficiency and zeal of some of the batteries I had the honor to inspect this year.

I have the honor to be, Sir,

Your obedient servant,

C. E. MONTIZAMBERT, Lieut.-Colonel,  
Assist. Inspector of Artillery.

The Inspector of Artillery, Ottawa.

#### GENERAL REMARKS BY INSPECTOR OF ARTILLERY.

##### *Field Batteries.*

Owing to the late season in which the camps of instruction were held, the general turn out was not so good, in point of numbers, this year as on previous occasions; and one very good corps, the Shefford Field Battery, which was to have joined the camp at Richmond, was so weak numerically as to cause its commanding officer to abandon his intention to turn out on that occasion. There can be no doubt but that to ensure an efficient muster in rural corps, in time of peace, the selection of the most suitable season for annual drill must be decided by the exigencies of the occasion and locality.

I have again to report my former recommendations as to points of detail, and would again most strongly urge the advisability of increasing the number of horses from four to six per gun. Lieut.-Col. Montizambert's suggestion as to assembling the detachments of the different batteries armed with the same nature of gun, at a central range in each Province, for competitive practice is, I consider, a very good and practical one. The expenses would be very trifling compared with the good effects which might reasonably be expected to accrue in the direction of additional *esprit de corps*, zeal and ultimate efficiency.

The very high scores made by Nos. 1 and 2 Batteries, Guelph, 1st Provisional Brigade, and at gun practice, which secured to the former the efficiency prize for this year, are indicative of the good results to be obtained by careful instruction in team shooting, which was ably carried out under the superintendence of the officer commanding the brigade, combined, as on this occasion, with very favorable conditions as to weather, length of range, &c.

With reference to the equipment of field batteries, the want of a suitable black leather legging to be worn by mounted men, is very noticeable, as failing the supply, generally at the expense of the officers, of long boots, the appearance of men riding with low boots or shoes, and no straps, is both unsightly and unserviceable.

##### *Garrison Batteries.*

After many years experience as an inspector, I am forced to arrive at the conclusion, that to render these corps even reasonably efficient, they must be put on the same footing as field batteries, and perform at least twelve days drill every year (*See Note 16*). The time necessary to teach a recruit the ordinary drill and duties which are required of every soldier, leaves very little to be devoted to artillery exercises; and if the drill is not resumed for two years, it is nearly all forgotten, and the soldier himself loses all interest in his corps.

Were the country obliged to act on the defensive, in a campaign, a very much larger force of garrison artillery than at present exists, would immediately be required for the defences of Kingston, Quebec, St. John, N.B., and to supplement the Royal Artillery at Halifax, and it is therefore sufficiently evident that at these



localities, where men can be so easily trained, every effort should be made to organize and encourage the formation of garrison artillery batteries.

It is unfortunate, however, that at the cities named a sufficiently large number of infantry battalions to meet the requirements of the local population, already exists, and, as I have already pointed out in previous reports, the average recruit prefers the less arduous and equally showy duties of an infantry soldier, it would be necessary for the requirements of the case to diminish the local infantry force. Garrison artillery would then, as it does at present in a few localities, become more popular and consequently more efficient.

I have great pleasure in recording here the excellent work which has been performed in an unostentatious manner by the Dominion Artillery Association. As a part of the competition, for the most efficient battery, answers to a list of questions previously prepared and published by the Inspector of Artillery, were required, and the information which had thus to be gained by individuals cannot fail to be of much benefit to the corps generally. It is proposed that this system be continued next year, and form part of the inspection of every battery. The rules for regulating competitive gun practice have been most carefully revised and considered, and the consequence has been a greatly increased efficiency in this most important particular.

The Association is yet in its infancy, but uniting as it does, in a common interest, the widely separated units of the same corps, its influence, if wisely directed in the general interests of the service, cannot fail to be of great and lasting benefit to the Dominion.

It has already received a cordial recognition from the National Artillery Association of Great Britain, and it is to be hoped that means will be forthcoming to enable it to send at least one detachment to England during the ensuing summer, to again compete at the national competition at Shoeburyness.

D. T. IRWIN, Lieut.-Colonel,  
Inspector of Artillery.

#### NOTES BY MAJOR-GENERAL COMMANDING.

- (1) It would be of advantage to this battery to do its annual drill at local headquarters next year.
- (2) Strongly recommended.
- (3) I had the pleasure of seeing this battery again this year and was glad to see them in as satisfactory a condition as when reported on last year.
- (4) I quite agree with this recommendation. I saw the battery myself and was pleased with it.
- (5) I concur in this recommendation, and consider that the guns would be much more useful at the Royal Military College, Kingston.
- (6) I concur in the recommendations of Lt.-Col. Cotton, Assistant Inspector of Artillery, and am sorry to read such an account of this brigade.
- (7) It affords me much pleasure to receive so satisfactory a report.
- (8) I am glad that the Chariottetown Brigade maintain their good name.
- (9) A very unsatisfactory report as to care of equipment, shewing much neglect on the part of the officer commanding.
- (10) I am glad to observe such a marked improvement reported of this battery.
- (11) A very satisfactory report—I recommend that foot-rests for axle seats be furnished; also nose bags.
- (12) The appearance and satisfactory state, in all ways, of this Brigade of Field Artillery, which I saw myself, afforded me very much pleasure. I concur in Lieut.-Col. Montzambert's recommendation as to re-arming of No. 2 Battery with the exception that the guns should be the same as that of No. 1 Battery.
- (13) I was much pleased with what I saw of these two batteries in camp at Niagara, and I concur with Lieut.-Col. Montzambert's recommendation regarding repairs to buildings for stables.
- (14) A very satisfactory report.
- (15) The deficiency of stores here reported is not very creditable to the officer who was in charge of them.
- (16) I consider it of the utmost importance that the drill of Garrison Batteries should be annual.

TABLE showing relative efficiency of Batteries inspected during 1882, according to the scale of credits established by Dominion Artillery Association.

FIELD ARTILLERY.

Subjects.	Clothing and Accoutrements.	Guns, Carriages and Equipment.	Horses.	Harness and Harnessing.	Marching past—Walk, Trot and Galop.	Standing Gun Drills—Position and general duties.	Answers to questions by Officers (as issued) limited to 2 for each Officer present.	Answers to questions by N.-O. Officers (as issued) limited to 2 for each Officer present.	Field Manœuvres.	Sword Drill by Mounted Officers and Non-Com. Officers.	Dismounted and Disabled Ordnance.	Discipline, including Camping details.	One-fifth total score at competitive practice.	Present on parade at Inspection.				Inspected by	Remarks.
														Officers.	N. O. Officers & Men.	Horses.	Staff.		
Full Credits.	10	10	10	15	15	25	5 each.	2 each.	25	5	10	10	—	Officers.	Officers & Men.	Horses.	Staff.		
Montreal	9	9	8	13	10	20	14	27	15	X	7	8	56.8	2	65	29	2	.....	Lt.-Col. Irwin.
Newcastle	5	5	7	8	10	18	X	X	13	X	X	9	45.8	3	75	29	2	.....	do
Woodstock	5	6	7	5	11	15	X	X	12	X	X	7	36.8	3	55	29	2	.....	do
Ottawa	9	8	8	12	10	21	22	23	22	3	6	10	87.2	3	55	25	1	Lt.-Cl.	Lt.-Colonel
Gananoque	8	6	9	11	8	20	22	14	18	3	8	9	71.2	4	67	29	and 4.	Montizambert.	
Kingston	8	6	9	10	9	23	17	15	20	3	8	7	50.4	3	55	29	1	.....	do
Durham	9	7	9	12	9	22	21	17	20	4	8	10	76.0	3	65	29	2	.....	do
London	9	9	8	10	10	22	30	21	24	10	10	10	69.6	4	64	29	2	.....	do
1st Bde. (No. 1 F. B.)	10	8	8	12	10	23	36	26	22	4	8	9	99.2	3	62	30	1	Lt.-Cl.	do
Guelph.	10	6	9	12	10	23	23	33	22	3	7	9	101.2	3	52	29	and 3.	do	
Hamilton (No. 2 do)	9	8	9	12	8	24	16	14	21	3	10	10	69.0	4	60	28	2	.....	do
Toronto	10	8	8	13	9	22	X	X	20	4	8	10	81.8	3	55	25	.....	do	
Quebec	8	10	8	12	10	25	24	40	20	4	9	10	84.6	4	62	31	1	.....	Lt.-Col. Cotton.
Richmond	10	10	8	12	10	20	17.5	15	18	3	.....	10	*	2	37	25	.....	do	
Halifax	8	8	2	5	2	20	X	X	X	2	.....	5	†	2	39	12	.....	do	

NOTE.—In subjects marked thus X Batteries were unable to show efficiency.  
 \* Cannot practice with present armament.  
 † Score not kept in accordance with rules.

TABLE shewing relative efficiency of Batteries inspected during 1882, according to the scale of credits established by Dominion Artillery Association.

GARRISON ARTILLERY.

SUBJECTS.	Clothing and Accoutrements.	Company Drill.	Manual and Firing exercises.	Standing Gun Drill.	Answers to questions by Officers present (as issued) limited to 2 for each Officer.	Answers to questions by Officers present (as issued) limited to 2 for each Officer and N.-C.	Each Officer and manicate, 1st to 4th.	Each man with efficiency badge for 1881.	Machine and Interior Economy.	One-fifth score at competitive practice.	Present on parade at inspection.			Remarks.
											Officers.	N. Com. Officers & Men.	Staff.	
Full Credits.	10	10	10	25	5 each.	2 each.	4 to 1	25	10	—				
Lévis Garrison Artillery. ....	4	4	5	10	×	×	4	7	3	23.2	2	29		Lt.-Col. Irwin.
do	7	5	10	10	×	×	4	.....	4	13.2	1	26		do
do	9	5	5	18	20	20	11	.....	7	30.6	2	27		do
do	8	4	5	13	4	4	.....	.....	6	31.6	2	29		do
New Brunswick Bde Gar. Arty.	3	.....	2	10	×	×	.....	.....	2	21.2	2	38		At Chatham by
do	9	.....	6	16	4	4	.....	.....	7	26.6	2	30		Lt.-Col. Irwin.
do	8	7	7	18	11	13	7	.....	6	10.2	2	21		do
do	8	6	6	12	9	7	12	.....	7	7.4	2	22		do
do	7	6	8	20	12	19	21	.....	6	14.0	2	32		do
do	7	6	6	15	14	3	6	.....	5	19.6	2	18		do
do	9	6	5	18	15	4	7	.....	4	20.6	2	30		do
do	.....	.....	.....	.....	.....	.....	6	.....	.....	.....	1	.....		do
Cobourg, G. B.	9	5	7	24	24	14	4	.....	10	36.8	3	42		Lt.-Colonel
do	8	2	7	22	×	×	.....	.....	9	20.0	2	20		Montzambert.
do	9	7	8	22	×	×	.....	.....	9	28.0	2	35		do
St. Catharines do	8	6	6	16	19	18	10	.....	10	36.0	2	39		do
Gaspé do	10	8	9	18	10	9	.....	.....	6	.....	2	37		Major Holmes.
St. John's do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	10		Lt.-Col. Cotton.
do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	10		do
do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	10		do
do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	21		do
do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	20		do
do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	17		do
do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	19		do
1st Halifax Brigade Garr. Arty.	*8	6	6	23	18	9	.....	.....	8	.....	.....	.....		.....
do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....
do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....
do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....
do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....

P. E. Island Brigade Garr. Arty. { No. 1... 10 | 8 | 24 | 19 | 18 | 10 | 36 | do  
 { No. 2... 10 | 8 | 18 | 18 | 9 | 6 | 36 | do

\* As all the Batteries of this Brigade paraded together, want of time prevented the Inspecting Officer from making a detailed inspection of each. The credits given, being the general result for the whole Brigade.  
 The subjects marked thus X, Batteries were unable to show efficiency.

D. T. IRWIN, Lieut.-Colonel,  
 Dominion Inspector of Artillery.

## APPENDIX No. 4.

### ANNUAL REPORT ON ROYAL SCHOOLS OF GUNNERY.

The Adjutant-General of Militia.

SIR,—I have the honor to forward herewith the Reports of Lieut.-Colonels Montizambert and Cotton, on the Royal Schools of Gunnery, and Batteries under their command.

1. In accordance with orders received, I relinquished the command of the Royal School of Gunnery, Quebec, on the 1st November, and have the satisfaction of knowing that my successor, Lieut.-Col. Cotton, who has been in command of the battery since its organization, in 1871, is extremely well qualified to carry on the more general and responsible duties devolving on the position of Commandant of the Royal School of Gunnery and Assistant Inspector of Artillery, with zeal, intelligence and assiduity.

2. I quite concur in the general nature of the recommendations of both Lieut.-Colonels Montizambert and Cotton, as to the necessity which exists for some augmentation to the pay of the non-commissioned officers and men of both batteries. The rate of wages has considerably increased throughout the Dominion since the formation of these batteries, in 1871, and it appears to be no longer possible to attract the same desirable class of recruits (*See Note 1*).

To carry on these schools of military instruction successfully, the average intelligence of non-commissioned officers and men should be of a high order, at present, at Quebec, owing to the want of men to carry on the unavoidable duties, it is found necessary in many cases to enlist recruits, some of whom can neither read nor write, and others whose general education is so defective as to prevent their ever being employed to instruct others.

3. The appointment of an Inspector of Artillery at Headquarters will, I trust, result in a more completely uniform system of instruction and examination being adopted in both Schools of Gunnery, which will be under his supervision.

4. The recent General Order relative to courses of instruction in military surveying, fortification, reconnaissance, &c., at the Royal Military College will, I trust, afford many officers who are anxious to learn their duties, an opportunity to obtain instruction in those most important subjects, and the practical results to be seen throughout the Dominion, effected by officers who have been through the courses of instruction at the Royal Schools of Gunnery and have availed themselves to the utmost of the practical and theoretical instruction to be obtained thereat, affords me an opportunity of again urging upon all officers who are desirous of becoming soldiers, in reality as well as in name, the advisability of so obtaining instruction in military duties.

5. During the past year a trained Armorer Sergeant has been attached to "A" Battery, from the Royal Artillery, and a Riding Instructor has been similarly attached, from the 4th Dragoon Guards. The services of both these well-qualified non-commissioned officers have been constantly in request and are very valuable.

6. It will be noticed that there has been a considerable falling off in the number of officers, non-commissioned officers and men, attached to "A" Battery for short courses of instruction. A special infantry class was authorized during the summer, and applications for permission to join were received from eight or nine officers, but only two non-commissioned officers having applied to join, the idea of forming a special class had to be abandoned, but it is to be hoped, that, failing regularly organized Infantry Schools, it will be again adopted and that officers commanding

companies will recognize the benefit to be obtained by having, at least, a few of their non-commissioned officers trained in a school of practical military instruction.

D. T. IRWIN, Lieut. Colonel,  
Inspector of Artillery.

ANNUAL REPORT ON "A" BATTERY, ROYAL SCHOOL OF GUNNERY.

CITADEL,  
QUEBEC, 31st December, 1882.

SIR,—I have the honor to submit herewith the Annual Report of the Royal School of Gunnery, "A" Battery, for the year ending 31st December inst.

I assumed command on the 1st November last.

During the year, 9 officers and 96 non-commissioned officers and men joined the school. Of this number 6 officers and 30 non-commissioned officers and men joined for short course of instruction, and 3 officers for a long course. Of the 66 non-commissioned officers and men enlisted in "A" Battery, 18 were re-enlisted for a further term of three years service.

Batteries.	Officers.	Non-Commiss- ioned Officers and Men.	Total.
"A" Battery, R.S.G. ....		66	66
Queen's Own Canadian Hussars .....		3	3
Quebec Field Battery .....		2	2
Woodstock do .....		1	1
Quebec Garrison Artillery, No. 1 Battery .....		1	1
do do No. 2 do .....	2	5	7
do do No. 3 do .....		11	11
Lévis Garrison Artillery, No. 1 do .....		1	1
do do No. 2 do .....	1	1	2
Pictou, N.S., Garrison Battery .....		3	3
17th Battalion .....	3	2	5
87th do .....	3		3
<b>Total</b> .....	<b>9</b>	<b>96</b>	<b>105</b>

The following certificates have been issued since last Report, dated December, 1881:—

	Long Course.				Short Course.				Attendance.	Total.
	1st Class.	2nd Class.	3rd Class.	4th Class.	1st Class.	2nd Class.	3rd Class.	4th Class.		
Officers .....	2				3	1				6
Non-commissioned officers and men .....						*2	3	3	24	32
<b>Total</b> .....	<b>2</b>				<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>24</b>	<b>38</b>

\*Infantry.

In addition a special examination was held in Montreal, of the Montreal Brigade of Garrison Artillery, and the following certificates granted:—

Non-commissioned officers and men, 6 third class.

Officers, 4 second class.

The annual rifle practice of "A" Battery was carried on at the range at Lévis, and the returns of the shooting transmitted to Headquarters. Figure of merit for 1882, 51.32. Prizes amounting to \$40 were given for rifle shooting out of the canteen funds.

The Sergeant Instructors of Infantry, were detailed to the following places during the year:—

Sergeant Genest. Montreal Military School.

" Cornish. St. Marie College.

" Coyne, Three Rivers College.

Corporal Blais, Rigaud College.

Sergeant Cornish, St. Hyacinthe College.

" Phillips } Camp Sergt.-Major Brigade Camps at Richmond and Sherbrooke

Corporal Blais, Instructor Brigade Camp, Batiscan.

Sergeant Phillips }

" Proctor } Instructors to Drill Association 9th Battalion, Quebec.

" Coyne }

Two more horses are needed to turn out the Field Battery Division in proper order, and allow for casualties.

Extensive repairs to the buildings and fortifications generally have been carried out during the year. Casemates for a number of years uninhabitable, have been put in a thorough state of repair and are now all occupied. The canteen was moved from the old building into the repaired casemates. The building vacated by the canteen requires extensive repairs and it is hoped these will be done during the ensuing year.

A concrete platform was laid down on east flank of Manns bastion of Citadel, and the 8-inch converted Pallisser M. L. gun mounted, with a good command of the approach to the Harbor.

The annual competition between "A" and "B" Batteries took place this year at Quebec, "B" Battery winning both competitions.

The report of the death of Major Hebert, of "B" Battery, on active service in Egypt, was received here with great regret by all ranks.

I desire most strongly to recommend that the officer commanding "A" Battery be promoted to the rank of Major, with pay and allowances of that rank. Also that the good conduct pay of the non-commissioned officers and men be raised to five cents per diem, instead of two, three, and four cents for first, second, and third years service respectively; and in addition an issue of groceries to every non-commissioned officer and man, on the scale laid down in Regulations and Orders for the Militia.

The quarters available for officers, and the mess establishment, are very restricted, and it is hoped some remedy will be afforded soon.

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

W. H. COTTON, Lieut.-Colonel.  
Commandant R. S. G.

The Inspector of Artillery,  
Ottawa.

## ANNUAL REPORT ON "B" BATTERY ROYAL SCHOOL OF GUNNERY.

KINGSTON, 21st December, 1882.

SIR,—I have the honor to report that during the year ending 31st December, 1882, 23 officers and 170 non-commissioned officers and men joined for instruction. Of this number the officers were as follows:—

	Officers.
Artillery, Short Course .....	2
Cavalry " .....	2
Engineers " .....	2
Infantry " .....	17
	—
	23

Sixty-five were non-commissioned officers, gunners, drivers, and troopers from the various Artillery, Cavalry, and Infantry corps in the Provinces of Ontario and Manitoba.

In addition, 105 non-commissioned officers and men enlisted and re-enlisted in "B" Battery.

The following is a return of certificates granted:—

First Class Certificates, "Long Course" .....	2
do " "Short Course" .....	18
Second " " .....	4
Third " " .....	14
Fourth " " .....	13
Attendance " "Long" and "Short" .....	46
	—
Total .....	97

In addition to the ordinary Gunnery School work, the undermentioned Instructors have been employed, as follows:—

Staff Sergeant Lyndon, Kingston Field Battery.

" Reily, Hamilton "

" Maguire, 3rd and 4th Regiments Cavalry.

Sergeant Infantry Instructor Billman, Military School, Ottawa, Ottawa College, and High School, Mount Forest.

Sergeant Infantry Instructor James Sloane, London Institute and Dufferin College, London.

Sergeant Infantry Instructor, Charles H. Hawlett, Military School, Toronto, and Brigade Sergeant Major, Camp Cobourg.

The gentlemen cadets, Royal Military College, have had the usual courses in equitation under the late Major Hebert and Lieutenant Donaldson, assisted by Riding Instructor Staff Sergeant Maguire, Royal School of Gunnery.

Major Walker, R.E., Inspector of Engineers, of the Royal Military College Staff, has kindly afforded instruction in engineering to the attached officers of the Royal School of Gunnery. Definite orders on the subject have been recently issued.

Annual competition between "A" and "B" Batteries in shifting ordnance and gun practice took place in Quebec on the 5th and 6th September, "B" Battery being fortunate enough to win both events.

The Battery Rifle Association was very strong this year. The matches came off in August. The Association gave \$240 in prizes, and the citizens of Kingston gave in money and kind the large sum of \$250.

Musketry instructions, battery competitions, mounted exercises, and athletic sports were carried out as usual, Driver Shannaghan being the mounted and Gunner Jolin the dismounted competitors for Lord Dufferin's Cup.



Major General Strange, R.A., late Commandant Royal School of Gunnery, retired from the service in March last, to the regret of the whole Canadian Militia Artillery.

The services of that officer to the artillery arm in Canada can hardly be over-estimated. He founded the Dominion Artillery Association which is doing so much good to the force.

We have to deeply mourn the death of Major Hébert, a Lieutenant of the Battery, who volunteered for service in Egypt, and died at Cairo of fever, on the 1st of November last.

In view of the high price of labor, the pay given to the United States Army so close to us, and the high pay of the North-West Police, I strongly recommend that the pay of the men of the Batteries should be slightly increased, I would suggest 45 cents per diem, with 5 cents extra as good conduct pay, and a free ration of bread, meat, and groceries.

This would be little enough for the work the men have to do in an educational establishment like this, the duties appertaining to which have to be regularly performed, besides those necessary in garrisoning a large station such as this with a handful of men.

I beg to state that I have been very ably assisted by my second in command, Major Short, and also by all the officers and non-commissioned officers of the Royal School of Gunnery staff. Major Short commanded during my long absence on inspection duty, and carried out everything to my entire satisfaction.

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

C. E. MONTIZAMBERT, Lieut.-Colonel.  
Commandant R. S. G.

The Inspector of Artillery,  
Ottawa.

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NOTE BY MAJOR-GENERAL COMMANDING.

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(1) The question of increased pay to these Schools of Gunnery is one which I think demands immediate attention, as the efficiency of these schools depends on the pay being such as to attract a good class of men with a fair amount of education.

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## APPENDIX No. 5.

## INSPECTION OF ENGINEER MILITIA.

ROYAL MILITARY COLLEGE,  
31st October, 1882.

SIR,—I have the honor to report that I inspected the Companies of Engineer Militia as under :

## MONTREAL ENGINEERS.

I inspected this company on the 9th instant, at St. Helen's Island, Montreal, and was accompanied by Lieut.-Col. Worsley, Acting Deputy Adjutant-General Military District No. 5. The strength of the company on parade was, I regret to say, very small, viz: 3 officers and 28 non-commissioned officers and men. The equipment was fair, but many of the tunics are bad and require to be renewed. The arms were very dirty, which fact I brought personally to the notice of the acting Deputy-Adjutant General on the ground. The drill of the company was all that could reasonably be expected, in the ordinary company drill, and I found that they had practised and were fairly well up in the shelter trench exercise. After the drill I proceeded to inspect the work done by the company during their training, and have much pleasure in reporting very favorably thereon.

A single sling bridge had been thrown across a chasm 60 feet wide over which the company was marched. I examined this bridge carefully and questioned the non-commissioned officers who had charge of the construction, and can state that the work was well done and was very creditable to the company.

Two gun pits converted into a battery were also executed full size, the work being well done. A full sized rifle pit had also been constructed. A squad of men was then exercised at barrel piercing and made a very good pier in good time, the lashings being very correctly done. I questioned non-commissioned officers and men closely on various details of the works and got satisfactory replies, showing that the men took an intelligent interest in their work.

The great fault of this company is its small numbers. It is much to be regretted that the full number of men are not enrolled to take advantage of the excellent instruction they receive from Major Kennedy.

While on this subject I beg to draw attention to a special Report which I forwarded directly through the Acting Deputy Adjutant-General, requesting that if possible a special rate of pay of \$1 per diem might be granted to the company this year, and to strongly recommend that this may be done. I must again refer to my Report of last year, in which I pointed out that the difficulties of keeping up engineer companies would I feared prove insuperable unless it is frankly recognized that they have specially hard work to do, and that they must be compensated for this extra work. I venture again to draw the attention of the authorities to this very vital point, and to beg that it may receive the full consideration which its importance demands. (See Note 1.)

## BRIGHTON COMPANY.

I inspected this company at the Camp at Sussex on the 11th instant. The Company is up to its full strength and had on parade three officers and 36 non-commissioned officers and men. The men were of splendid physique, but are still unfortunately badly equipped, the Engineer tunics supplied being as a rule of sizes much

too small for the men of this company. I requested Major Vince to make a demand for a supply of larger tunics, which will, I hope, be complied with.

The drill of the company was indifferent, but Major Vince stated that they had purposely given their entire time to engineering work, and the work done was so good that I could not blame, although I pointed out that in future I should expect to see an improvement in the drill, as, though a knowledge of engineering was the sole *raison d'être* of engineer soldiers, still it must never be forgotten that engineers are soldiers first and that the engineering is added to, not substituted for, the ordinary infantry drill.

After the inspection of arms, &c., the company paraded for work, and executed the following during the day:—Five different kinds of shelter trench, including covered trench (bullet shed); conversion of two gun pits, previously made, into a two gun battery; a field casemate for shelter of reserves, &c. I was very much pleased with the way the work was done, especially with the manner in which Lieutenant Tompkins selected his working party and constructed the casemate with only a rough pencil sketch to guide him. The handiness of the men in the use of the axe, and in erecting wooden framing with axe and augur only by means of trenails being specially noticeable.

Lieutenant Connell, who had charge of the conversion of the gun pits into battery, also did his work well. The company had thrown a single lock bridge, 30ft. span across the stream bounding the camp, the whole of the timber for this and the other works was felled on the spot, and the framing was secured partly by trenails instead of lashing, as there was a great dearth of suitable rope. Here again the resources of the men were well tested. I saw the removal of this bridge on the following morning, and had another example of the handiness of the men with the axe. The frames were too heavy for the number of men available to lift, and the difficulty was overcome by two men with axes chopping through the standards of one frame, and letting it fall into a perpendicular position, when it was easily hauled back, and the other frame allowed to drop into the water, and hauled to shore. (See Note 2.)

On the whole I was much pleased with this company, and can confidently state that they would, if required, prove themselves a most useful body of engineer soldiers.

I requested Major Vince to demand a further supply of engineer stores, and beg to recommend that his demand may be complied out.

I would again recommend that this company be increased to a strength of say 70 men. Major Vince informs me that he can get the men, and it is certainly to be desired that he should get the opportunity of training a larger number than he is now allowed.

#### CHARLOTTETOWN COMPANY.

I inspected this company on the 14th inst., accompanied by Major Freeland, Brigade Major, P.E.I. The number on parade were 2 officers and 26 non-commissioned officers and men; 10 men were reported absent without leave, and the total strength of the company was shown as 2 officers and 41 non commissioned officers and men.

The company was very well turned out, the clothing was good, and the appearance on parade left nothing to be desired, except that the arms might have been cleaner, but here, I regret to say, my commendation must cease. The drill was bad, and, with the exception of the commanding officer, there appeared to be a lamentable ignorance on the part of all concerned, and this especially in the case of the officer second in command. On enquiry I found that no engineer work had ever been attempted, and that the company had no engineer stores of any kind. (See Note 3).

I had a conversation with Major Dogherty on the state of the Company, and he expressed a strong desire to undertake engineer work, and from all I heard, I believe that an honest endeavor will be made this winter to make the company efficient engineers. Acting on this belief, I have forwarded to Major Dogherty a list of the articles which he requires to commence instruction, and he promised me that he would demand these articles only on the clear understanding that they would be

utilized and instruction vigorously pushed on. Under these circumstances, I recommend that the stores be issued, as without them, of course, nothing can be done. Major Dogherty expressed a wish to send an officer to Kingston during the winter for instruction, and if this can be arranged, it will, no doubt, be a great advantage to his corps.

I expressed very clearly to this corps my opinion that the existence of companies nominally engineers, but without any engineer training, was injurious both to themselves and to the service at large, for reasons stated in my Report of last year, and I hope that the result of my inspection will be to rouse all ranks to make an effort to place themselves abreast of the excellent companies at Montreal and Brighton.

I will not here do more than refer again to my general recommendations as to the engineer force, as contained in my previous Reports. It is greatly to be regretted that the Toronto and St. John companies have ceased to exist, but I venture to hope that if my recommendation regarding pay is carried out (the increased pay to be granted only to those reported efficient) there will be no difficulty in starting these companies afresh, and in getting up companies in the other large towns, as recommended.

That the provision of the complement of engineer troops for the active militia would be beneficial in the highest degree there can be no doubt. The long struggle over the spade may be said to be over. It is universally admitted that an intrenching tool must, in the very near future, become part of the personal equipment of every infantry soldier, and this being so, the provisions of trained instructors for the infantry, would of itself demand a number of engineers far in excess of the supply, and this, it appears to me, is at present the first duty of the engineer companies; to have a body of troops, however small, who have done even shelter trenching, is of undoubted value, where the mass of infantry is, from causes altogether beyond their control, unable to carry out that most important branch of field instruction, the construction of hasty shelter.

I look to continued annual inspections, if combined with generous treatment in the supply of stores, &c., as being most important for increasing the efficiency of the engineer force, as it tends to create amongst them a healthy rivalry, which was heretofore wanting. If the force were a little larger, annual competitions (*See Notes 4 and 5*) similar in their nature to those which now stimulate so greatly the energies of the artillery, would, no doubt, be very valuable, and, it appears to me, that now that two companies are really established and working as engineers, the chief thing to be desired is to extend the movement to all the large towns, by encouraging in every way the promotion of new companies. I find that a very general idea exists that the officers of these companies must be civil engineers, and I imagine that many are deterred from taking up engineer work by the want of this qualification. No doubt it is a very good thing to have civil engineers as officers for such companies, but when they are not available there is no reason whatever to prevent any intelligent man from undertaking the work. I must repeat here that what we want at present is the rough and ready field engineering required for pioneer and camp duties in the field. High and scientific work may come later and with it will come the men. If the force is once started and its value recognized by its brethren in arms of the infantry, there will be no difficulty in getting officers for any special branches of a corps, which will then be acknowledged to be a valuable addition to the national forces.

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

G. R. WALKER,  
Captain Royal Engineers and Local Major.

The Adjutant-General of Militia,  
Ottawa.

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NOTES BY MAJOR-GENERAL COMMANDING.

(1) I myself inspected the work done by this company. It appeared to me very good indeed, and it affords me much pleasure to find the Inspector report so favorably. It is weak in numbers, however, and I commend the remarks of the Inspector, regarding increased pay for Engineers, to the serious consideration of the Government.

(2) I had the pleasure of seeing the excellent work done by this company, and considered it most creditable to all concerned. I concur thoroughly with what Major Walker states regarding the great value or service of the corps, and feel confident their increase, even at considerable cost to the Dominion, would be money well spent.

(3) I am sorry to read this report of the Charlottetown corps of engineers and recommend that their continued existence shall depend entirely on what is done by them during the present winter. To neglect their arms and drill and to know nothing of their engineer duties are grave charges against them.

(4) These general remarks of Major Walker I consider of great value. If the Dominion Government would encourage a competition at some central place between *squads of engineers* it would be of great advantage to the service.

(5) I would also recommend that a supply of *Wallace's spades*, recently invented by Major Wallace, King's Royal Rifle Corps, and a number of which have been issued to the Imperial troops, should be obtained for the engineer forces of Canada. I have seen them tried by volunteers in England and can strongly recommend them and they only cost about \$1.50 each (and in numbers would be cheaper.)

APPENDIX No. 6.  
(A.)—GUNNERY CERTIFICATES.

PROVINCE OF ONTARIO.

NAMES of Officers, Non-Commissioned Officers and others of the Active Militia who have obtained Certificates at the Royal School of Gunnery, Kingston, during the Year 1882.

Name and Rank.	Corps.	Date of Certificates.				Long or Short Course.
		1st Class.	2nd Class.	3rd Class.	4th Class.	
Baker, Gunner Robert	"B" Battery, R.S.G.			Dec. 18	May 5	Short.
Beebe, Gunner and Driver G.	Toronto Field Battery					do
Davidson, 1st Lieutenant John	1st Provisional Brigade Field Artillery	April 28				do
Dayison, Gunner Albert	"B" Battery, R.S.G.				May 8	do
Doyle, Gunner and Driver Patrick	do				do 15	do
Dreiman, 2nd Lieutenant W. M.	Kingston Field Battery		Aug. 11			do
Farley, Lieutenant and Captain Alfred A.	"B" Battery, R.S.G.	Aug. 29		Dec. 9	Dec. 18	Long.
Gibson, Sergeant W.	Toronto Garrison Battery					Short.
Gibble, Gunner John	"B" Battery, R.S.G.					do
Hickey, Gunner and Driver Thomas	Durham Field Battery					do
Hutchinson, Corporal E. A.	London do				May 8	do
Hyndman, Gunner William	"B" Battery, R.S.G.			Dec. 19	do 5	Long.
Hynes, Gunner and Driver H.	London Field Battery					Short.
Johnson, Gunner William	"B" Battery, R.S.G.			Dec. 18	Dec. 18	do
Morton, Captain Andrew W.	14th Battalion					do
Nixon, Sergeant Thomas	Winnipeg Field Battery	Aug. 10				do
Perritt, Gunner and Driver W.	Durham Field Battery			Dec. 18		do
Pike, Gunner and Driver Robert	Toronto do				Aug. 14	do
Pope, Gunner and Driver N.	Ottawa do				do 14	do
Potts, Gunner and Driver C.	"B" Battery, R.S.G.			Aug. 15		do
Robertson, Gunner and Driver Charles	Durham Field Battery				May 8	do
Robinson, Acting Bombardier J. S.	"B" Battery, R.S.G.				July 21	do
Smart, Gunner and Driver R. W.	Durham Field Battery				Aug. 14	do
Smart, Sergeant W. Crawford	do			April 28		do
Smythe, Gunner and Driver R. F.	1st Provisional Brigade Field Artillery			April 28		do
Taylor, Sergeant James	Ottawa Field Battery			April 28	May 5	do
Total		3	1	8	14	26

PROVINCE OF QUEBEC.

NAMES of Officers, Non-Commissioned Officers and others of the Active Militia who have obtained Certificates at the Royal School of Gunnery, Quebec, during the Year 1882.

Name and Rank.	Corps.	Date of Certificates.				Long or Short Course.
		1st Class.	2nd Class.	3rd Class.	4th Class.	
Arnton, 2nd Lieutenant W. H.	Montreal Brigade Garrison Artillery		June 22			Short.
Bell, Corporal J. J.	do			June 22		do
Brush, 2nd Lieutenant F.	do		June 22			do
Cooper, Sergeant J.	do			June 22		do
Crawford, 2nd Lieutenant	New Brunswick Brigade Garrison Artillery		April 6		April 1	do
Devey, Sergeant William	Picton Garrison Battery				do 21	do
Early, Sergeant J.	No. 3 Quebec Garrison Battery					do
Fages, 2nd Lieutenant John Archibald.	87th Battalion	April 21				do
Hibbens, Sergeant-Major J.	Montreal Brigade Garrison Artillery			June 22		do
Houde, 2nd Lieutenant Louis P.	No. 2 Lewis Garrison Battery	April 1				do
Howard, 2nd Lieutenant E.	do		June 22			do
Howell, Corporal H. A.	do			June 22		do
Hudon, 1st Lieutenant J. A. G.	No. 1 Quebec Garrison Battery	April 15				do
Hudon, Captain L. D.	Temiscouata Provisional Battalion	do 21				Long.
Kilburn, Sergeant J. H.	Woodstock Field Battery			April 21		Short.
Lessard, 1st Lieutenant F. L.	No. 2 Quebec Garrison Battery	April 4				Long.
Mulcahey, Acting Bombardier A.	"A" Battery, R. S. G.			April 1		Short.
McEdwards, Gunner J.	do			do 21		do
McInenly, Sergeant T.	No. 3 Quebec Garrison Battery					do
Scott, Bombardier T. W.	Montreal Brigade Garrison Artillery			June 22	April 21	do
Stevenson, 2nd Lieutenant D.	do		June 22			do
Swift, Corporal, F. G.	do			June 22		do
Total		5	5	9	3	

(B.)  
ENGINEER CERTIFICATES.

NAMES of Officers, Non-Commissioned Officers and others who have obtained Certificates at the Royal School of Gunnery, Kingston, during the Year 1882.

Name and Rank.	Corps.	Date of Certificates.				Long or Short Course.
		1st Class.	2nd Class.	3rd Class.	4th Class.	
Moffatt, 2nd Lieutenant James W. ....	Montreal Company of Engineers.....	Nov. 23.....				Short.

(C.)—CAVALRY CERTIFICATES.

Carley, Sergeant J. ....	3rd Provisional Regiment of Cavalry. ....	Aug. 14.....				Short.
Creighton, Sergeant G. ....	do do .....	do 14.....				do
Johnson, Sergeant D. ....	do do .....	do 14.....				do
McKinlay, Sergeant S. M. ....	do do .....	do 14.....				do
Mossom, Sergeant D. ....	Governor General's Body Guard. ....	Dec. 20.....				do
Orchard, 2nd Lieutenant W. H. ....	4th Provisional Regiment of Cavalry. ....	Oct. 10.....				do
	Total.....	1	5			6



(D.)

## INFANTRY CERTIFICATES.

NAMES of Officers, Non-Commissioned Officers and others who have obtained Certificates at the Royal Schools of Gunnery, during the Year 1882.

Name and Rank.	Corps.	Date of Certificates.		Long or Short Course.
		1st Class	2nd Class.	
Baillie, Captain William M .....	47th Battalion.....	Aug. 8.....		Short.
Bowie, 2nd Lieutenant H. W. ....	Governor General's Foot Guards	April 6.....		do
Brennan, 2nd Lieutenant F. H. ....	57th Battalion.....	Aug. 23.....		do
Cartwright, Lieutenant R. C. ....	14th do .....	do 8 .....		do
Day, 2nd Lieutenant M. L. ....	41st do .....	April 28.....		do
Duncan, Sergeant W. ....	49th do .....	June 28.....		do
Healey, Sergeant Thos. H. ....	47th do .....	do 28.....		do
Jackson, Captain David E. ....	41st do .....	March 28.....		do
Kelly, Captain Thomas.....	47th do .....		Nov. 15.....	do
Living, Sergeant Charles E. ....	43rd do .....	Dec. 12.....		do
Murray, jun., 2nd Lieutenant James	14th do .....	Aug. 8.....		do
McLean, 2nd Lieutenant John B .....	31st do .....	do 8.....		do
Poliquin, Corporal Achille.....	17th do .....		Dec. 1.....	do
Quinney, Sergeant H. ....	Governor General's Foot Guards	June 28.....		do
Roger, Corporal Eugene.....	17th Battalion .....		Dec. 1.....	do
Shannon, 2nd Lieutenant Lewis W. ....	14th do .....	Aug. 8.....		do
Skinner, 2nd Lieutenant J. S. ....	14th do .....	do 8.....		do
Thompson, Captain W. Clay .....	39th do .....	May 18.....		do
Trickey, Sergeant N. ....	41st do .....		June 28.....	do
Walker Lieutenant David J. ....	47th do .....	Aug. 8.....		do
Ward, Captain James.....	35th do .....	do 8.....		do
	Total.....	17	4	21

## RECAPITULATION.

	Certificates issued by Royal Schools of Gunnery.				Total Short or Long Course.
	1st Class.	2nd Class.	3rd Class.	4th Class.	
Gunnery.....	8	6	17	17	48
Engineer.....	1				1
Cavalry.....		1	5		6
Infantry.....	17	4			21
Total .....	26	10	22	17	76

## APPENDIX No. 7

## MILITARY SCHOOL CERTIFICATES.

## PROVINCE OF ONTARIO.

NAMES of Officers and Non-Commissioned Officers of the Active Militia, who have obtained Certificates at the Schools of Military Instruction at Toronto and Ottawa, during the year 1882.

Name and Rank.	Corps.	Date of Second Class Certificates.
Allan, Captain David M .....	30th Battalion .....	16th February.
Appelbe, Captain R. S.....	10th do .....	24th do
Ault, 2nd Lieutenant Arthur W.....	59th do .....	5th April.
Baker, Lieutenant Gordon.....	59th do .....	5th do
Barker, Sergeant Robert L.....	20th do .....	24th February.
Bliss, 2nd Lieutenant D. C. F.....	Ottawa Field Battery.....	5th April.
Burnet, Corporal Thomas F.....	35th Battalion .....	24th February.
Burritt, 2nd Lieutenant William H.....	56th do .....	5th April.
Chesley, Corporal Henry P.....	Governor-General's Foot Guards.	17th do
Cleland, 2nd Lieutenant Hugh R.....	31st Battalion .....	24th February.
Coté, 2nd Lieutenant Narcisse O.....	Governor-General's Foot Guards.	30th March.
Drummond, Sergeant George.....	56th Battalion .....	5th April.
Elliott, 2nd Lieutenant James A.....	56th do .....	5th do
Francis, Sergeant Francis.....	10th do .....	24th February.
Grace, 2nd Lieutenant James C.....	45th do .....	5th April.
Graham, Lieutenant Adam W.....	25th do .....	16th February.
Grant, 2nd Lieutenant George W.....	Governor-General's Foot Guards.	17th April.
Gray, Corporal Henry H.....	do .....	17th do
Hammond, Corporal Charles C.....	25th Battalion .....	4th March.
Hodgins, Corporal John.....	Governor-General's Foot Guards.	17th April.
Johnson, Lieutenant Alfred S.....	18th Battalion .....	16th February.
Johnston, Sergeant Thomas J.....	46th do .....	16th do
Landrigan, Sergeant John.....	.....	.....
Lanskill, Sergeant J.....	12th do .....	4th March.
Lawson, Corporal William.....	26th do .....	24th February.
Lee, Sergeant Marcus.....	77th do .....	24th do
Lees, Sergeant William.....	43rd do .....	5th April.
Leigh-Spencer, 2nd Lieutenant Oliph.....	10th do .....	24th February.
Macdonell, Corporal Henry.....	Governor-General's Foot Guards.	17th April.
Mason, Corporal Lawrence P.....	2nd Battalion .....	4th March.
Moberly, Lieutenant John E.....	35th do .....	4th do
Moir, Lieutenant Alexander.....	30th do .....	16th February.
Morrison, 2nd Lieutenant James.....	56th do .....	5th April.
Mussen, Sergeant John R.....	37th do .....	4th March.
McEwen, Lieutenant Robert.....	26th do .....	16th February.
O'Donovan, 2nd Lieutenant John J.....	34th do .....	24th do
O'Grady, Paymaster J. W. de C.....	43rd do .....	5th April.
Raymond, Sergeant L. Clarke.....	44th do .....	24th February.
Robson, Lieutenant Thomas E.....	26th do .....	16th do
Roe, Sergeant Charles C.....	20th do .....	24th do
Rogers, Sergeant Joseph E.....	35th do .....	24th do
Rolling, Sergeant James.....	25th do .....	16th do

PROVINCE OF ONTARIO—*Concluded.*

NAMES of Officers and Non-Commissioned Officers of the Active Militia who have obtained Certificates in the Schools of Military Instruction, Ontario and Quebec, during the Year 1882.

Name.	Corps.	Date of Second Class Certificates.
Ross, Corporal Henry.....	Governor-General's Foot Guards.	17th April.
Sherwood, Arthur Percy.....		5th do
Stephen, Sergeant Edward L.....	35th Battalion .....	4th March.
Sutherland, Corporal George.....	10th do .....	4th do
Thompson, 2nd Lieutenant Joseph Boyce .....	2nd do .....	24th February.
Thompson, 2nd Lieutenant Philip N.....	Governor-General's Foot Guards.	30th March.
Tubby, Lieutenant W. G.....	20th Battalion .....	24th February.
Williams, Lieutenant George.....	42nd Battalion.....	29th March.
Young, Corporal Wellington.....	77th do .....	4th do

Second Class Certificates. .... 51

## PROVINCE OF QUEBEC.

Barry, 2nd Lieutenant John J.....	Temiscouata Provisional Battalion	3rd March.
Benoit, Sergeant Benjamin A.....	84th Battalion .....	25th February.
Bernier, Sergeant F. G.....	61st do .....	17th do
Booth, Sergeant W. J.....	54th do .....	25th do
Burns, 2nd Lieutenant J. H.....	83rd do .....	25th do
Bussiere, 2nd Lieutenant Adolphe.....	80th do .....	2nd March.
Cartier, Sergeant J. E. B.....	84th do .....	17th February.
Cassels, Corporal Richard S.....	2nd do .....	10th do
Côté, 2nd Lieutenant Hilaire.....	76th do .....	2nd March.
Coulombe, 2nd Lieutenant Etienne.....	Dorchester Provisional Battalion.	2nd do
Delfausse, 2nd Lieutenant J. H. R.....	83rd Battalion .....	2nd do
Desparois, Lieutenant Paul .....	64th do .....	3rd do
Dunn, Sergeant-Major Andrew J.....	85th do .....	2nd do
Evans, Lieutenant Thomas .....	11th do .....	3rd do
Fournier, 2nd Lieutenant Cleophas.....	61st do .....	10th February.
Gauvin, Sergeant Michel.....	81st do .....	2nd March.
Gervais, Sergeant Alphonse S.....	84th do .....	17th February.
Hall, Lieutenant Clark .....	52nd do .....	25th do
Hitchcock, Lieutenant G. P. H.....	58th do .....	2nd do
Jones, Sergeant William.....	83rd do .....	3rd do
Laferrière, Captain A. A.....	86th do .....	25th February.
LaRue, 2nd Lieutenant Ernest .....	87th do .....	2nd March.
Lent, Corporal Arthur A.....	60th do .....	25th February.
Marcotte, Sergeant Tancrede.....	81st do .....	2nd March.
Mason, Sergeant Tancrede .....	83rd do .....	25th February.
Nicholson, 2nd Lieutenant James.....	64th do .....	2nd March.
Paré, Sergeant Leon.....	81st do .....	2nd do
Paré, Sergeant Olivier.....	81st do .....	17th February.
Parent, Lieutenant J. E.....	83rd do .....	2nd March.
Persons, 2nd Lieutenant J. J.....	52nd do .....	25th February.
Reni, Sergeant Henri.....	80th do .....	25th do
Rochette, 2nd Lieutenant Gédéon.....	86th do .....	25th do
Rossignol, 2nd Lieutenant E.....	Kamouraska Provisional Battalion	17th do
Roy, 2nd Lieutenant Octave.....	87th Battalion .....	3rd March.
Sloan, 2nd Lieutenant Joseph.....	50th do .....	25th February.
Talbot, Lieutenant Albert Charles.....	61st do .....	10th do

Second Class Certificates ..... 36

## PROVINCE OF NEW BRUNSWICK.

NAMES of Officers and Non-Commissioned Officers of the Active Militia who have obtained Certificates in the School of Military Instruction, New Brunswick, during the Year 1882.

Name.	Corps.	Date of Second Class Certificates.
Allanach, Sergeant.....	73rd Battalion .....	4th March.
Anderson, Sergeant James H.....	62nd do .....	4th do
Cameron, 2nd Lieutenant James .....	73rd do .....	4th do
Coleman, 2nd Lieutenant Charles R.....	68th do .....	4th do
Dodge, 2nd Lieutenant George Allison .....	68th do .....	4th do
Fairweather, 2nd Lieutenant Charles Henry.....	74th do .....	4th do
Henderson, Corporal Charles Weldon.....	62nd do .....	4th do
Hill, Corporal Douglas Kendall .....	Victoria Provisional Battalion.....	4th do
Langstroth, 2nd Lieutenant Hiram S.....	74th Battalion .....	4th do
Micheau, Corporal William Henry .....	Victoria Provisional Battalion .....	4th do
McFee, 2nd Lieutenant Smiley Alexander.....	74th Battalion .....	4th do
McLeod, Lieutenant Theophilus S.....	82nd do .....	4th do
McNeil, Corporal John D.....	Victoria Provisional Battalion .....	4th do
McRae, Sergeant Alexander .....	do do .....	4th do
Porter, Sergeant Jacob W.....	Cumberland Provisional Battalion .....	4th do
Roberts, Sergeant Edward M.....	New Brunswick Brigade Garrison Artillery .....	4th do
Ross, Lieutenant Floyd Eugene.....	68th Battalion .....	4th do
Russell, Sergeant Charles Stewart.....	73rd do .....	4th do
Sheridan, Sergeant John.....	73rd do .....	4th do
Smith, Lieutenant Joshua Henry .....	78th do .....	4th do
Woodrow, 2nd Lieutenant Ross Dougald .....	62nd do .....	4th do
Woodworth, Corporal Henry Havelock.....	New Brunswick Brigade Garrison Artillery.....	4th do

Second Class Certificates ..... 22

## RECAPITULATION.

Ontario .....	51
Quebec .....	36
New Brunswick .....	22
Total Second Class Certificates .....	109

## APPENDIX No. 8.

NAMES of Officers of the Active Militia, and of Candidates for Commissions therein, who have obtained Certificates from Boards of Examiners, during the Year 1882.

## PROVINCE OF ONTARIO—INFANTRY CERTIFICATES

Name and Rank.	Corps.	Date of First Class Certificates.	Date of Second Class Certificates.
Acheson, 2nd Lieutenant George.....	2nd Battalion.....		3rd October.
Ault, 2nd Lieutenant Arthur W.....	59th do .....	8th April.....	
Baker, Lieutenant Gordon.....	59th do .....	8th do .....	
Bliss, 2nd Lieutenant D. C. Foster.....	Ottawa Field Battery.....	8th do .....	
Brock, 2nd Lieutenant Henry.....	2nd Battalion.....		3rd do.
Brown, 2nd Lieutenant Geo. McL.....	13th do .....		3rd do.
Burritt, 2nd Lieutenant Wm. Henry.....	56th do .....	8th April.....	
Cave, 2nd Lieutenant Wm. F.....	35th do .....		3rd do
Coombs, Captain Harry Lovell.....	39th do .....	3rd October.....	
Coulson, 2nd Lieutenant William John.....	13th do .....		3rd do
Grace, 2nd Lieutenant James C.....	45th do .....	8th April.....	
Graham, Captain William J.....	35th do .....	3rd October.....	
Greene, 2nd Lieutenant Henry Vincent.....	2nd do .....		3rd do
Leigh-Spencer, 2nd Lieutenant O. L.....	10th do .....	3rd October.....	
Moore, 2nd Lieutenant Edmund E. W.....	13th do .....		3rd do
Mutton, Lieutenant William G.....	2nd do .....	3rd October.....	
O'Grady, Paymaster J. W. de C.....	43th do .....	8th April.....	
Reid, 2nd Lieutenant.....	13th do .....		3rd do
Ryerson, Lieutenant John Wesley.....	39th do .....		3rd do
Sherwood, Arthur Percy.....		8th April.....	
Toller, Captain Frederick.....	Gov.-General's Foot Guards	8th April.....	
Trotter, 2nd Lieutenant Robert G.....	10th do .....		3rd do
Zealand, 2nd Lieutenant E. G.....	13th do .....		
1st and 2nd Class Certificates.....		12	10

## PROVINCE OF QUEBEC—INFANTRY CERTIFICATES.

Aubrey, Captain Alphonse D.....	85th Battalion.....	29th April.....	
Begin, 2nd Lieutenant J. Victor.....	17th do .....		3rd May
Belcher, 2nd Lieutenant Henry Martyn.....	3rd do .....		4th April.
De Montigny, Lieutenant Charles E. J.....	85th do .....		29th do
Dunn, 2nd Lieutenant George T.....	85th do .....		17th June.
Dunn, Lieutenant Joseph.....	85th do .....		29th April.
Edwards, 2nd Lieutenant Joseph P.....	3rd do .....	4th April.....	
Manseau, 2nd Lieutenant Horace.....	80th do .....		17th June.
Parent, Lieutenant Joseph Edouard.....	83rd do .....	17th June.....	
Simard, 2nd Lieutenant Arthur.....	65th do .....		17th do
1st and 2nd Class Certificates.....		3	7

## LIST of Candidates for Commissions, &amp;c.—Continued.

## PROVINCE OF NEW BRUNSWICK—INFANTRY CERTIFICATES.

Name and Rank.	Corps.	Date of First Class Certificates.	Date of Second Class Certificates.
Fraser, 2nd Lieutenant George A. ....	62nd Battalion .....	.....	5th July.
Gregory, 2nd Lieutenant Cyrus Young.....	62nd do .....	.....	5th do
Jarvis, 2nd Lieutenant Edward Clifton.....	62nd do .....	.....	5th do
Kinnear, Lieutenant John Millidge.....	74th do .....	28th September	.....
Macintyre, Lieutenant John P.....	St. John Rifle Co. ....	.....	5th do
McRobbie, 2nd Lieutenant John Halley.....	62nd Battalion.....	.....	5th do
1st and 2nd Class Certificates .....	.....	1	5

## PROVINCE OF NOVA SCOTIA—INFANTRY CERTIFICATES.

Cock, Lieutenant Edmund Alexander.....	78th Battalion.....	.....	28th April.
Lawrence, Captain Henry Taylor.....	78th do .....	.....	28th do
2nd Class Certificates.....	.....	.....	2

## PROVINCE OF MANITOBA—CAVALRY AND INFANTRY CERTIFICATES.

Disbrowe, 2nd Lieutenant William H.....	Winnipeg Troop Cavalry.....	20th April.....	.....
Knight, Lieutenant Cornelius.....	do .....	.....	20th April .....
Shelton, Sergeant Henry T.....	do .....	.....	20th do .....
Forrest, 2nd Lieutenant Christopher F.....	Winnipeg Infantry Company.....	.....	22nd do .....
1st and 2nd Class Certificates .....	.....	1	3

## PROVINCE OF PRINCE EDWARD ISLAND—INFANTRY CERTIFICATES.

Henderson, Lieutenant Isaac.....	82nd Battalion.....	.....	28th April.
Ives, Captain Thomas.....	Prince Co. Provisional Battalion .....	.....	28th do
Scott, 2nd Lieutenant William.....	82nd Battalion.....	.....	28th do
Stewart, 2nd Lieutenant Daniel.....	82nd do .....	.....	28th do
2nd Class Certificates.....	.....	.....	4

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**LIST of Candidates for Commissions, &c.—Concluded.**


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RECAPITULATION.

Provinces.	First Class.	Second Class	Total.
Ontario.....	12	10	22
Quebec.....	3	7	10
New Brunswick.....	1	5	6
Nova Scotia.....	.....	2	2
Manitoba.....	1	3	4
Prince Edward Island.....	.....	4	4
Total.....	17	31	48

## APPENDIX No. 9.

REPORT ON THE ROYAL MILITARY COLLEGE OF CANADA, BY THE  
ADJUTANT GENERAL, ACTING FOR OFFICER COMMANDING THE  
MILITIA DURING HIS ABSENCE FROM CANADA.

HEADQUARTERS, OTTAWA, 24th October, 1882.

The Major General Commanding the Militia,  
Ottawa.

SIR,—I have the honor to transmit herewith a Report upon the state and condition of the Royal Military College of Canada, made after my inspection of it as Officer Commanding the Militia during your absence from Canada on leave.

The closing exercises of the College and the annual inspection took place on the 27th June, 1882, in the presence of a large assemblage of persons from different portions of the Dominion, who seemed to take a deep interest in everything connected with the advancement of the Cadets, and in the well being of the institution.

Having previously become acquainted with the interior affairs of the College, I devoted the forenoon to the inspection, at their exercises, of those who had been instructed in equitation and in signalling. During the afternoon I saw the Cadets at their exercises with field guns, shifting heavy ordnance, pontoon bridge building, and as infantry; also the work of the Cadets in drawing, plans, &c., under the head of fortification, reconnaissance, surveying, freehand drawing and painting, and civil engineering; and in the evening, by courtesy of the Commandant, I had the honor of presenting certificates of graduations to the outgoing class (20), and the prizes to those who had become entitled to receive them. Four of the graduates obtained commissions in the Imperial regular army, as rewards for their competency.

The result of the inspection was most satisfactory, and I left the College with the conviction that an exceedingly valuable institution has been added to the educational system of the country.

The creation of a military college in which young men may acquire an education which will enable them to undertake both civil and military works, is not a novelty. Indeed, Canada is only following in the footsteps of other countries where the necessity for such institutions has been demonstrated by the results of experience. The establishment of this one indicates substantial progress. It is the only satisfactory means by which knowledge in the special subjects of study for which the curriculum provides can be acquired in the Dominion. Its advantages are, therefore, apparent. By being educated in it the young men of the country will become better qualified to solve the difficult problems which will arise as the population expands, and Canada takes higher rank in the scale of national development.

There can be no doubt that the educational work has been prosecuted with earnestness and perseverance; for while it is only six years since the College was opened, it has now an accomplished staff, is equipped with modern appliances, and filled with Cadets from the several Provinces.

Having only a small permanent force, the relative value of a military college is doubtless greater in Canada than in countries having a regular military establishment. This College will therefore naturally exert an important influence on the militia. Already a sound military spirit has commenced to radiate from this centre, that will grow in volume as the population increases in number, and the College attains to its full measure of usefulness.



The combination of drill, athletic exercises and study is of a nature to secure health, strength and knowledge, so far as such can be controlled by regulations. It is, therefore, gratifying to state that the progress already made gives an assurance that the plan of organization has not only been well considered, but that its details are being faithfully carried out.

In their intercourse with the Cadets the professors seem to make it their object to secure respect and obedience; indeed, it is apparent that they exercise a moral influence which tends to the prevention of infraction of the regulations, and, as a consequence, to diminish the necessity for punishments. In order to facilitate instruction several of the professors have, with painstaking assiduity, prepared text books for use in their departments. By these means they have been enabled to introduce such improvements in form and method of working as they considered would be likely to prove advantageous. Many needful instructional appliances have also been provided by Government during the year, amongst which are excellent geological specimens, contributed by the Department of the Interior.

In respect to the general state and condition of the institution, every department appears to be well organized and administered, so far as the means within reach will permit. Everything is working smoothly, studies progressing in a satisfactory manner, and there has been no friction during the year in any office or department.

At the parade of the corps the Cadets, 70 in number, appeared smart and soldier-like, their arms, accoutrements and clothing clean and serviceable, and their military evolutions were carried out with precision and accuracy. The manœuvres of the Cadets as infantry terminated with skirmishing, an attack upon a building, and the destruction by gun-cotton of a barricaded door. An organized corps, under direction of the Surgeon, looked after the wounded and carried them off the field.

They showed great proficiency in their exercises with field guns. In mounting and dismounting heavy ordnance, and in the construction of pontoon bridges, one of a considerable length, made with ordinary casks and having the usual superstructure of scantling and planks, was tested by the hundreds of spectators who saw it constructed and marched over it.

In consequence of the improving state of the educational facilities, the cadets of the current year, who represent the several Provinces of the Dominion, are in the enjoyment of greater advantages than their predecessors. The method of instruction is doubtless better suited to the circumstances of the country, than would be that followed in institutions having short military courses confined to the technicalities appertaining to one arm of the service. Here all the cadets undergo, during their four years' course, military instruction applicable to the different arms, and all are trained as private soldiers and as non-commissioned officers, while those who have also qualified for civil pursuits in the technical subjects find the course has so strengthened them as to ensure a successful career.

These results speak well of the past and present, and they give great encouragement of an increasing development in the future. The acquisition by a number of young men of such an education as the College course affords cannot fail to be of the greatest possible value, not only to those graduates who may embark in the avocations of civil life, but to the country at large, in having a reserve of men who are becoming so well qualified for military employment.

Although little effort has apparently been used to advertise the College, owing to want of accommodation, the educational advantages it affords are becoming more widely known and appreciated. It appears to be conceded that the entrance examination is not too severe, and that unless young men are previously educated to the extent of its requirements, they would not be likely to qualify for the periodical examinations for promotion from class to class. Those who intend competing for cadetship should, therefore, qualify for such competition. They should also be so far advanced in age and strength of intellect as to possess the power to grasp principles, as without these qualifications they cannot hope to derive the maximum of advantage which should follow study during the course of instruction.

In all subjects of study the object is to develop the reasoning powers more than to cultivate the habit of committing to memory by rote. The College course necessitates private study, personal instruction, and lectures for all the classes. Instruction by lecture only would be defective, as it is not possible for all the cadets who enter at the same time, and are in the same class, to be equally capable. Those most advanced must retard the progress of others, or their knowledge of subjects must be superficial, owing to their want of capacity to keep pace with those more advanced. In such cases private study and personal instruction seem a necessity. Candidates who pass a high entrance examination possess the highest qualifications for a successful career; but it does not always follow that they cannot be overtaken by those who become more capable and are more industrious.

The military portion of the course is, necessarily, to a considerable extent, theoretical, for the reason there are few opportunities for practical work beyond those afforded by the drill, training and interior economy of the College corps. The means within their reach, however, enable them to obtain a knowledge of guns, ammunition and military appliances, and military drill and duty. They are trained in habits of order, obedience and command. They are developed physically, and subjected to discipline. They learn equitation. They make models of works in the field, when the weather permits, and in sand at other times. They also construct bridges and carry out target practice.

A workshop, where the cadets can make models and appliances, and perfect plans which will form a foundation and give greater strength and vitality to the instructional system, would add materially to the usefulness of the institution.

The educational course is undoubtedly of a high class. Its comparative cheapness, to those who follow it, is also an advantage. So it may be hoped that as the institution grows in age, the *esprit de corps* which now exists will increase in strength, and that the cadets will continue to feel a pride in maintaining discipline, and its honor and well being. It will also be seen that as no cadet can graduate before he is between 19 and 20 years of age, it will naturally follow that those who complete the course will be ready to enter upon any career open to them, at an age when their faculties are fairly developed, and when they can apply their intelligence with the greatest effect in the prosecution of any special or technical work for which their education has qualified them.

The number of cadets in attendance (70) is in excess of the dormitory accommodation in the barrack building, some being temporarily quartered in rooms provided for and required for class and instructional purposes. Under those circumstances it is desirable that additional sleeping room be made available. This will require an expenditure on capital account, but it must be remembered the education the College affords may be expected to bear fruit hereafter, which will amply compensate the Dominion for any present outlay necessary to secure efficiency. Also that the professorial and instructional staff now employed, although not in excess of present requirements, would prove ample for the instruction of the authorized establishment of 120 Cadets.

Enjoying such educational advantages as the College affords, very many of the graduates will naturally become intellectually capable of contributing vastly to the solution of a question of great importance to the country, and by their example and achievements, aid materially in building up a suitable system of defence. There can be little doubt that those who combine the knowledge the college course and military training ensure, with that resulting from subsequent occupation in civil life, where force of character, fertility in resource, self reliance, and a practical knowledge of personal and political economy can be more fully developed, will make more practical administrators than those who may go directly from the college for continuous service in the army—indeed such men are liable to run in a groove, and are sometimes wanting in those essential elements which ensure success, viz.: inventive genius to overcome difficulties under trying circumstances, not provided for by regulation or in books of instruction. The benefit to the Dominion from having some of the graduates employed on the North-West Mounted Police Force will also be considerable. The

work is local in a portion of the country where military knowledge such as the graduates possess may be needed in the future, and which presents present opportunities for maturing their judgment, and enabling them to become acquainted in time of peace with subjects which, if war should arise in the future, will be of great value.

Although the creation of this college may seem premature to some, it must be remembered the population occupy a country, the extreme length of which, from east to west, is over 3,000 miles, and that persons possessing the knowledge the graduates will acquire, will become indispensable as development progresses.

It has been found in countries where military experience has been created by necessity, that the greatest strength of their armed forces consisted in those officers who, from being educated in a military college, were capable of quickly organizing and disciplining levies drawn from the Militia, and undertaking the more responsible duties appertaining to military administration. It is, therefore, satisfactory to know that while Canada is making laudable efforts to transform the primeval territories into fruitful fields, and to promote those objects which tend to the creation of wealth and development, it is not unmindful of the provisions for defence. In these views the object of the College seems so important in its bearing upon the future militia system of the country, and the expenditure required for buildings, plant and maintenance forms such an inconsiderable portion of that required for the general purposes of the Dominion, as to give it superior claims for consideration.

Canada has here an institution which, while it combines most of the better qualities of military colleges in other countries, is adapted to the circumstances of a country where arts of peace are more sought after than those of war. It must be remembered, however, it is only in institutions of this nature that young men can acquire that technical knowledge which ensures capacity for framing designs in military pursuits, and necessary skill to carry them into execution.

If the graduates are to continue to fulfil the expectations of the public in respect to their future usefulness, very much will depend upon the men who are to instruct them. The present military educational staff are officers of the Imperial regular army, whose services have been made available for definite periods. As these expire care should be taken in selecting successors. Only persons possessing professorial and instructional qualities of the highest class should be appointed to fill vacancies. If this precaution be acted on, and the additional dormitory accommodation to the extent required for the authorized establishment be provided, there appears to be little doubt that the College may be left to work out its own destiny, and to emit from year to year a class of educated young men who will not fail to make their mark in whatever sphere of duty their lot may be cast.

I have the honor to be, Sir,

Your obedient servant,

W. POWELL, Colonel,  
*Adjutant General of Militia.*

## APPENDIX No. 10.

## ROYAL MILITARY COLLEGE OF CANADA.

## ANNUAL REPORT.

From the Commandant Royal Military College to Major-General Luard, President Royal Military College, and Commanding Militia of Canada.

KINGSTON, ONTARIO, 12th December, 1882.

SIR,—

1. I have the honor to submit the following Report on the examination and class work of the term 10th September, 1881, to 27th June, 1882, and on the condition of the College since my last Report, viz: December 1881.

*Graduates 1882.*

2. The Gentlemen Cadets named in the table at end of Report (*Page 194*), having successfully passed all obligatory examinations, graduated on the 27th June, and received the certificates and other distinctions specified against their names.

*Qualification of Graduates 1882.*

3. I have pleasure in representing that the graduates of June 1882, are as a whole, fully equal to any of their predecessors in industry and natural ability; and in completeness of their course of theoretical instruction, and in knowledge of practical military subjects, they are certainly superior.

The graduates of 1882, have been fortunate in having had during their College career greater facilities than their predecessors for instruction in equitation, consequent on the increased establishment of horses of the Royal School of Gunnery, Kingston; and also in instruction in Military Engineering, consequent on the receipt of additional military stores and appliances at the Royal Military College.

The course of Infantry drill has been systematized, and has been of more varied character than hitherto, with the object of increasing the knowledge of the graduates in the drill duties of officers and non-commissioned officers. The improved knowledge of the present graduates in the duties of Battalion and Company Officers is consequently very apparent.

*Commissions in Her Majesty's Regular Army.*

4. The four commissions in Her Majesty's Regular Army offered annually to the Cadets of the Royal Military College, have been accepted as follows:—

Royal Engineers—Sergeant W. H. Robinson, New Brunswick.  
 Royal Artillery—Company Sergt.-Major G. S. Duffus, Nova Scotia.  
 Infantry—Company Sergt.-Major F. St. D. Skinner, Ontario.  
 “ Battalion Sergt.-Major E. T. Taylor, Quebec.

These gentlemen are thoroughly qualified for the honorable profession they have adopted.

Lance-Sergeant Latimer might have obtained a commission in either Royal Artillery or Infantry had he so desired, but preferred employment in Canada.

Company Sergeant-Major Skinner might have obtained a commission in the Royal Artillery but preferred Infantry.

*Medals for General Proficiency.*

5. The undernamed graduates were entitled to, and received, the gold, silver and bronze medals presented by His Excellency the Governor General to the Cadets respectively, 1st, 2nd and 3rd in general proficiency, as determined by marks obtained throughout the full course of four years, viz:—

Gold Medal—Sergeant W. H. Robinson.

Silver Medal—Lance-Sergeant F. H. Latimer.

Bronze Medal—Company Sergeant-Major F. St. D. Skinner.

The competition for these medals has been keen and sustained; the distinctions attained well earned.

*Sword for Conduct and Discipline.*

6. The sword awarded annually for conduct and discipline has been won by:—  
Battalion Sergeant-Major Edward Thornton Taylor.

I wish to call special attention to the admirable manner in which this gentleman has performed the very responsible duties of Senior Non-Commissioned Officer. He has displayed more than ordinary judgment, combined with strict performance of duty.

*Prizes.*

7. The undernamed Cadets have obtained prizes:

Subject Prizes (Determined on full, *i.e.* four, years course of instruction):—

Conduct and Discipline - Battalion Sergt.-Major Taylor.

Drills and Exercises—Battalion Sergeant-Major Taylor.

Mathematics and Mechanics—Sergeant Robinson.

Fortification and Military Engineering.—Sergeant Robinson.

Descriptive Geometry and Geometrical Drawing—Sergeant Robinson.

Artillery (Theory and Construction of)—Sergeant Robinson.

Surveying, Military Topography and Reconnaissance—Co. Sergt.-Major Skinner.

Mil. History (Strategy, Tactics, Mil. Admin. and Law)—Co. Sergt.-Major Skinner.

French—Lance-Sergeant Latimer.

Physics—Sergeant Robinson.

Chemistry—Sergeant Robinson.

Geology—Company Sergeant-Major Skinner.

Freehand Drawing—Lance-Sergeant Latimer.

Civil Engineering—Lance-Sergeant Latimer.

Class Prizes (Determined on work and examinations of the Term *i.e.* ten months):—

1st Class—Lance-Sergeant Latimer.

2nd Class—Corporal Stewart.

3rd Class—Cadet Carey.

4th Class—Cadet Von Hugel.

*Honorary Distinctions.*

8. The undernamed Cadets became entitled to Honorary Badges, consequent on their having been first in the combined theoretical subjects of their respective classes, or first in three or more separate subjects of instruction.

*1st Class.*

Sergeant Robinson—One star. { 1st in Fortification and Military Engineering.  
1st in Military Topography and Civil Surveying.  
1st in Chemistry.  
1st in Physics.

Lance-Sergt. Latimer—Two stars.

- { 1st in Class.
- { 1st in Civil Engineering.
- { 1st in French.
- { 1st in Freehand Drawing.

2nd Class.

Corporal Stewart—One star.

- { 1st in Class.

Corporal Leonard—One star.

- { 1st in Fortification and Military Engineering.
- { 1st in Military Topography and Civil Surveying.
- { 1st in Geom. Drawing and Des. Geometry.
- { 1st in Chemistry.
- { 1st in Physics.

3rd Class.

Cadet Carey—Two stars.....

- { 1st in Class.
- { 1st in Military History.
- { 1st in Artillery (Theory and Construction of.)
- { 1st in Fortification and Military Engineering.

Cadet Von Iffland—One star...

- { 1st in Drills and Exercises.
- { 1st in French
- { 1st in Geometrical Drawing and Des. Geometry.
- { 1st in Military Topography.
- { 1st in Civil Engineering.

4th Class.

Cadet Von Hugel—One star....

- { 1st in Class.
- { 1st in Fortification and Military Engineering.
- { 1st in French.
- { 1st in Drills and Exercises.

9. Honorary Badges as named have been awarded to the five Cadets most proficient in each of the several military exercises specified, viz:—

For Equitation—Spurs .....

- { Battn. Sergt.-Major Taylor.
- { Co. Sergt.-Major Duff.
- { Sergeant Stairs.
- { Co. Sergt.-Major Duffus.
- { Co. Sergt.-Major Skinner.

For Small Arm Competition } —Crossed Swords.  
(Sword, Bayonet, Foil).

- { Sergt. Hodgins (special for 1st class.)
- { Cadet Almon.
- { " Carruthers.
- { " Neyland.
- { Sergeant Lang.
- { Lance-Corp'l. Weller.

For Annual Rifle Practice—Crossed Rifles.....

- { Co. Sergt.-Major Kirkpatrick.
- { Sergeant Lang.
- { Cadet Joly.
- { Lance-Corp'l. Weller.
- { Co. Sergt.-Major Skinner.

For Annual Artillery Practice—Crossed Guns....

- { Cadet Strange.
- { " Twining.
- { Lance-Corp'l. Kerby.
- { Cadet Chalmers.
- { Sergeant Anderson.

*General Result of Examination.*

10. The general result of the examination of the term—September, 1881, to June, 1882—has been extremely satisfactory, with exception of the 3rd Class.

The Cadets most deserving of special mention are :—

1st Class—Messrs. Robinson, Latimer, Skinner, Duffus, Taylor, Duff, Wood and Kirkpatrick.

2nd Class—Messrs. Leonard, Stewart, Lang, Weller and Casgrain.

3rd Class—Messrs. Carey, Von Iffland and Van Buskirk.

4th Class—Messrs. Von Hugel, Skinner and Moren.

In the not less important and honorable quality of character, Co. Sergt.-Majors Duff and Kirkpatrick, and Sergts. Greenwood and Wood merit special commendation as non-commissioned officers, both for conduct and discipline.

Battalion Sergt.-Major Taylor is specially referred to in par. 5.

*Examiners' Report.*

11. The several examiners report as follows :—

*Military History.*

1st Class—General progress very satisfactory on the whole, but the answers in Strategy and Tactics occasionally did not enter sufficiently into the subject. The students appear to write slowly, and apparently with some difficulty in expressing their thoughts.

Messrs. Skinner, Robinson and Duff sent in excellent papers.

2nd Class—Very satisfactory; Messrs. Campbell, Twining and Almon sent in some papers evidencing great proficiency.

3rd Class—Indifferent, with exception of Mr. Carey, who has done well.

*French.*

1st Class—General progress during present term very satisfactory. Mr. Latimer merits special mention for application and progress.

2nd Class—Progress rather slow; Messrs. Casgrain, Carruthers, Lang and Almon deserve special mention for their application, especially Mr. Almon.

3rd Class—Far superior to former class; Messrs. Von Iffland and Crawford were very clever in translation. Mr. Drayner speaks fluently, but neglects grammar.

4th Class—Far the best class in the College, both for knowledge and industry.

*Civil Engineering.*

As a result of the examination and term work I have confidence that the graduates of June, 1882, have got at present a hold on the subject of Civil Engineering sufficient to make them efficient and reliable men for the Department of Public Works.

If these gentlemen get appointments, I confidently predict that they will be found well worth their pay. I wish to draw special attention to Messrs. Robinson, Latimer and Duff, as likely to be very good men in Civil Engineering.

*Freehand Drawing.*

The progress of the whole of the classes is very satisfactory.

1st Class—In consideration of the extremely good work in copying from models, and in light and shade drawing, although but comparatively little has been done in coloring, I strongly recommend Messrs. Latimer and Hodgins for "special mention."

2nd Class—Messrs. Lambe, Leonard, Lang and Weller are excellent draughtsmen, Mr. Lambe manifesting very remarkable talent.

3rd Class—Messrs. Von Iffland, Van Buskirk and Carey have done some excellent drawing.

4th Class—Von Hugel, Hodgins and Tilley have made rapid progress.

*Surveying and Military Topography.*

1st Class—Most of the graduating class possess considerable skill in topographical drawing, especially Messrs. Skinner, Duff, Duffus, Latimer and Robinson. There are very few in the class who would not become first rate practical surveyors with a little more field experience. The reconnaissances made by the class have been generally well done, especially those of Messrs. Duff, Duffus, Greenwood, Hodgins, Latimer, Robinson, Skinner, Stairs and Wood. Messrs. Latimer, Robinson and Skinner have passed a very good examination in Geodesy and practical Astronomy, and are entitled to the distinction of "special mention."

2nd Class—There are several good draughtsmen and hard workers in this class, especially Messrs. Leonard, Stewart, Weller, Lambe, Casgrain, Lang and Kirby.

3rd Class—Messrs. Carey and Von Iffland passed very good examinations, and some of the others promise well.

*Fortification and Military Engineering.*

1st Class—This class has done well in obligatory fortification, but having neglected to take up voluntary fortification the best men in the class have failed to get "Honors," and all but one, even "special mention." Had they taken up the voluntary work probably four would have gained "Honors."

Sergeant Robinson obtains the prize on very good answering.

2nd Class—Has done well on the whole, Messrs. Leonard, Stewart, Lang and Casgrain very well.

3rd Class—This class has done badly, with exception of Messrs. Carey, Von Iffland, Hearn and Van Buskirk who have passed a favorable examination.

4th Class—Has done very well, especially Messrs. Von Hugel, Skinner, Tilley and Ridout.

*Descriptive Geometry.*

1st Class—Messrs. Robinson, Latimer, Duffus and Skinner obtained "Honors."

2nd Class—Done very well indeed, especially Messrs. Leonard, Stewart and Lang.

3rd Class—Poor examination, except Messrs. Von Iffland and Carey.

*Geometrical Drawing.*

4th Class—Very creditable examination.

*Mathematics and Mechanics.*

1st Class—I recommend Mr. Robinson for "Honours" and Mr. Latimer for "Special mention." The latter could have obtained "Honours" and Messrs. Duffus and Skinner "Special mention," had they continued mathematics in the 1st Class.

2nd Class—Very satisfactory; Messrs. Stewart, Lang and Leonard have done very superior work; and Messrs. Almon, Weller, Casgrain and J. White have made excellent progress.

3rd Class—Very unsatisfactory; Messrs. Carey and Von Iffland have both worked and done extremely well.

4th Class—This is the most satisfactory class I have yet had under my care. Messrs. Moren and Von Hugel are up to a very high standard; Messrs. Skinner, Tilley and Ridout have done remarkably well.

*Artillery.*

2nd Class—Very satisfactory; Messrs. Weller, Stewart, Leonard and Lang have done exceptionally good papers, Mr. Weller taking the prize. I wish to call attention to the thoroughness of Mr. Lang who also commanded the winning squad in the competitive shift of heavy ordnance.

3rd Class—Unsatisfactory, and obtained a very low average of marks.



*Physics and Chemistry.*

The year has been characterized by diligent and successful study in both 1st and 2nd Classes, the 2nd Class deserving special mention in this respect. Supplementary to the annual returns, Messrs. Skinner, Robinson and Latimer are entitled to particular mention. The competition in Chemistry between Messrs. Latimer and Robinson has been particularly keen. Mr. Latimer has obtained a slightly (70) greater number of marks in a total of 2000, but by an arrangement entered into at the beginning of the term, and consequent on Mr. Latimer being in a position to receive during the current term unusual facilities of instruction in Chemistry, he is only entitled to count for competition, his average on former work.

In the 2nd Class the averages obtained have been unusually high, in fact it is the best class I have ever had. The following were especially distinguished; Messrs. Leonard, Stewart, Lang, Kerby, Weller and J. White. An excursion by the graduating class to Brockville to inspect the Acid and Superphosphate Works in operation in that city, has proved of great value, and I hope in future years opportunities for these practical sources of instruction may be increased. Very valuable actual knowledge is gained by visits to industries kindred to the subject of theoretical instruction.

*Matriculants, 1882.*

12. The successful matriculants for the year 1882, are as follows:—

Names.	Province.	Age on Joining.		Where Educated.
		Y'rs.	Mos.	
Sloggett, H.....	P. E. Island .....	18	0	Prince of Wales College, Charlottetown. P. E. Island.
Perry, C. N. ....	Ontario .....	16	11	Trinity College School, Port Hope.
Kennedy, J. N. C. ....	Manitoba .....	17	11	St. John's College, Winnipeg.
Kirkpatrick, G. M. ....	Ontario .....	16	0	Halleybury College, England.
Coutlee, C. R. F. ....	Quebec .....	15	7	Collegiate Institute, Ottawa.
Cartwright, G. S. ....	Ontario .....	16	0	Kingston Academy, Ont.
Newcomb, J. N. ....	Manitoba .....	18	1	Manitoba College, Winnipeg.
Smith, H. C. ....	Quebec .....	16	2	Bishop's College School, Lennoxville, Q.
Roe, R. L. ....	Ontario .....	17	1	High School, Napanee.
Worsley, G. S. ....	Ontario .....	16	4	Kingston Academy, Ont.
Newman, C. P. ....	Quebec .....	15	10	High School, Montreal.
Hensley, C. A. ....	Nova Scotia .....	17	0	King's Collegiate School, Windsor, N.S.
Girouard, E. P. C. ....	Quebec .....	15	7	Three Rivers College, Q.
Yorston, W. G. ....	Nova Scotia .....	16	7	Truro, N.S.
McColl, R. ....	Nova Scotia .....	15	11	New Glasgow, N.S.
Maxwell, C. M. ....	Quebec .....	18	0	Bishop's College School, Lennoxville, Q.
Macdonell, A. C. ....	Ontario .....	17	10	Trinity College School, Port Hope.

These gentlemen give unusually good promise in every respect, and their conduct and industry are equally to be commended.

*Conduct.*

13. I have great satisfaction in recording that the conduct of the Gentlemen Cadets has, since the date of my last report, viz., Dec. 1881, been excellent, and I have pleasure in stating that, in application to study, and in the performance of duty (especially by the non-commissioned officers), the general condition of the College has never been so sound and thorough as during the last twelve months. It has been more especially satisfactory during the last six months.

*Dominion Artillery Association Competition.—Shift of Garrison Artillery.*

14. In the shift of heavy ordnance assigned by the Dominion Artillery Association for competition for year 1882 among the Garrison Artillery of the Dominion, the Cadets have again proved successful. The shift consisted of dismounting a 24-pr. of 50 cwt., from a garrison standing carriage, and moving the gun to, and mounting it on another garrison carriage placed at a distance of 50 feet from the first carriage. The shift was performed in one minute sixteen seconds, which is extraordinarily good time. The best time made at the same shift by the representative Canadian Squad when competing at Shoeburyness, England, in 1881, was four minutes thirty seconds; that of the best English Squad, four minutes, thirty-two seconds.

The best time made for the same shift this year by any Garrison Battery in Canada, is two minutes thirty-five seconds.

The Cadets have now had the honor of heading the competition for three successive years.

*Graduates R.M.C. appointed to College Staff.*

15. Two graduates of the Royal Military College, Lieuts. Würtele and Cochrane, of the Canadian Militia have been appointed to the College Staff since my last report. The Professors of the several branches in which these young officers have assisted to instruct, report favorably of their zeal, and I am happy myself to add my complete satisfaction with the manner in which they have borne themselves in duties and matters not less important than scientific instruction.

*Facilities for Science Instruction.*

16. Considerable addition to apparatus and material for instruction in Chemistry and Physics has been received during the current term, and also a collection of valuable and well selected specimens for practical illustration of the science of geology and mineralogy. The College is also indebted to the Rev. Dr. Honeyman, Provincial Geologist, Nova Scotia, for a valuable presentation of geological and mineralogical specimens from the Province of Nova Scotia.

*Study of English added to Curriculum.*

17. The study of the English language and literature has been introduced into the Curriculum during the current term. I anticipate much advantage to the Cadets from this course.

*Requirements, Works, &c.*

18. It is strongly recommended that during the next vacation, provision be made for fitting up the east half of the upper floor of the class building for the Department of Physics, Chemistry, Geology, &c. At present these branches of instruction are scattered throughout the building in rooms ill-adapted for the purpose, and consequently the study of these important subjects is impeded.

In order to ensure effective charge of important stores, and to prevent the loss of valuable time in passing to and from Kingston, it is extremely desirable to provide quarters for the Staff, N.C.O. Instructor of Military Engineering. The expenditure necessary for this work will be small, and an annual saving of lodging money be effected.

The pressing necessity for provision of gas, not only for lighting purposes but also to enable the study of Chemistry to be fully carried out, has already been submitted.

A shed in which Artillery drill and exercises can be carried on in winter is much needed.

The necessity for additional Cadet Dormitory accommodation has been repeatedly advanced, and is once more respectfully urged for consideration.

The defective drainage alluded to in par. 22, of my last Annual Report should be remedied without delay.

Increased efficiency and economy could be obtained by heating the whole of the College buildings from the existing steam apparatus (which has ample capacity for the additional work) in the north building, instead of as at present, by separate furnaces and stoves.

*Text Books written by Staff:*

19. During the present term the following Text Books have been published by the Staff of the College.

"Notes on Arithmetic."	}	Lieut.-Col. E. Kensington, R.A.
"Notes on Algebra."		
"Notes on Conics, Part I."		
"Notes on Artillery, Part I."	}	Major S. G. Fairtlough, R.A.
"Notes on Smooth Bore Ordnance, Ammunition and Rockets."		
"Text Book of Military Law."		
"Notes on Military Administration."	}	Major Douglas Jones, R.A.
"Tactical Notes."		
"Notes on Astronomy."	}	Lieut.-Col. J. R. Oliver, R.A.
"A Course of Practical Astronomy, with the Elements of Geodesy."		
"Guide to Course of Military Engineering."	}	Major G. R. Walker, R.E., and Capt. H. K. Sankey, R.E.
"Explosives; their use for Military Engineering, land operations; and electrical measurements."		
	}	Capt. H. R. Sankey, R.E.

These works are intended more especially for the use of the Cadets of the Royal Military College of Canada, as adjuncts to the lectures delivered in class, and to the other text books on these subjects used in the Institution; they, however, also possess a considerably higher and wider range, and some are of themselves pretty complete treatises.

The compilation of these works, undertaken by the authors in addition to their ordinary duties, has involved considerable research and labor.

*Assistance from Royal School of Gunnery, Kingston.*

20. I wish to express my indebtedness to the Royal School of Gunnery, Kingston, for the care and skill with which it has carried out the practical instruction of gentlemen Cadets in equitation, and the readiness with which it has invariably afforded assistance to the College in this and other practical matters; and for the courtesy extended on all occasions.

*Classes of Militia Officers.*

21. During the term ending June, 1882, twenty-four militia officers (20 short course and four long course) have, with permission of Commandant Royal School of Gunnery, attended Royal Military College for instruction in Military Engineering. The time being short, the course was elementary and practical in character, but valuable and sufficient. The officers were regular and attentive and evinced considerable interest in the work. The examinations passed were highly creditable, and the officers received certificates in accordance.

A few officers also attended the College for instruction in Freehand Drawing. For "Long Course" Officers a little voluntary instruction in Freehand Drawing would be of great assistance to them for rough military sketching and reconnaissance work.

The Staff of the College has always been desirous of, so far as possible, extending the benefits of the institution to the militia generally, believing that this will conduce greatly to the advantage of the force.

Further development in this direction in subjects of somewhat high and theoretical nature is feasible and appears to be desirable.

*Co-operation of Royal Schools of Gunnery and Royal Military College.*

22. I attach great importance to, and am satisfied that much good to the Militia of Canada will result from, the harmonious co-operation of the Royal Schools of Gunnery and the Royal Military College in working for the common weal and instruction of the force generally.

*Resignation of Captain Sankey, Royal Engineers.*

23. In consequence of Captain Sankey having accepted a more beneficial appointment in England, the connection of this officer with the College ceased at the end of the term, viz: June, 1882. By the departure of Captain Sankey the College has been deprived of an instructor of marked ability and of untiring energy and zeal. While congratulating Captain Sankey on his advancement, I desire to express regret equally in my official and private capacity at losing so valuable a member of my staff.

*Office of Staff Adjutant.*

24. The duties of Staff Adjutant have now been performed temporarily by various officers successively, for over a year. The duties of this office, comprising as they do, those of Secretary, Pay and Quartermaster, are peculiarly such as cannot be passed from hand to hand indefinitely without prejudice to the public interest,

Every institution, alike civil and military, possesses some such permanent officer, and I therefore trust that a permanent appointment may be made as early as is practicable.

*Assistance by College to Toronto Industrial Exhibition.*

25. Having been requested by the Committee of the Toronto Industrial Exhibition 1882 to assist it in illustrating modern naval warfare by destroying a vessel by means of submarine mines or torpedoes, and having received the sanction of the Honorable the Minister of Militia and General Officer Commanding to do so; I detailed Captain Raban, R.E., and Staff Sergt.-Major Birtles (late R.E.), both of the Staff of Royal Military College, for this purpose.

The special conditions desired by the Committee, and the absence of all proper electrical material for the work, rendered it a service of some difficulty. The vessel was a stout built craft of about 140 feet length, 26 feet beam, steam-brig rigged, and "dummy" armed for the occasion, moored in Lake Ontario in over 50 feet of water at about 800 yards from shore.

The explosive employed for this service was 900 lbs. large grain blasting powder in three charges. The mine was fired from the shore by a Tension Dynamo Electric Machine. The vessel was entirely destroyed without leaving wreckage (as stipulated by Committee) in presence of over sixty thousands of spectators.

The admittedly thorough success of the operation, carried out as it was under unexpected and serious difficulties, reflects credit on the officer and non-commissioned officer named, upon whom the entire responsibility rested, and who spared neither labor or time to ensure this result. It should be added that it is doubtful if the

service could have been carried out at all without the voluntarily given, and most energetic, aid afforded by some graduates of the Royal Military College and by a gentleman Cadet on leave, who happened to be in Toronto, as the help of these gentlemen was the only skilled assistance which could be obtained.

*Success of Graduates, Royal Military College.*

26. Two years have passed since the first Gentleman Cadet graduated from Royal Military College. Fifty-four gentlemen have now graduated, and I believe that, with one exception, they have all obtained suitable employment, mostly as civil engineers and land surveyors. Several gentleman Cadets have also obtained temporary employment during their annual vacation and have afterwards returned to College to complete their course.

The graduates have already succeeded well in their several occupations, some indeed in a very marked manner. No better proof than this could be desired to demonstrate not only the high character and soundness of the instruction and training afforded at the Royal Military College, but also its practical value.

The graduates who have obtained commissions in Her Majesty's regular army have done no less well, whether in the field of scientific and military instruction in England, or in that of active war service abroad, which last some of them have been fortunate enough to be employed in.

I feel no doubt whatever that future graduates will be equally fortunate and successful, whether in civil or military careers.

*Recognition of Certificate of Graduation from Royal Military College.*

27. The time has now come when a Certificate of Graduation of the Royal Military College of Canada ought to be recognized by the country and by the different learned and scientific professions as on an equality with a degree of any other university, and as such, that it should entitle its holder to the same privilege towards shortening the time necessary to qualify for the several professions. It would be satisfactory if the leading members of the professions would personally satisfy themselves that the claim is well based.

*Qualification for Dominion Lands Surveyor.*

29. The obligatory course of Surveying and Practical Astronomy at the Royal Military College is of such a high theoretical, as well as practical out-door character, that Cadets who have passed it satisfactorily should, I consider, be legally entitled to become Dominion Land Surveyors without further examination, after not more than one year's apprenticeship in the usual way to a Dominion Land Surveyor. I may add that the voluntary course of Mathematics and Surveying at the Royal Military College contains all the subjects required for the degree of Dominion Topographical Surveyor.

*Notification to Public of Examinations for Admission to Royal Military College.*

29. I beg to recommend that a brief notification of each periodical examination for admission to the Royal Military College be regularly inserted in the leading journals of each Province at least six months before the date of the next ensuing examination. Notification in the *Canada Gazette* alone is quite insufficient to make the public generally aware that a national institution exists offering such great advantages to all Canadians as does the Royal Military College, and the absence of such indispensable knowledge greatly reduces the benefit which it is capable of affording the country. This course is adopted in other countries, although their great military colleges have existed for very many years.

*Commandant's indebtedness to Staff.*

30. I desire to thank the superior Staff, equally military and civil, without exception; and also the subordinate Staff; for their continued earnest and zealous work and loyal co-operation in their endeavor to raise the Royal Military College of Canada to a high standard of excellence.

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

E. O. HEWETT, Lieut.-Colonel, R.E.,  
Commandant Royal Military College.

DETAIL of Qualification of Gentlemen

Regimental Number.	Rank.	Names.	Province (belonging to).	Subjects in which the graduates obtained "Pass," and their relative positions, as determined by marks obtained from date of joining to date of graduation from Royal Military College.															
				Mathematics and Mechanics.	Fortification and Military Engineering.	Artillery (Theory and Construction of).	Military History.	Strategy and Tactics, Military Administration and Law.	Military Topography, Reconnaissance and Civil Surveying.	Geometrical Drawing and Descriptive Geometry.	French.	German.	Chemistry.	Physics.	Geology and Mineralogy.	Freehand Drawing and Painting.	Civil Engineering.	Conduct.	Drills and Exercises.
55	Sergeant.....	Anderson, F. C.....	Ontario.....	15	15	15	17	17	17	14	10	15	17	...	14	...	13	10	8
53	Lance Corpl.	Clarke, H.....	do .....	17	18	16	18	18	16	18	...	16	18	...	17	16	19	19	...
51	Co. S.-M.....	Duff, G. M.....	do .....	6	7	11	3	6	6	12	6	12	5	...	10	6	7	3	4
58	Co. S.-M.....	Duffus, G. S.....	Nova Scotia	3	4	6	5	4	3	7	3	3	4	...	6	4	9	4	7
57	Sergeant.....	Greenwood, H. S.	Ontario.....	9	6	9	13	8	14	15	...	8	13	...	12	8	5	5	6
46	Sergeant.....	Hodgias, A. E.....	do .....	13	10	17	12	5	8	9	7	17	16	...	2	17	*11	8	9
63	Corporal.....	Hooper, G. R.....	Quebec .....	11	14	7	7	14	18	11	11	6	9	...	16	10	14	7	*16
48	Co. S.-M.....	Kirkpatrick, A. K.	Ontario.....	7	9	8	16	10	5	13	...	13	10	...	5	9	4	6	2
71	Corporal.....	Laidlaw, G. E.....	do .....	18	19	19	19	19	10	19	...	...	...	...	19	...	16	18	15
60	Lance Sergt.	Latimer, F. H.....	do .....	2	3	2	4	3	2	1	8	2	2	...	1	1	8	9	11
65	Corporal.....	Ogilvie, G. H.....	do .....	19	17	12	11	15	19	17	...	14	14	...	15	14	1	13	13
62	Sergeant.....	Robinson, W. H.....	N. Brunsw'k	1	1	1	2	2	1	6	9	1	1	...	7	2	15	12	14
61	Co. S.-M.....	Skinner, F. St. D.	Ontario.....	4	2	3	1	1	4	3	5	5	3	5	3	3	3	2	3
52	Sergeant.....	Stairs, W. G.....	Nova Scotia	12	12	14	8	9	12	5	2	10	12	1	9	13	10	14	10
45	Batt. S.-M....	Taylor, E. T.....	Quebec .....	5	5	13	9	12	7	4	4	4	11	3	11	15	2	1	1
66	Corporal.....	Tomlinson, A. T.	Ontario.....	16	13	10	14	11	15	8	...	9	15	...	13	5	17	16	*16
68	Sergeant.....	Wetmore, A. R.....	N. Brunsw'k	8	11	4	10	7	11	16	...	11	8	4	4	7	*11	11	12
67	Sergeant.....	Wood, Z. T.....	Nova Scotia	10	8	5	6	13	13	2	1	7	6	2	8	11	6	17	5
47	Lance Corpl.	Wurtele, E. F.....	Quebec .....	14	16	18	15	16	9	10	...	18	7	...	18	12	18	15	...

Cadets who Graduated 27th June, 1882.

General Position in Batch on Graduation.	Total Number of Marks obtained from date of Joining to date of Leaving Royal Military College.	Distinctions Obtained.		
		Certificate. (Class of).	Honours.	Special Mention.
17	23,022	First .....	Conduct.....	Drills and Military Exercises.
18	20,843	Second..	Nil .....	Nil.
6	38,199	First ...	Strategy, Tactics, Military Administration and Law. Civil Engineering, Conduct. Drills and Military Exercises. N.-C. Officers' Discipline.	Nil.
4	45,221	do ....	Geometrical Drawing and Descriptive Geometry, Civil Engineering. Conduct. Drills and Military Exercises.	N.-C. Officers' Discipline.
9	33,921	do ....	Conduct. Drills and Military Exercises, N.-C. Officers' Discipline.	Civil Engineering.
13	30,455	do ....	Conduct.....	Freehand Drawing and Painting. Drills and Military Exercises. N.-C. Officers' Discipline.
12	30,822	do ....	Conduct.....	Drills and Military Exercises.
8	35,099	do ....	Conduct. Drills and Military Exercises. N.-C. Officers' Discipline.	Civil Engineering.
19	17,869	Second..	Nil .....	Conduct.
2	50,481	First ...	Artillery (Theory and Construction of), Geometrical Drawing and Descriptive Geometry. Physics. Chemistry. Civil Engineering. Conduct.	Mathematics and Mechanics. Surveying and Military Topography and Reconnaissance. Strategy, Tactics, Military Administration and Law. French. Freehand Drawing and Painting. Drills and Military Exercises. N.-C. Officers' Discipline.
15	27,712	do ....	Conduct.....	Nil.
1	50,983	do ....	Mathematics and Mechanics, Artillery (Theory and Construction of), Strategy, Tactics, Military Administration and Law. Geometrical Drawing and Descriptive Geometry. Physics. Civil Engineering.	Fortification and Military Engineering. Surveying, Military Topography and Reconnaissance. French, Chemistry. Conduct. Drills and Military Exercises.
3	48,372	do ....	Strategy, Tactics, Military Administration and Law. Geometrical Drawing and Descriptive Geometry. Civil Engineering. Conduct. Drills and Military Exercises. N.-C. Officers' Discipline.	Artillery (Theory and Construction of), Surveying, Military Topography and Reconnaissance. French. Geology.
11	33,042	do ....	Conduct.....	French. N.-C. Officers' Discipline.
8	38,202	do ....	Conduct. Drills and Military Exercises, N.-C. Officers' Discipline.	French.
14	30,261	do ....	Civil Engineering .....	Conduct.
10	33,382	do ....	Civil Engineering. Conduct.....	Drills and Military Exercises.
7	36,075	do ....	Conduct. N.-C. Officers' Discipline.....	French.
18	26,701	do ....	Nil .....	Nil.



## APPENDIX No. 11

## REPORT OF THE DIRECTOR OF STORES.

DEPARTMENT OF MILITIA AND DEFENCE,  
STORE BRANCH,  
OTTAWA, 30th December, 1882.

SIR,—I have the honor to submit the following Report on Militia stores and property in my charge:—

## CLOTHING.

The clothing this year, as in the previous year, has been supplied from contractors in England, the infantry great coats being manufactured in Canada.

The aggregate issues for the year, for all arms of the service, have been 5,940 tunics, cloth and serge; 7,061 pairs of trousers, cloth and serge; 3,129 forage caps, and 3,953 great coats.

The following tabular statement shows the issues made to the respective arms of the service for that period:—

## ISSUES.

Tunics, Cloth.					Tunics, Serge.				Trousers, Cloth, Pairs.		Trousers, Serge, Pairs.			Forage Caps.				Great Coats.		
Cavalry.	Artillery.	Engineers.	Infantry.	Rifles.	Cavalry.	Artillery.	Infantry.	Rifles.	Cavalry.	Artillery.	Artillery.	Infantry.	Rifles.	Cavalry.	Artillery.	Infantry.	Rifles.	Cavalry.	Artillery.	Infantry and Rifles.
82	719	21	3,571	927	.....	583	26	11	218	222	875	4,240	1,511	86	728	2,292	23	66	395	3,492

## AMMUNITION.

The practice ammunition issued during the year amounted to 235,456 rounds of ball, and 185,800 rounds of blank. (See Appendix A.)

There have been issued on re-payment during the year 607,487 rounds of "Snider" ball, 7,360 rounds of "Martini Henri" rifle, and 300 rounds of "Spencer" rifle ball ammunition, making a total of 615,147 rounds, to the various Rifle Associations and corps for rifle competition and private practice, for which deposit receipts to the amount of \$10,089.23 have been received and duly credited to the Receiver General. This includes also the amount received from the Post Office Department for value of gunpowder and friction tubes issued for the noon gun at Ottawa. (See Appendix B.)

The customary issue of gunpowder, friction tubes, shot, shell and fuses has been made to the several corps of Field and Garrison Batteries of Artillery for annual practice and salutes. (See Appendix C.)

In order to increase the reserve ammunition in British Columbia, 300,000 rounds "Snider" ball and 100,000 rounds blank, with a supply of gunpowder and projectiles, have been ordered from England to Victoria, B.C.

The first issue of "Snider" ball ammunition has been received from the new cartridge factory at Quebec, which compares favorably with that received from England. The manufacture of the small arm ammunition in Canada may now be considered as fairly established.

#### ORDNANCE STORES.

A battery of four 40-pounder, R. B. L. guns, complete with carriages and limbers, also the necessary proportion of small stores, ammunition, &c., forwarded by the Imperial Government, was received from England in November last per steamship "Erl King," and distributed as follows, viz. :—Two at Quebec, one at Montreal, and one at Kingston.

#### ARMS.

The armourers at Toronto, Kingston, Montreal, Quebec, and Halifax are fully employed in repairing arms of the Militia in their respective districts. Owing to the large number of arms requiring attention in Military District No. 2, the armourer at Toronto has applied for an assistant.

The appointment of two more armourers would appear to be necessary,—one for Military District No. 1 at London, and one for District No. 4 at Ottawa, as a number of rifles are reported to be in want of repair in these districts. Ottawa, moreover, being the head quarters of the Force of Canada, it would appear desirable to have an armourer stationed there. For the present a temporary arrangement has been made to repair the arms of No. 4. District at Ottawa.

#### BOARDS OF SURVEY.

Boards of Survey were duly held in the several districts on the Militia stores in charge of storekeepers, as required by Regulations.

The Board at Ottawa recommend certain alterations in the interior of the store building at this station, with a view of affording additional facilities for the proper care and storage of the clothing, of which a plan has been submitted. The building, however, is old and unsuited for a military store, as from its situation it is subject to dampness on the ground flat where arms and other stores are kept. An armourer's shop is also required for the repairing of arms.

#### CAMP LOSSES AND DEFICIENCIES.

Much difficulty is experienced in recovering the value of articles of camp equipment reported to be deficient or damaged, which is usually assessed by the district storekeepers when the camp equipment is returned into store. In most cases the assessment is disputed under the plea that the loss must have occurred in transit from camps.

The Regulations and Orders provide for the assessment of camp deficiencies on the spot by deduction from the men's pay. This has not been found to work satisfactorily, and some other system would appear necessary to adopt to meet the difficulty, and avoid the dissatisfaction that usually arises in such cases.

It is suggested that in future a responsible person should be detailed, under direction of the Store Branch, to take charge of all camp equipment issued for camps at the Militia stores, and see the same delivered to the proper officers in camp, and on the breaking up of camps to receive the same, when losses or deficiencies could be ascertained, and the corps found to be responsible for such, duly assessed, and amount recovered from the commanding officer on the spot.

#### MILITARY MUSEUM.

Since my last Report under this head, a number of articles of historical interest have been added to the Museum, including contributions from His Excellency the Governor General, who has evinced a warm interest in the Museum since its establishment.

Circulars have been sent to commanding officers of Militia corps, inviting donations of such articles as may be considered appropriate to place in the Museum, to which a few have responded.

It is proposed to establish a Military Library in connection with the Museum, and to afford inducements for lectures on military subjects.

#### DEPOSIT RECEIPTS.

The amount received by the Store Branch for stores and ammunition issued on re-payment, and for rents collected on Militia property during the year, is shown in the following statement:—

Ammunition.		Clothing.		Arms and Accoutrements.	Deficiencies.	Rents.	Miscellaneous.	Total Amount.
Rounds.	Amount.	Officers.	Men.					
615,147	\$ cts. 10,089 23	cts. 61 03	\$ cts. 438 22	\$ cts. 81 47	\$ cts. 46 38	\$ cts. 5,347 51	\$ cts. 151 92	\$ cts. 16,215 76

#### RENTS OF MILITIA PROPERTIES.

The following statement shows the amounts collected for rents of Militia properties for the current year at the several stations.

The rents connected with Military properties received during the year amounted to \$5,347.51; arrears still due, \$298.00.

Numero Tenants.	Stations.	Amounts of Rents Accrued.	Arrears still Due.	Remarks.
		\$ cts.	\$ cts.	
1	Winnipeg, Man.....	.....	.....	
1	Chatham, Ont.....	1 00	.....	
1	London.....	213 60	.....	
2	Niagara.....	70 00	.....	
5	Toronto.....	243 50	.....	
1	Ottawa.....	1 00	.....	
20	Kingston.....	526 06	15 00	
4	Montreal.....	350 50	.....	
1	Laprairie.....	1 00	.....	
2	Isle aux Noix.....	64 00	.....	
23	Quebec, &c.....	2,847 85	56 00	
28	Point Lévis.....	753 00	227 00	
19	New Brunswick.....	255 00	.....	
1	Nova Scotia.....	20 00	.....	
1	Prince Edward Island.....	1 00	.....	
.....	Prescott, Ont.....	.....	.....	
.....	St. John's, Que.....	.....	.....	
110	Total received, 1882.....	\$5,347 51	.....	
	Total arrears.....	.....	\$298 00	

I have the honor to be, Sir,  
Your most obedient servant,

J. MACPHERSON, Lieut.-Colonel,  
Director of Stores and Keeper of Militia Properties.

The Honorable  
The Minister of Militia and Defence, Ottawa.

[A.]

S. A. AMMUNITION issued for Practice during the year 1882.

Date.	Corps and Station.	Rounds.	
		Ball.	Blank.
<i>Military District No 1, London.</i>			
1882.			
Sept. 21.....	Captain Lee, No. 7 Company, 25th Battalion, for Annual Drill...	760	.....
do 21.....	The Quarter Master, Camp London do	.....	36,120
Oct. 16.....	Captain Macfarlane, No. 4 Company, 29th Battalion do	620	.....
do 16.....	do Cheney, No. 7 do 24th do do	680	.....
Nov. 16.....	Lieutenant Wiggle, No. 4 Troop, 1st Reg. Cavalry do	600	.....
do 16.....	Captain Cowan No. 2 Company, 29th Battalion do	740	.....
do 16.....	do N Ellis No. 5 do 29th do do	620	.....
do 16.....	do W. Mason No. 1 do 30th do do	700	.....
do 16.....	do Beattie No. 3 do 30th do do	740	.....
do 16.....	do Allen No. 4 do 30th do do	800	.....
do 16.....	do Mutrie No. 6 do 30th do do	740	.....
do 16.....	do McDowell No. 7 do 30th do do	600	.....
do 16.....	do Booth No. 9 do 30th do do	660	.....
do 16.....	do Elliott No. 2 do 33rd do do	680	.....
do 16.....	do Roddic No. 5 do 33rd do do	780	.....
do 27.....	Lieutenant Crowe No. 2 do 30th do do	660	.....
do 16.....	Captain White No. 10 do 30th do do	740	.....
Dec. 9.....	do E. Robinson No. 8 do 26th do do	760	.....
do 29.....	do E. Mackenzie No. 3 do 7th do do	840	.....
		12,720	36,120
Oct. 10.....	Less—Returned from Camp Quarter Master, London .....	.....	18,200
	Total.....	12,720	17,920
<i>Military District No. 2, Toronto.</i>			
1882.			
May 23.....	Lt -Col. Otter, 2nd Battalion, Q. O. Rifles, Toronto, for Review .....	.....	6,000
Aug. 29.....	do Denison, G. G. B. G., Toronto, for Annual Drill .....	1,680	1,680
Sept. 13.....	Major Peters, London Field Battery do	500	.....
do 15.....	do Dunn, Camp Quarter Master, Niagara do	50,000	50,000
Oct. 28.....	Lt -Col. Grasett, 10th Battalion do	6,000	1,500
Nov. 4.....	do Otter, 2nd Battalion Q. O. Rifles do	8,400	.....
		66,580	59,180
Oct. 2.....	Less—Returned from Camp Quarter Master, Niagara .....	27,100	28,400
	Total.....	39,480	30,780
<i>Military District No. 3, Kingston.</i>			
1882.			
May 20 ...	The Officer Commanding 14th Battalion, Annual Drill.....	.....	5,040
July 26.....	The Cobourg Garrison Battery do	840	840
Aug. 14.....	“B” Battery R. S. G. (Martini) do	1,000	.....
do 14.....	do do do	4,700	4,700
do 14.....	Durham Field Battery do	500	.....
Sept. 1.....	Major King, Camp Quarter Master, Cobourg Camp, Annual Drill	25,200	19,740
		32,240	30,320
	Less—Returned from Camp Quarter Master, Cobourg .....	11,940	14,000
	Total.....	20,300	16,320

S. A. Ammunition issued for Practice during the Year 1882—*Continued.*

Date.	Corps and Station.	Rounds.	
		Ball.	Blank.
<i>Military District, No. 4, Ottawa.</i>			
1882.			
July 6.....	Lt. Gourdeau, P. L. D. Guards, Annual Drill.....	700	.....
Aug. 30.....	Lt.-Col. White, Quarter Master, Brockville Camp, Annual Drill.	18,000	18,500
Nov. 30.....	The G. G. F. Guards, Ottawa do	5,040	5,040
		23,740	23,540
Sept. 15.....	Less—Returned from Camp Quarter Master, Brockville.....	430	6,400
	Total.....	23,310	17,140
<i>Military Districts Nos 5 and 6, Montreal.</i>			
1882.			
Aug. 9.....	For 65th Battalion, Montreal, Annual Drill.....	7,360	.....
Sept. 12.....	Montreal Cavalry do	700	700
do 12.....	For Camp at Richmond do	15,000	15,000
do 12.....	do Berthier do	20,000	.....
do 26.....	do Sherbrooke do	11,000	11,000
Oct. 6.....	Montreal Engineers do	800	.....
Nov. 20.....	For 63th Battalion do	.....	6,720
		54,860	33,420
Oct. 2.....	Less—Returned from camp at Berthier.....	23,500	9,600
do 15.....	do Richmond and Sherbrooke.....		
	Total.....	31,360	23,820
<i>Military District No. 7, Quebec.</i>			
1882.			
May 12.....	For "A" Battery, Annual Drill.....	6,300	3,000
July 26.....	No. 1 Company, Charlevoix Battalion, Annual Drill.....	840	.....
do 26.....	No. 3 do do	840	.....
do 26.....	No. 4 do do	840	.....
Sept. 21.....	17th Battalion, Annual Drill.....	2,456	.....
do 21.....	23rd do do	2,175	.....
do 21.....	87th do do	1,320	.....
do 21.....	Dorchester Provisional Battalion, Annual Drill.....	1,535	.....
Oct. 4.....	70th Battalion do	5,040	5,040
	Total.....	21,346	8,040
<i>Military District No. 8. St. John, N.B.</i>			
1882.			
Sept. 1.....	Major Gillespie, No. 7 Battery, Garrison Artillery, Annual Drill.	840	.....
do 6.....	N. B. Brigade Garrison Artillery, Annual Drill.....	840	.....
do 29.....	Lt.-Col. Domville, 8th Cavalry do	2,520	2,520
do 29.....	Brighton Engineer Company do	840	840
do 29.....	Major McCulley, 73rd Battalion do	4,200	4,200
do 29.....	Lt.-Col. Beer, 74th Battalion do	5,040	5,040
Oct. 18.....	Capt. Hartt, St. John Rifles do	840	840
do 21.....	Lt.-Col. Blaine, 62nd Battalion do	5,040	5,040
do 23.....	Capt. McMullin, 71st Battalion do	840	840
	Total.....	21,000	19,320

S. A. Ammunition issued for Practice during the Year 1882—Continued.

Date.	Corps and Station.	Rounds.	
		Ball.	Blank.
<i>Military District No. 9, Halifax, N.S.</i>			
1882.			
July 21.....	1st Halifax Brigade Garrison Artillery, Annual Drill.....	5,040	5,520
do 21.....	Halifax Field Battery do .....	1,600	.....
do 21.....	63rd Battalion (Rifles) do .....	5,520	5,520
do 24.....	66th do P. L. F. do .....	7,200	7,200
Sept. 7.....	Camp Quartermaster, Aldershot do .....	.....	20,800
do 16.....	Captain Ryan, King's Troop Cavalry do .....	840	.....
do 16.....	do Dodge, No. 1 Co. 68th Battalion do .....	840	.....
do 16.....	do Beckwith 2 do do .....	840	.....
do 16.....	do Redden 3 do do .....	840	.....
do 16.....	do Steadman 4 do do .....	840	.....
do 16.....	do Roscoe 5 do do .....	840	.....
do 16.....	do Borden 6 do do .....	840	.....
do 16.....	do Harris 7 do do .....	840	.....
do 16.....	do Foster 8 do do .....	840	.....
do 16.....	do Ross 10 do do .....	840	.....
do 16.....	do Elliott 1 69th Battalion do .....	840	.....
do 16.....	do Morse 2 do do .....	840	.....
do 16.....	do Wade 3 do do .....	840	.....
do 16.....	do Charlton 4 do do .....	840	.....
do 16.....	Lieutenant Bailey 5 do do .....	840	.....
do 16.....	Captain Buckler 6 do do .....	840	.....
do 16.....	do Nicholl 7 do do .....	840	.....
do 16.....	do Turnbull 8 do do .....	840	.....
do 16.....	do Harris 9 do do .....	840	.....
do 16.....	do Jacques 1 72nd Battalion do .....	840	.....
do 16.....	do Roach 2 do do .....	840	.....
do 16.....	do Bowlby 3 do do .....	840	.....
do 16.....	do Taylor 4 do do .....	840	.....
do 16.....	do Phinney 5 do do .....	840	.....
do 16.....	do Morse 6 do do .....	840	.....
do 16.....	do Windrow 6 75th Battalion do .....	840	.....
do 6.....	do King 1 do do .....	840	840
do 6.....	do Curil 2 do do .....	840	840
do 6.....	do Ross 3 do do .....	840	840
do 6.....	do Ham 4 do do .....	810	840
do 6.....	do Langille 5 do do .....	840	840
do 7.....	Lieut.-Col. Kaulbach, 75th Battalion do .....	2,000	.....
do 9.....	do Bremner, 66th do do .....	2,000	.....
do 12.....	Captain James, Mahone Bay Garrison Art'y do .....	1,000	.....
do 14.....	do Jolly, Yarmouth do do .....	840	840
do 18.....	Lieutenant Dimock, 78th Highlanders do .....	2,000	.....
do 26.....	Lieut.-Col. McPherson, 2nd Halifax Brigade G. A., Annual Drill .....	1,500	.....
do 26.....	Captain Gordon, Pictou Garrison Artillery do .....	1,000	.....
do 26.....	Lieut.-Col. Bremner, 66th Battalion do .....	200	.....
do 31.....	Captain McLeod, No. 8 Co. 78th Battalion do .....	500	.....
	Total.....	56,440	44,080
<i>Military District No 10, Manitoba.</i>			
	No issue reported for practice.....	.....	.....
<i>Military District No. 11, Victoria. B.C.</i>			
1882.			
April 13.....	Seymour Garrison Artillery, Annual Drill .....	600	.....
June 12.....	New Westminster Rifles do .....	560	.....
	Total.....	1,160	.....

S. A. Ammunition issued for Practice in 1882.—*Concluded.*

Date.	Corps and Station.	Rounds.	
		Ball.	Blank.
1882.	<i>Military District No. 12, Charlottetown, P.E.I.</i>		
July 26.....	Major Mabon, No. 4 Co. 82nd Battalion, Annual Drill.....	740	740
Ang. 5.....	Captain Ives, P. C. Battalion do .....	800	800
do 17 .....	Lieutenant Fraser, No. 1 Co., King's do .....	800	800
do 22.....	Captain Dogherty, 82nd Battalion do .....	800	800
do 15.....	do McLeod do do .....	800	800
do 31.....	Major Irving, P. E. I. Provisional Brigade G. A., Annual Drill..	2,700	2,700
Sept. 25.....	do Dogherty, Engineers, Annual Drill.....	900	900
do 25.....	Captain Stewart, 82nd Battalion do .....	800	800
Oct. 10.....	Major Mabon do do .....		40
	Total.....	8,340	8,380

## RECAPITULATION.

District.	Rounds.	
	Ball.	Blank.
Military District No. 1, London .....	12,720	17,920
do 2, Toronto .....	39,480	30,780
do 3, Kingston.....	20,300	16,320
do 4, Ottawa .....	23,310	17,140
do 5 and 6, Montreal .....	31,360	23,820
do 7, Quebec .....	21,346	8,040
do 8, St. John, N.B .....	21,000	19,320
do 9, Halifax, N.S .....	56,440	44,080
do 10, Winnipeg.....		
do 11, Victoria, B.C .....	1,160	
do 12, Charlottetown, P.E.I.....	8,340	8,380
Total.....	235,456	185,800

J. MACPHERSON, Lieut.-Colonel.

Director of Stores and Keeper of Militia Properties.

The Honorable  
The Minister of Militia and Defence.  
Ottawa.

30th December, 1882.

## [B.]

## S. A. AMMUNITION issued on repayment during the Year 1882.

*Military District No. 1, London.*

Date.	Purchaser.	Corps.	Rounds.	Amount.
1882.				\$ cts.
Jan. 26...	Capt. Stevenson .....	26th Battalion .....	1,000	16 00
Mar. 24...	F. W. Macqueen .....	Woodstock Rifle Association .....	1,000	16 00
do 30...	R. W. Stewart .....	Guelph Rifle Association .....	1,500	24 00
April 22...	F. W. Macqueen .....	Woodstock Rifle Association .....	1,000	16 00
do 24...	Major Wilson .....	33rd Battalion .....	2,000	32 00
May 9...	F. W. Macqueen .....	Woodstock Rifle Association .....	1,500	24 00
do 16...	Lt.-Col. O'Malley .....	25th Battalion .....	1,000	16 00
do 18...	Capt. Stevenson .....	26th do .....	1,000	16 00
do 22...	Capt. McKenzie .....	7th do .....	500	8 00
June 5...	Guelph R. A. .....	.....	1,000	16 00
May 29...	Capt. Robson .....	Huron Rifle Association .....	4,000	64 00
do 29...	Guelph R. A. .....	.....	1,500	24 00
June 29...	Capt. Stevenson .....	26th Battalion .....	1,000	16 00
July 15...	do .....	26th do .....	1,000	16 00
do 25...	W. Wigmore .....	London Rifle Association .....	1,000	16 00
do 26...	Perth R. A. .....	.....	1,500	24 00
Aug. 3...	do .....	.....	2,000	32 00
do 10...	Capt. Stevenson .....	26th Battalion .....	1,500	24 00
do 10...	Lt.-Col. Hon. H. Aylmer .....	Brigade Major .....	1,000	16 00
do 10...	R. H. Jarvis .....	37th Battalion .....	500	8 00
do 23...	F. W. Macqueen .....	Woodstock Rifle Association .....	1,000	16 00
Sept. 13...	N. A. Woodcock .....	Ingersoll Rifle Association .....	500	8 00
do 16...	F. W. Macqueen .....	Woodstock Rifle Association .....	4,000	64 00
do 20...	Lt.-Col. Moffatt .....	do .....	4,000	64 00
do 26...	W. Lawrence .....	.....	800	12 80
do 26...	N. A. Woodcock .....	Ingersoll Rifle Association .....	1,000	16 00
do 28...	Major White .....	28th Battalion .....	500	8 00
Oct. 4...	Capt. Stevenson .....	26th do .....	1,000	16 00
do 17...	N. A. Woodcock .....	Ingersoll Rifle Association .....	2,000	32 00
do 20...	do .....	do .....	1,200	19 21
Dec. 6...	Capt. Stevenson .....	26th Battalion .....	1,000	16 00
do 14...	Lt.-Col. Hon. H. Aylmer .....	Brigade Major .....	500	8 00
Total .....			44,000	\$704 01

*Military District No. 2, Toronto.*

Jan. 1...	J. L. Rawbone .....	Governor General's Body Guard .....	500	8 00
do 7...	Capt. Saule .....	37th Battalion .....	2,000	32 00
Feb. 10...	Capt. Nelles .....	do .....	2,000	32 00
April 6...	Lt.-Col. Alger .....	Ontario Rifle Association .....	6,000	96 00
do 28...	Capt. Saule .....	37th Battalion .....	1,000	32 00
May 8...	J. L. Rawbone .....	Governor General's Body Guard .....	2,000	16 00
do 11...	Lt.-Col. Alger .....	Ontario Rifle Association .....	10,000	160 00
do 16...	Lt.-Col. Jones .....	38th Battalion .....	2,000	32 00
do 15...	Peterboro' Rifle Assoc'n .....	.....	2,000	32 00
June 7...	Mr. Crowe .....	.....	160	3 90
do 8...	Lt.-Col. Jones .....	38th Battalion .....	500	8 00
do 8...	J. L. Rawbone .....	Governor General's Body Guard .....	500	8 00
July 5...	Capt. Cooper .....	12th Battalion .....	M.H.	} 28 00
do 5...	do .....	do .....	S.B.	
do 17...	J. L. Rawbone .....	Governor General's Body Guard .....	1,000	16 00
do 21...	Lt.-Col. Jones .....	38th Battalion .....	2,000	32 00



B.—S. A. Ammunition issued on repayment during the Year 1882—*Con.**Military District No. 2, Toronto—Concluded.*

Date.	Purchaser.	Corps.	Rounds.	Amount.
1882.				\$ cts.
Aug. 1...	Lt.-Col. Alger.....	Ontario Rifle Association.....	48,600	777 60
do 3...	do .....	do .....	500	8 00
do 7...	Lt.-Col. Jones .....	38th Battalion .....	2,000	32 50
do 11...	Capt. Saule .....	37th do .....	1,000	16 00
do 14...	Lt.-Col. Alger.....	Ontario Rifle Association.....	500	8 00
do 15...	do .....	44th Battalion .....	500	8 00
do 22...	do .....	Wellington Field Battery.....	1,000	16 00
do 29...	do .....	44th Battalion .....	500	8 00
do 29...	J. L. Rawbone.....	Governor General's Body Guard .....	1,000	16 00
Sept. 1...	Capt. Saule.....	37th Battalion .....	2,000	32 00
do 4...	Lt.-Col. Alger.....	20th do and 44th Battalion .....	1,000	16 00
do 14...	Major Dingwell.....	46th do .....	1,000	16 00
Oct. 2...	Lt.-Col. Alger .....	Bowmanville Rifle Association .....	2,000	32 00
do 4...	Lt.-Col. Jones .....	38th Battalion .....	1,000	16 00
do 13...	J. L. Rawbone.....	Governor General's Body Guard.....	1,000	16 00
do 16...	Lt.-Col. Alger.....	Ontario Rifle Association.....	1,000	16 00
do 26...	J. L. Rawbone.....	Governor General's Body Guard.....	1,000	16 00
		Total.....	98,760	\$1,586 00

*Military District No. 3, Kingston.*

Jan. 28...	Capt. Gordon.....	14th Battalion .....	2,000	32 00
April 27...	Lt.-Col. Bog.....	16th do .....	4,000	64 00
May 18...	Sergt Russell.....	16th do .....	1,000	16 00
July 11...	R. W. Bell.....	Peterboro' Rifle Association .....	2,000	32 00
Aug. 5...	Sergt. McLaughlin.....	16th Battalion .....	2,000	32 00
do 9...	Lt.-Col. Bog.....	16th do .....	2,000	32 00
Sept. 20...	H. Tammage.....	49th do .....	2,000	32 00
do 25...	R. W. Bell.....	Peterboro' Rifle Association .....	2,000	32 00
do 30...	Capt. Bailie .....	Kingston do .....	3,000	48 00
Oct. 3...	R. W. Bell.....	Peterboro do .....	2,000	32 00
do 19...	H. Tammage .....	49th Battalion .....	1,000	16 00
do 23...	J. A. Howard.....	57th do .....	530	8 50
do 28...	Capt. Birdsall .....	57th do .....	500	8 00
Nov. 2...	H. Tammage .....	49th do .....	1,000	16 00
Oct. 12...	Lieut. McNaughton.....	Cobourg Rifle Association .....	500	8 00
Nov. 16...	Capt. Birdsall.....	57th Battalion .....	500	8 00
do 15...	H. Tammage.....	49th do .....	1,500	24 00
Dec. 26...	D. E. Jackson .....	41st do .....	3,000	48 00
		Total.....	30,530	\$488 50

*Military District No 4, Ottawa.*

April 4...	Sergt. Clayton.....	Governor-General's Foot Guards.....M.H.	500	12 00
do 4...	Capt. Chamberlain .....	43rd Battalion .....	1,000	16 00
do 18...	Sergt. Cawdron .....	Governor-General's Foot Guards .....	1,000	16 00
do 27...	Dr. Malloch .....	do do .....	500	8 00
May 3...	Lieut. Armstrong.....	do do .....	500	8 00
do 3...	Dom. Rifle Association .....	.....M.H.	1,200	24 00

(B)—S. A. Ammunition issued on repayment during the year 1882—*Con.**Military District No. 4, Ottawa—Concluded.*

Date.	Purchaser.	Corps.	Rounds.	Amount.
				\$ cts.
1882.				
May 18...	Corp. Ross.....	Governor-General's Foot Guards .....	500	8 00
do 23...	Capt. Wright .....	43rd Battalion .....	2,437	39 00
do 25...	Sergt. Cawdron.....	Governor-General's Foot Guards.....	500	8 00
June 5...	do .....	do do .....	1,000	16 00
do 10...	Capt Lang .....	43rd Battalion .....	1,000	16 00
do 10...	C. Wilson .....	do .....	500	8 00
do 13...	Sergt. Cawdron .....	Governor-General's Foot Guards.....	1,000	16 00
do 16...	Sergt. Deslauriers.....	do do .....	1,000	16 00
do 19...	Sergt. Cawdron.....	do do .....	1,000	16 00
do 23...	Capt. MacQueen.....	.....	1,000	16 00
do 23...	Major Tilton .....	Governor-General's Foot Guards .....	S. B. 20	} 5 12
do 23...	do .....	do do .....	M. H. 200	
June 29...	Capt. Chamberlain.....	43rd Battalion .....	500	8 00
July 3...	Sergt. Cawdron.....	Governor-General's Foot Guards .....	1,000	16 00
July 10...	do .....	do do .....	1,000	16 00
do 13...	Sergt. Morton.....	do do .....	500	8 00
do 15...	Sergt. Sutherland .....	do do .....	M. H. 50	1 20
do 17...	Pte. Briggs .....	do do .....	500	8 00
do 21...	Sergt. Cawdron.....	do do .....	1,000	16 00
do 27...	do .....	do do .....	500	8 00
do 31...	do .....	do do .....	2,000	32 00
Aug. 2...	Sergt. Brown .....	54th Battalion .....	500	8 00
do 3...	W. Todd .....	Governor-General's Foot Guards.....	2,500	40 00
do 3...	Sergt. Cawdron.....	do do .....	1,000	16 00
do 14...	A. E. Nash .....	do do .....	500	8 00
do 19...	Sergt. Sutherland .....	do do .....	500	8 00
do 22...	Sergt. Cawdron.....	do do .....	500	8 00
do 23...	Capt. Macdonald.....	42nd Battalion .....	500	8 00
do 25...	Lieut. Huntington .....	Prescott Cavalry.....	1,500	24 00
do 28...	Pte. Taylor .....	Governor-General's Foot Guards.....	M. H. 100	2 40
do 30...	Sergt. Bell .....	Princess Louise Dragoon Guards.....	500	8 00
Sept. 20...	Sergt. Cawdron.....	Governor-General's Foot Guards .....	1,000	16 00
Oct. 6...	J. W. Motherwell.....	Rifle Association.....	1,000	16 00
do 9...	Metropolitan R. A .....	.....	2,000	32 00
do 9...	do .....	.....	2,000	32 00
do 9...	Pte. Pink.....	43rd Battalion.....	500	8 00
do 9...	Lieut. McNaughton.....	.....	M. H. 200	4 80
do 19...	Capt. Walker .....	43rd Battalion .....	500	8 00
do 26...	Capt. Laskey .....	41st do .....	500	8 00
do 31...	Capt. O'Grady.....	43rd do .....	M. H. 100	2 40
Nov. 1...	do .....	do do .....	500	8 00
do 1...	do .....	do do .....	M. H. 50	1 20
do 7...	Lieut. Gourdeau.....	Princess Louise Dragoon Guards .....	500	8 00
do 17...	Lt.-Col Maunsell .....	Deputy Adjutant-General .....	M. H. 50	1 20
do 20...	Lieut. Featherson .....	43rd Battalion .....	600	9 60
do 20...	Lt.-Col. Maunsell .....	Deputy Adjutant-General.....	Spencer. 300	3 00
do 27...	D. McMartin.....	43rd Battalion.....	M. H. 100	2 40
do 28...	Capt. O'Grady.....	43rd Battalion .....	M. H. 300	7 20
do 28...	do .....	do .....	200	3 20
do 30...	Dominion Rifle Ass'tion.....	.....	32,930	526 88
do 30...	do .....	.....	M. H. 2,420	58 08
do 30...	do .....	.....	3,100	64 00
do 30...	Gunpowder, for Noon gun,	Ottawa, 500 lbs.; 315 friction tubes .....	.....	131 96
Total.....			78,857	\$1,443 64

(B.)—S. A. Ammunition issued on repayment during the Year 1882—*Con.**Military Districts Nos. 5 and 6, Montreal.*

Date.	Purchaser.	Corps.	Rounds.	Amount.
Feb. 11...	Major McFee.....	51st Battalion.....	2,000	32 00
do 28...	Capt. Blaine.....	83rd Battalion.....	560	8 96
April 4...	J. C. Marks.....	Caretaker, Rifle Range.....	3,120	44 92
do 26...	do.....	do.....	4,480	} 76 48
do 26...	do.....	do..... M.H.	200	
do 27...	Lt.-Col. Ibbotson.....	53rd Battalion.....	560	
May 8...	Capt. James Smith.....	11th do.....	1,000	16 00
do 19...	J. C. Marks.....	Caretaker, Rifle Range.....	4,480	71 96
do 19...	Lt.-Col. Ibbotson.....	53rd Battalion.....	560	8 96
do 19...	Capt. Smith.....	11th do.....	1,000	16 00
do 20...	Capt. Moorehouse.....	53rd do.....	560	8 96
June 2...	J. C. Marks.....	Caretaker, Rifle Range.....	5,600	} 94 40
do 2...	do.....	do..... M.H.	200	
do 6...	Lt. Wright.....	50th Battalion.....	560	
do 6...	R. G. Spearing.....	Sherbrooke Rifle Range.....	560	8 96
do 13...	Lt. Edwards.....	58th Battalion.....	560	8 96
do 13...	R. G. Spearing.....	Sherbrooke Rifle Range.....	560	8 96
do 23...	J. C. Marks.....	Caretaker, Rifle Range.....	5,040	80 64
do 24...	R. J. Spearing.....	Sherbrooke Rifle Range.....	560	8 96
July 6...	do.....	do.....	1,120	17 92
do 14...	J. C. Marks.....	Caretaker, Rifle Range.....	5,600	89 60
do 22...	R. J. Spearing.....	Sherbrooke Rifle Range.....	1,680	26 88
do 22...	Capt. Sheppard.....	5th Regiment Cavalry.....	660	9 00
do 24...	J. C. Marks.....	Caretaker, Rifle Range.....	2,240	35 84
do 26...	do.....	do.....	6,800	39 60
do 28...	Capt. Moorehouse.....	53rd Battalion.....	560	8 96
Aug. 1...	J. C. Marks.....	Caretaker, Rifle Range.....	1,120	17 92
do 8...	Lt.-Col. Sheppard.....	83rd Battalion.....	1,120	17 92
do 8...	Capt. Sheppard.....	5th Regiment Cavalry.....	560	8 96
do 8...	J. C. Marks.....	Caretaker, Rifle Range.....	6,720	} 131 62
do 8...	do.....	do..... M.H.	1,000	
do 8...	do.....	do.....	11,200	
do 8...	do.....	do..... M.H.	1,800	} 222 60
do 24...	do.....	do.....	5,600	
do 24...	Lt.-Col. Ibbotson.....	53rd Battalion.....	1,120	17 92
do 28...	Capt. Moorehouse.....	53rd do.....	560	8 96
do 28...	D. McRae.....	1st do.....	560	8 96
do 30...	J. F. Learned.....	Secretary, Rifle Association.....	1,680	26 88
Sept. 5...	Capt. Smith.....	11th Battalion.....	560	8 96
do 8...	J. C. Marks.....	Caretaker, Rifle Range.....	6,720	107 52
do 11...	Thos. Weightman.....	11th Battalion.....	1,680	26 88
do 11...	Capt. Bower.....	52nd do.....	560	8 96
do 13...	Capt. Montigny.....	85th do.....	560	8 96
do 20...	Lt. Whitman.....	60th do.....	2,240	35 84
do 20...	Lt. Pollock.....	11th do.....	560	8 96
do 25...	R. Thompson.....	5th Regiment Cavalry.....	560	8 96
do 23...	Geo. Wright.....	50th Battalion.....	2,240	35 84
do 29...	Capt. Bower.....	53rd do.....	560	8 96
Oct. 5...	Capt. Brooks.....	do.....	1,120	17 92
do 6...	Lt.-Col. Ouimet.....	65th Battalion.....	1,120	17 92
do 8...	Capt. Cole.....	Montreal Garrison Artillery.....	560	8 96
do 9...	Capt. Sheppard.....	5th Regiment Cavalry.....	1,120	17 92
do 9...	Lt. Whitman.....	60th Battalion.....	1,680	26 88
do 20...	Capt. Watts.....	54th do.....	560	8 96
do 24...	do.....	54th do.....	560	8 96
Nov. 2...	J. C. Marks.....	Caretaker, Rifle Range.....	4,480	71 68
do 3...	Capt. Cole.....	Montreal Garrison Artillery.....	560	8 96
Oct. 17...	Lt.-Col. Gilmore.....	60th Battalion.....	1,680	26 88
Nov. 29...	W. B. Jackson.....	57th do.....	560	8 96

(B).—S. A. AMMUNITION issued on repayment during the Year 1882—*Con.**Military Districts Nos. 5 and 6, Montreal—Concluded.*

Date.	Purchaser.	Corps.	Rounds.	Amount.
1882.				
Dec. 4...	J. C. Marks.....	Caretaker, Rifle Range.....	560	8 96
do 30...	G. Wright.....	50th Battalion.....	560	8 96
		Total.....	113,920	\$1,848 56

*Military District No. 7, Quebec.*

Sept 26 ..	Capt. Russell .....	do .....	500	8 00
1882.				
Jan. 4...	Major Scott.....	8th Battalion.....	560	8 96
do 4...	do .....	do .....	560	8 96
do 7...	do .....	do .....	300	7 20
do 7...	do .....	do .....	1,000	16 00
March 2...	do .....	do .....	2,000	32 00
do 22...	do .....	do .....	500	8 00
do 24...	do .....	do .....	560	8 96
April 4...	Capt. Russell .....	do .....	1,000	16 00
do 6...	do .....	do .....	2,000	32 00
do 22...	Major Scott .....	do .....	1,000	16 00
do 28...	do .....	do .....	500	8 00
do 28...	do .....	do .....	1,000	16 00
do 28...	Capt. Miller .....	do .....	1,000	16 00
do 28...	Major Scott .....	do .....	500	8 00
May 5...	do .....	do .....	1,000	16 00
do 10...	Capt. Russell .....	do .....	500	8 00
do 19...	Major Scott .....	do .....	1,000	16 00
do 17...	do .....	do .....	500	8 00
do 17...	do .....	do .....	1,000	16 00
do 17...	do .....	do .....	500	8 00
June 2...	do .....	do .....	1,000	16 00
do 10...	do .....	do .....	1,000	16 00
do 17...	do .....	do .....	1,000	16 00
do 23...	do .....	do .....	1,000	16 00
do 28...	Capt. Russell .....	do .....	1,000	16 00
do 30...	Major Scott .....	do .....	2,120	33 92
July 15...	do .....	do .....	2,000	32 00
do 17...	do .....	do .....	1,000	16 00
Aug. 3...	Stadacona R. A .....	do .....	3,360	53 70
do 3...	Major Scott .....	8th Battalion.....	3,700	59 20
do 18...	do Stewart .....	do .....	1,000	16 00
do 18...	do Scott .....	do .....	1,000	16 00
do 10...	Jos. Michaud .....	Temiscouata R. A .....	2,000	32 00
do 12...	Major Demers .....	17th Battalion .....	1,000	16 00
do 18...	J. Michaud .....	Temiscouata R. A .....	3,000	48 00
do 26...	Major Scott .....	8th Battalion .....	1,000	16 00
do 24...	J. Blondeau .....	do .....	1,000	16 00
do 31...	Major Scott .....	8th Battalion .....	1,000	16 00
Sept. 28...	do Demers .....	17th do .....	1,000	16 00
do 20...	A. Couillard .....	Quebec R. A .....	500	8 00
do 27...	Major Scott .....	8th Battalion .....	500	8 00
Oct. 7...	do .....	do .....	500	8 00
do 2...	Judge Tachereau .....	do .....	200	4 80
do 21...	Major Scott .....	8th Battalion .....	300	4 80
Nov. 31...	do .....	do .....	500	8 00
do 8...	do .....	do .....	500	8 00
Dec. 9...	do .....	do .....	500	8 00
do 22...	do .....	do .....	1,000	1,600
do 28...	do .....	do .....	500	800
do 28...	do .....	do .....	100	240
		Total.....	\$48,700	\$784 90

(B).—S. A. Ammunition issued on repayment during the Year 1882—*Con.**Military District No. 8, St. John.*

Date.	Purchase.	Corps.	Rounds.	Amount.
1882.				\$ cts.
March 8...	Capt. Hartt.....	St. John Rifle Club .....	560	8 96
do 28...	Lieut. Upham.....	8th Regiment Cavalry .....	560	8 96
May 8...	Capt. Hartt.....	St. John Rifle Club.....	2,240	35 84
do 12...	Lieut. Robbie.....	62nd Battalion.....	560	8 96
do 15...	J. U. Fowler.....	8th Regiment Cavalry .....	560	9 25
do 16...	do .....	8th do .....	560	9 25
do 23...	Lieut. Blois.....	62nd Battalion.....	1,000	16 00
do 27...	Capt. Hartt.....	62nd do .....	1,000	16 00
June 2...	Lieut. Blois.....	62nd do .....	1,000	16 00
do 12...	W. H. Smith.....	62nd do .....	560	8 96
do 22...	J. U. Fowler.....	8th Regiment Cavalry .....	1,120	18 50
do 23...	Lieut. Blois.....	62nd Battalion.....	1,000	16 00
do 23...	Capt. Hartt.....	St. John Rifle Club.....	1,000	16 00
do 27...	do .....	do .....	560	8 96
do 29...	Capt. Langstroth .....	8th Regiment Cavalry.....	560	8 96
July 6...	do .....	8th do .....	500	8 00
do 11...	G. T. Stickney.....	St. John Rifle Club.....	1,120	17 92
do 27...	Lieut. McRobbin.....	62nd Battalion .....	560	8 96
Aug. 3...	Capt. Blois .....	62nd do .....	4,000	64 00
do 4...	Capt. Hartt.....	62nd do .....	2,000	32 00
do 8...	J. U. Fowler.....	8th Regiment Cavalry.....	500	8 00
do 8...	do .....	8th do .....	500	8 00
do 9...	Capt. Langstroth.....	8th do .....	1,000	16 00
do 14...	Capt. Howard .....	New Brunswick Rifle Association.....	2,000	32 00
do 14...	Capt. Hart .....	62nd Battalion.....	1,000	16 00
do 14...	Surgeon Botsford.....	Sussex Rifle Association .....	1,000	16 50
do 14...	Capt. Hartt.....	New Brunswick Rifle Association.....	14,000	224 00
do 21...	Surgeon Botsford.....	Sussex Rifle Association .....	1,000	16 00
Sept. 18...	Lieut. MacIntyre.....	St. John Rifle Club.....	2,000	32 00
do 27...	Capt. Blois .....	62nd Battalion.....	1,000	16 00
do 27...	Capt. Hartt .....	New Brunswick Rifle Association .....	4,000	64 00
Oct. 4...	Capt. Stewart .....	do .....	1,000	16 00
do 7...	Capt. Hartt.....	St. John Rifle Club.....	2,000	32 00
do 11...	do .....	8th Regiment Cavalry .....	1,000	16 00
do 14...	Lieut.-Col. Beer.....	74th Battalion .....	1,000	16 00
do 20...	Surgeon Botsford.....	Sussex Rifle Association .....	3,000	48 00
Total .....			57,020	913 96

*Military District No. 9, Halifax.*

April 27...	Capt. Bland.....	1st Brigade Halifax Garrison Artillery.....	500	8 00
May 8...	Lieut.-Col. Bremner.....	66th Battalion .....	1,000	16 00
do 18...	do Mowbray .....	1st Brigade Halifax Garrison Artillery.....	1,000	16 00
do 18...	do do .....	do do .....	560	8 00
do 23...	do McPherson .....	2nd Brigade do .....	1,000	16 00
do 31...	do Mackintosh .....	63rd Battalion .....	1,500	24 00
June 1...	Capt. Bland.....	1st Brigade Halifax Garrison Artillery.....	500	8 00
do 3...	Lieut.-Col. Mowbray.....	do do .....	500	8 00
do 3...	Lieut. Dimock.....	78th Battalion.....	1,000	16 00
do 9...	Lieut.-Col. Mowbray.....	1st Brigade Halifax Garrison Artillery.....	500	8 00
do 13...	Major Lydiard.....	King's Co. Rifle Association .....	1,500	24 00
do 14...	Lieut.-Col. McPherson.....	2nd Brigade Halifax Garrison Artillery .....	1,000	16 00
do 15...	do Bremner .....	66th Battalion .....	1,500	24 00
do 15...	Capt. Bland.....	1st Brigade Halifax Garrison Artillery.....	500	8 00

(B.)—S. A. Ammunition issued on repayment during the Year 1882—*Con.**Military District No. 9, Halifax—Concluded.*

Date.	Purchaser.	Corps.	Rounds.	Amount.
1881.				
June 24...	Lieut.-Col. Mackintosh...	63rd Battalion .....		\$
do 27...	do Mowbray .....	1st Brigade Halifax Garrison Artillery .....	1,000	16 00
do 28...	do do .....	do do .....	1,000	16 00
do 29...	Lieut. Dimock .....	78th Battalion .....	500	8 00
July 5...	Lieut.-Col. Mowbray .....	1st Brigade Halifax Garrison Artillery .....	1,000	16 00
do 5...	do Mackintosh .....	63rd Battalion .....	500	8 00
do 7...	do Bremner .....	66th do .....	1,000	16 00
do 10...	do Mowbray .....	1st Brigade Halifax Garrison Artillery .....	1,000	16 00
do 11...	J. E. Fitch .....	78th Battalion .....	500	8 00
do 11...	Lieut.-Col. Mowbray .....	1st Brigade Halifax Garrison Artillery .....	500	8 00
do 12...	Capt. Ryan .....	Kentville Troop Cavalry .....	500	8 00
do 14...	Lieut.-Col. Kaulbach .....	75th Battalion .....	3,600	57 60
do 15...	do McPherson .....	2nd Brigade Halifax Garrison Artillery .....	1,000	16 00
do 22...	do Mowbray .....	1st do do .....	500	8 00
do 24...	do do .....	1st do do .....	500	8 00
do 21...	Lieut.-Col. Mackintosh .....	63rd Battalion .....	1,000	16 00
do 24...	do Mowbray .....	1st Brigade Halifax Garrison Artillery .....	500	8 00
do 25...	do Mackintosh .....	63rd Battalion .....	500	8 00
do 26...	do Bremner .....	66th do .....	1,000	16 00
do 27...	Major Harrison .....	Cumberland Provisional Battalion .....	500	8 00
do 28...	Lieut.-Col. Mackintosh .....	63rd Battalion .....	2,000	32 00
do 28...	Capt. Barnhill .....	78th do .....	500	8 00
do 28...	Lieut.-Col. Bremner .....	66th do .....	1,000	16 00
do 28...	do Mowbray .....	1st Brigade Halifax Garrison Artillery .....	500	8 00
Aug. 1...	do McPherson .....	2nd do do .....	1,000	16 00
do 4...	do do .....	2nd do do .....	25,000	400 00
do 9...	do Mowbray .....	1st do do .....	500	8 00
do 16...	Capt. Jolly .....	Yarmouth Battery .....	500	8 00
do 17...	Lieut.-Col. McPherson .....	2nd Brigade Halifax do .....	1,000	16 00
do 26...	Capt. Gordon .....	Pictou Battery do .....	1,000	16 00
do 30...	Lieut.-Col. Mackinley .....	Provincial Rifle Association .....	M. H. 600	15 03
do 31...	Capt. Bland .....	Halifax Rifle Association .....	500	8 00
Sept. 7...	Capt. Jolly .....	Yarmouth Garrison Artillery .....	500	9 25
do 15...	Lieut.-Col. Mackintosh .....	63rd Battalion .....	3,000	48 00
do 19...	do do .....	63rd do .....	1,000	16 00
do 21...	Lieut. Dimock .....	78th do .....	2,000	32 00
do 26...	Lieut.-Col. Mowbray .....	1st Halifax Brigade Garrison Artillery .....	1,000	16 00
do 26...	Capt. Lawrence .....	Colchester Rifle Association .....	1,500	24 00
do 22...	Lieut.-Col. Bremner .....	66th Battalion .....	200	3 20
Oct. 5...	do Kaulbach .....	75th do .....	2,000	32 00
do 9...	do Bremner .....	66th do .....	2,000	32 00
do 12...	Capt. James .....	Mahone Bay Garrison Artillery .....	1,000	16 00
do 18...	Lieut. Dimock .....	78th Battalion .....	2,000	32 00
do 26...	Capt. Gordon .....	Pictou Garrison Artillery .....	1,000	16 00
do 26...	Lieut.-Col. McPherson .....	2nd Brigade Halifax Garrison Artillery .....	1,500	24 00
do 30...	Capt. McLeod .....	78th Battalion .....	500	8 00
do 31...	do Black .....	Cumberland Provisional Battalion .....	1,000	16 00
Total.....			84,400	1,357 08

B.)—S. A. Ammunition issued on repayment during the Year 1882—*Con.**Military District No. 10, Winnipeg.*

Date.	Purchaser.	Corps.	Rounds.	Amount.
				\$ cts.
1882.				
Jan. 1...	Manitoba Rifle Association .....		2,400	38 40
June 29...	Capt. Street .....	Rifle Association .....	600	14 40
July 7...	J. H. Smith .....	do .....	2,400	38 40
Aug. 2...	do .....	do .....	1,200	28 80
do 15...	Capt. Street .....	do .....	4,800	76 80
do 31...	Manitoba Rifle Association .....		4,800	76 80
Sept. 29...	Capt. Street .....	Rifle Association .....	600	14 40
Dec. 21...	J. H. Smith .....	do .....	2,400	38 40
Total .....			19,200	\$326 40

*Military District No. 11, Victoria.*

				\$ cts.
1881.				
Dec. 16...	Victoria Rifle Association .....		4,200	67 20
do 28...	Provincial do .....		4,200	67 20
1882.				
Feb. 17...	Victoria do .....		420	6 72
March 9...	E. Fletcher .....	Provincial R. A. ....	2,520	40 32
May 12...	O. Trew .....	New Westminster R. A. ....	2,100	33 60
July 17...	E. Fletcher .....	Provincial R. A. ....	2,520	40 32
Total .....			15,960	\$255 36

*Military District No 12, Charlottetown.*

				\$ cts.
May 12...	Queen's Co. R.A. ....		1,000	16 00
June 2...	Ewen Macdougall .....	Queen's Co. R. A. ....	500	8 00
do 7...	Capt. Moore .....	Brigade G. A. ....	500	8 00
do 19...	Major Dogherty .....	Engineer Co. ....	2,000	32 00
do 13...	E. Macdougall .....	Queen's Co. R. A. ....	2,000	32 00
do 17...	Capt. Moore .....	Brigade G. A. ....	500	8 00
Aug. 7...	E. Macdougall .....	Queen's Co. R. A. ....	2,000	32 00
do 11...	Major Dogherty .....	Engineer Co. ....	5,800	92 80
do 8...	Capt. Owen .....	Brigade G. A. ....	3,000	48 00
Sept. 19...	E. Macdougall .....	Queen's Co R. A. ....	1,000	16 00
do 25...	John Longworth .....	do .....	2,000	32 00
do 30...	Geo. Passmore .....	Brigade G. A. ....	500	8 00
Oct. 5...	Geo. Alexander .....	82nd Battalion .....	500	8 00
do 6...	Major Dogherty .....	Engineer Co. ....	1,000	16 00
do 25...	Geo. Alexander .....	Brigade G. A. ....	500	8 00
Nov. 13...	do .....	do .....	500	8 00
do 27...	do .....	do .....	500	8 00
Total .....			23,800	\$380 80

(B.)—S. A. Ammunition issued on repayment during the Year up to 30th December, 1882.

RECAPITULATION.

Military Districts.		Rounds.	Amount.
			\$ cts.
Military District	No. 1, Loudon .....	44,000	704 01
do	No. 2, Toronto .....	98,760	1,586 00
do	No. 3, Kingston .....	30,530	488 50
do	No. 4, Ottawa .....	78,857	1,443 64
do	No. 5, and 6, Montreal.....	113,920	1,848 56
do	No. 7, Quebec .....	48,700	784 90
do	No. 8, St. John, N.B. ....	57,020	913 98
do	No. 9, Halifax.....	84,400	1,357 08
do	No. 10, Winnipeg .....	19,200	326 40
do	No. 11, Victoria, B.C.....	15,960	255 36
do	No. 12, Charlottetown, P.E.I.....	23,800	380 80
Total .....		615,147	\$10,089 23

	Rounds.
Snider ball .....	607,487
Martini-Henry ball .....	7,360
Spencer Rifle ball.....	300
	<hr/>
	615,147

J. MACPHERSON, Lieut.-Colonel,  
Director of Stores and Keeper of Militia Properties.

STORE BRANCH,  
30th December, 1882.



## [C.]

## RETURN of Gunpowder and Friction Tubes issued for Practice and Salutes during the Year 1882.

Military Districts.	Stations.	Corps.	Gunpowder.	Friction Tubes.
			Lbs.	No.
No. 1.....	London .....			
No. 2.....	Toronto .....	Field and Garrison Batteries of Artillery..	2,271	1,350
No. 3.....	Kingston .....	do do do and		
No. 4.....	Ottawa .....	Royal Military College.....	4,727	1,890
Nos. 5 & 6.	Montreal .....	Field Battery of Artillery and Salutes.....	1,091	175
		Field and Garrison Batteries of Artillery and Salutes.....	3,511	1,135
No. 7.....	Quebec .....	do do do ...	6,463	2,079
No. 8.....	St. John, N.B. ....	do do do ...	2,396	925
No. 9.....	Halifax, N.S. ....	do do do ...	5,106	905
No. 10.....	Winnipeg.....	Field Battery and Salutes.....	130	225
No. 11.....	Victoria, B.C. ....	Garrison Batteries and Salutes .....	502	50
No. 12.....	Charlottetown, P.E.I....	do do .....	1,801	302
		Total .....	27,998	9,036

J. MACPHERSON, Lieut.-Colonel,

Director of Stores and Keeper of Militia Properties.

The Honorable

The Minister of Militia and Defence,  
Ottawa.

30th December, 1882.

## APPENDIX No. 12.

LIST of Drill Sheds and Armouries in the Dominion, by Provinces; from Returns received in 1881.

LOCALITY.	Description, and Size ( <i>in Feet</i> ).		Land, Size of Site, Ownership and Location.	Date of Erection.
	Drill Shed.	Armoury.		
PROVINCE OF ONTARIO.				
	Feet.	Feet.		
Acton West, Co. Halton.....	46 × 80	16 × 12	Government property, $\frac{1}{2}$ acre, corner of Bower and Elgin Streets.....	1868
Annan, Co. Grey.....	60 × 40	14 × 15	Government property, Lot No. 34, Con. C., Township of Sydenham.....	1875
Ashburnham, Co. Peterboro'.	46 × 80	14 × 30	Government property, West of Lake and South of Elizabeth Streets.....	1868
Aylmer, Co. Elgin.....	88 × 42	10 × 16	Government property, $\frac{1}{2}$ acre, Lot No. 13, 7th Con., Talbot Road, Township of Malahide.....	1877
Barrie, Co. Simcoe.....	145 × 85	8 × 15	Government property, 1 acre, S. W. corner of Town Park and East side of Small Street.....	1868
Bayfield, Co. Huron.....	85 × 45	18 × 14	Government property, $\frac{1}{2}$ acre, Lot No. 260, Market Square, East corner.....	1868
Beaverton, Co. Ontario.....	80 × 48	19 × 11	$\frac{1}{2}$ acre, Osborne Street, pt. N. $\frac{1}{2}$ Con. 5, Thorah.....	1872
Berlin, Co. Waterloo.....	60 × 150	.....	200 feet square, East side of Queen Street, owned by Town of Berlin.....	1868
Binbrook, Co. Wentworth....	80 × 40	20 × 14	Government property, 1st Lot 4th Block, Township of Binbrook.....	1868
Blanchard, Co. Perth.....	49 × 81	.....	East Mitchell Road, facing Con. Lot No. 16.....	1869
Bond Head, Co. Simcoe.....	80 × 46	16 × 20	Government property, $\frac{1}{2}$ acre.....	1868
Bothwell, Co. Kent.....	80 × 47	.....	do Lot corner of Main and Walnut Streets.....	1868
Bowmanville, Co. Durham....	150 × 80	70 × 15	Government property, $\frac{1}{2}$ acre, Centre St. Leased to the Crown permanently, by the West Gwillimbury Agricultural Society.	1868
Bradford, Co. Simcoe.....	84 × 42	12 × 10	Government property, East Ward.....	1868
Brantford, Co. Brant.....	150 × 90	18 × 9	do Durham Street, Pt Lot 24, Con 6, Whitby, Village of Brooklin.....	1868
Brooklin, Co. Ontario.....	50 × 80	.....	Government property, Lot 3, 7th Con., Burford.....	1868
Burford, Co. Brant.....	44 × 80	16 × 44	Government property, Rideau Canal....	1869
Burritts Rapids, Co. Grenville	80 × 48	24 × 15	do on Agricultural Grounds, between Caithness Street and River.....	1868
Caledonia, Co. Haldimand....	100 × 50	12 × 14	Government property, Munro St. $\frac{1}{2}$ acre.	1868
Cannington, Co. Ontario.....	78 × 48	15 × 15	do	1867
Carleton Place, Co. Lanark...	80 × 48	20 × 12	Government property.....	1877
Oayuga, Co. Haldimand.....	48 × 80	10 × 16	do Lot 125 × 600 ft., Colborne Street.....	1868
Chatham, Co. Kent.....	112 × 60	.....	Government property, 90 × 50 ft., on Queen Street.....	1869
Cheapside, Co. Haldimand ...	80 × 45	12 × 15		

LIST of Drill Sheds and Armouries in the Dominion, &c.—Continued.

LOCALITY.	Description, and Size (in Feet).		Land, Size of Site, Ownership and Location.	Date of Erection.
	Drill Sheds.	Armoury.		
<i>ONTARIO—Continued.</i>				
	Feet.	Feet.		
Clarksburg, Co. Grey .....	48 × 80	12 × 16	Government property, Pt. of Lot 30, 10th Con., Township of Collingwood.	1869
Clinton, Co. Huron .....	46 × 80	10 × 20	Government property, $\frac{1}{2}$ acre, Orange Street .....	1871
Cold Springs, Co. Northumberland .....	80 × 48	19 × 12	Government property, 28 square perches, Lot 16, 5th Con., Tp. of Hamilton ....	1870
Collingwood, Co. Simcoe.....	61 × 112	.....	$\frac{1}{8}$ of an acre, Lot No. 36, West St. Maria Street.....	1867
Columbus, Co. Ontario.....	50 × 80	12 × 20	Government property, $\frac{1}{10}$ of an acre, East side of Simcoe Street.....	1868
Cookstown, Co. Simcoe .....	85 × 65	16 × 22	Government property, Simpson Street, $\frac{1}{2}$ acre .....	1868
Cornwall, Co. Stormont.....	54 × 80	.....	Town of Cornwall, S.W. corner, Lot 16, South side Fourth St. ....	1868
Cross Hill, Co. Waterloo.....	46 × 80	3 × 48	Government property, all the land occupied by shed.....	1868
Dresden, Co. Kent.....	80 × 47	10 × 16	Lot No. 1, West side of Cross Street.....	.....
Dundas, Co. Wentworth.....	60 × 100	14 $\frac{1}{2}$ × 8 $\frac{1}{2}$	Government property, E. part Lot 24...	1868
Dungannon, Co. Huron.....	40 × 80	.....	do Joseph Street....	1869
Durham, Co. Grey .....	80 × 40	.....	do Part of 2nd Division, Lot 24, $\frac{1}{2}$ acre.....	1867
Erin, Co. Wellington .....	80 × 48	.....	West side of Main Street, part of E. $\frac{1}{2}$ Lot 15, 9th Concession, Township of Erin.....	1868
Exeter, Co. Huron.....	50 × 80	15 × 20	Government property, part of Lot No. 18, 1st Concession of Osborne.....	1868
Fenwick, Co. Welland.....	40 × 80	.....	Government property, Lot 16, Concession 9.....	.....
Flesherton, Co. Grey.....	Regul'n size	.....	Government property, Lot. No. 150, Durham Street, Flesherton Village....	1869
Forest, Co. Lambton.....	45 × 84	10 × 9	Government property, Lot 66 × 210....	1873
Fort Erie, Co. Welland.....	84 × 44	.....	do corner Princess and Victoria Streets.....	1868
Gananoque, Co. Leeds.....	120 × 60	24 × 16	Government Lot 3, part of Lot 4, Block O.....	1866
Georgetown, Co. Halton.....	48 × 80	10 × 16	Government property, 50ft. front × 84ft. deep, part Lot 43, East side of Market Street.....	1866
Gorrie, Co. Huron .....	48 × 80	.....	Government property, corner John and Wellington Streets, $\frac{2}{3}$ of an acre.....	1869
Greenwood, Co. Ontario.....	50 × 80	11 × 24	Government property between Lots 10 and 11, 6th Concession, Township of Pickering.....	1868
Guelph, Co. Wellington.....	70 × 35	.....	Government property.....	1876
Hagersville, Co. Haldimand.	81ft. 9in. × 51ft.....	16ft. 6in. × 12ft. 2in...	Part of building lot, Village of Hagersville .....	.....
Hamilton Co. Wentworth.....	212ft. 10in. × 79ft. 11in..	18ft. 6in. × 13ft.....	Government property, East side James Street.....	1877
Harrietsville, Co. Middlesex...	60 × 24	.....	do Lot 12, Con. 5 .....	1866
Hastings, Tp. Hastings.....	50 × 80	16ft. square.	do $\frac{1}{2}$ acre, Elizabeth Street	1869
Hespeler, Co. Waterloo.....	48 × 80	12ft. 4in. × 16ft. 4in...	do George Street .....	1869
Hollen, Co. Wellington.....	48 × 80	.....	do Village of Hollen, 6th Con., Lot 17, Maryboro', $\frac{1}{2}$ acre.....	1868

## LIST of Drill Sheds and Armouries in the Dominion, &amp;c.—Continued.

LOCALITY.	Description, and Size ( <i>in Feet</i> ).		Land, Size of Site, Ownership and Location.	Date of Erection.
	Drill Shed.	Armoury.		
ONTARIO—Continued.				
Hullsville, Co. Haldimand....	100 × 50	7 × 44	Government property, $\frac{1}{4}$ acre, No. 41 Bertha St. ....	1868
Janetville, Co. Durham .....	.....	.....	do Lot No. 6, 13th Con., Tp. of Manvers .....	1869
Kendal, Co. Durham .....	100 × 50	16 × 12	do Lot 9, 7th Con., Clarke or Church St. ....	1874
Kinburn, Co. Carleton .....	80 × 40	18 × 12	do part of Lot 12, Tp. Fitz- roy .....	.....
Kingston, Co. Frontenac .....	200 × 80	9 Armouries, ea. 14ft. 8in. × 6ft. 6in. ...	Queen's College, 5 acres .....	1864
Lansdowne, Co. Leeds .....	80 × 48	16 × 20	Government property, 132 feet square, corner of Centre and Concession Sts..	1868
Lindsay, Co. Victoria .....	.....	.....	Town of Lindsay, corner of Kent and Victoria Avenue .....	1868
Lloydtown, Co. York.....	50 × 80	.....	Government property, 50 × 80, Centre and Church Sts .....	.....
London, Co. Middlesex .....	113ft. 6in. × 77ft. ....	.....	do Central Avenue and Wellington St. ....	1864
do do .....	143 × 43	.....	do central part of military grounds .....	.....
Lucan, Co. Middlesex.....	40 × 60	14 × 20	do Lot No. 154.....	1871
Manvers, Co. Durham .....	60 × 80	12 × 20	do 60 × 97, west of road, Lots 11 and 12, Tp. Manvers .....	.....
Meaford, Co. Grey .....	46 × 80	12 × 29	Leased to Government for 99 years, 192 × 80 ft. ....	1869
Merrickville, Co. Grenville....	80 × 48	20 × 15	Government property, on Rideau Canal.	1868
Metcalfe, Co. Russell.....	80 × 48	18 × 13	Byron Street.....	1871
Milford, Co. Prince Edward...	50 × 70	48 × 8	Government property, Spring Street....	1871
Milton, Co. Halton .....	.....	25 × 72	County property, North side Queen St., 25 × 75 ft. ....	.....
Nasagaweya, Co. Halton .....	80 × 50	.....	Government property, 2nd Con., Nasa- gaweya .....	1868
Nelson, Co. Halton .....	80 × 50	.....	Government property, 2nd Con., Dun- das Street, Tp. Nelson. Co. Halton ...	1868
Niagara Falls, Co. Welland... ..	.....	12 × 14	Corporation Niagara Falls, Queen St., Market Square .....	.....
Norval, Co. Halton.....	80 × 46	.....	Government property .....	1870
Norwood, Co. Peterboro' .....	46 × 80	18 × 20	do 66 × 100 ft., Queen Street.....	1869
Odessa, Co. Lennox .....	122 × 48	20 × 8	Government property, about $\frac{1}{4}$ acre, Corner Durham St and Macadamized Road .....	1869
Omeme, Co. Victoria.....	90 × 50	12 × 22	Government property, 160 ft., Lot 6, George Street .....	1868
Orillia, Co. Simcoe .....	.....	.....	Government property, Andrew Street..	1868
Oshawa, Co. Ontario.....	100 × 65	12 × 30	do 150 × 96 ft., Cor- ner Albert and King Streets, Oshawa.	1868
Ottawa, Co. Carleton .....	178 × 75	.....	Government property, Cartier Square...	1879
Owen Sound, Co. Grey .....	100 × 50	.....	do 2 acres, South- west cor. of Public Pleasure Ground..	1880
Parkhill, Co. Middlesex.....	80 × 44	16 × 16	Government property, Lot 3 × 4 ft., $\frac{1}{2}$ acre .....	1870
Perth, Co. Lanark .....	150 × 80	10 × 14	Government property, 112 × 168 ft., Lot 8, South side Heriot Street .....	1868

LIST of Drill Sheds and Armouries in the Dominion, &c.—Continued.

LOCALITY.	Description, and Size ( <i>in Feet.</i> )		Land, Size of Site, Ownership and Location.	When Erected.
	Drill Shed.	Armoury.		
<b>ONTARIO—Continued.</b>				
	Feet.	Feet.		
Peterboro', Co. Peterboro'.....	80 × 144	.....	Government property, north of Murray and West of George Streets.....	1867
Porter's Hill, Co. Huron.....	80 × 46	20 × 14	Lot 26, 7th Con., Township of Goderich.....	1871
Port Hope, Co. Durham.....	90 × 160	18 × 90	Leased from estate J. B. Hall, Elias Street.....	1868
St. Thomas, Co. Elgin.....	60 × 112	14 × 60	Government property, Crocker and Elgin Streets.....	1868
Sharon, Co. York.....	82 × 46	.....	Government property, 50 × 330, pt. of Lot 9, Con. 3, Township of East Gwillimbury.....	1868
Simcoe, Co. Norfolk.....	50 × 100	.....	Government property.....	1868
Southampton, Co. Bruce.....	40 × 60	12 × 20	Corporation of Southampton, $\frac{1}{4}$ acre, corner of High and Albert Streets.....	.....
Springville, Co. Durham.....	80 × 45	10 × 18	North-east corner, Lot 23, 10th Concession.....	1868
Stewartown, Co. Halton.....	80 × 50	15 × 10	$\frac{1}{2}$ acre, Lot 15, 8th Con., Township of Esqueving.....	1868
Stoney Creek, Co. Wentworth	48 × 80	12 × 14	Government property, Lot No. 24, Con. 4, Township of Saltfleet.....	1873
Stratford, Co. Perth.....	80 × 150	.....	Government property, $\frac{1}{2}$ acre, Lots Nos. 224 and 547, Canada Company's Survey, Albert, Front and Brunswick Streets.....	1869
Strathroy, Co. Middlesex.....	20 × 50	.....	Leased to Government, north side of Market Square.....	1868
Streetsville, Co. Peel.....	80 × 50	.....	Government property.....	1868
Sutton, Co. York.....	47 × 82	.....	Government property, about $\frac{1}{4}$ acre, Block 8, Con. 7, Sutton Village.....	1869
Teeswater, Co. Bruce.....	45 × 80	.....	Government property, $\frac{1}{2}$ acre, Mary Street.....	1874
Thorold, Co. Welland.....	48 × 30	.....	Leased to Government, Albert Street... Pt. Lot No. 10, M. Road, South.....	1866
Tilbury East, Co. Kent.....	46 × 80	8 × 12	.....	1870
Toronto, Co. York.....	160 × 100	.....	Government property, between East and West Market Street.....	1877
Trenton, Co. Hastings.....	84 × 42	.....	Government property, same size as shed, Market Square.....	1869
Uxbridge, Co. Ontario.....	48 × 96	12 × 16	Government property, S.E. $\frac{1}{4}$ of Lot 28, 6th Concession, Tp. of Uxbridge.....	.....
Vernon, Co. Russell.....	80 × 48	12 × 12	On 6th Concession Road, Township of Osgoode.....	1869
Vienna, Co. Elgin.....	80 × 40	.....	Government property, Lot 16, corner of Elm and Ann Streets.....	1868
Walkerton, Co. Bruce.....	144 × 80	.....	Government property, Park Lot (N. $\frac{1}{2}$ ) No. 1, East of Victoria Street.....	1870
Wallacetown, Co. Elgin.....	50 × 80	.....	On Agricultural grounds, $\frac{1}{4}$ acre, South of Argyle Street.....	1870
Wardsville, Co. Middlesex.....	48 × 80	.....	Lot 9, South side Main Street.....	1868
Warwick, Co. Lambton.....	48 × 80	4 × 40	Government property, 45 × 85 feet, Lot 13, South Egremont Street.....	1868
Waterdown, Co. Wentworth.	48 × 80	16 × 17	Corporation of the Township of East Flamboro'.....	1868
Watford, Co. Lambton.....	80 × 47	.....	Government property, 80 × 80, on St. Clair Street, Village of Watford.....	1868
Whitby, Co. Ontario.....	145 × 82	72ft. 6in. × 16	Government property, corner of Byron and Front Streets.....	1868
Whittington, Co. Dufferin.....	46 × 80	10 × 14	Government property, on corner of Lot 10, Concession 1, Amaranth.....	1868

LIST of Drill Sheds and Armouries in the Dominion, &c.—*Concluded.*

LOCALITY.	Description, and Size ( <i>in Feet</i> ).		Land, Size of Site, Ownership and Location.	Date of Erection.
	Drill Shed.	Armoury.		
<b>ONTARIO—Continued.</b>				
Widder, Co. Lambton.....	83 × 49	50ft. long, 8ft. high, 4ft. 4in. wide..	Government property, 12 × 63, Lot 19, Louise Street.....	1868
York, Co. Haldimand .....	100 × 60	.....	Government property, $\frac{3}{4}$ acre, corner of King and Albion Streets.....	1868
<b>PROVINCE OF QUEBEC.</b>				
Carillon, Co. Argenteuil .....	60 × 30	.....	Government property, 100 × 40, Centre Street .....	.....
Cushing do .....	100 × 40	.....	Mr. Cushing, Carillon Road.....	.....
Marbleton, Co. Wolfe .....	.....	.....	Government property, Lot 196.....	.....
Montreal, City of.....	.....	.....	In ruins.....	.....
Robinson, Co. Compton .....	132 × 60	.....	Government property, 1 acre, Lot 20, Victoria Road.....	.....
St. Andrews, Co. Argenteuil..	120 × 40	.....	Corporation, 1 acre, Lot 60, 4th con- cession .....	.....
Sherbrooke .....	130 × 60	.....	Corporation, on Montreal St., Cadastre No. 674 .....	.....
Quebec .....	222 × 84	145 × 20	Government property, d'Auteuil Street.....	.....
<b>PROVINCE OF NEW BRUNSWICK.</b>				
Fredericton, Co. York.....	.....	20 × 30	Government property, in "Stone Bar- racks," Queen Street.....	.....
Portland, Co. St. John .....	.....	29 × 24	Government property, summit of Fort Howe line .....	.....
Saint John.....	200 × 80	14 × 18	Government property, Barrack Square.....	1879
<b>PROVINCE OF NOVA SCOTIA.</b>				
Amherst, Co. Cumberland....	80 × 45	.....	Government property, 100 × 60, Prince Arthur Street .....	1872
Billtown, Co. Kings .....	90 × 45	.....	Government property, $\frac{1}{4}$ acre .....	.....
Halifax.....	194 × 58	5 armouries, 26 × 24	Government property, Spring Garden Road .....	.....
Lunenburg .....	90 × 45	.....	Government property .....	.....
Maccan and River Hebert, Co. Cumberland.....	80 × 40	.....	Government property, 80 × 40 .....	.....
Windsor, Co. Hants.....	120 × 50	.....	Imperial Government property, 250 × 100, road leading to Fort Edward.....	.....
<b>PROV. OF BRITISH COLUMBIA.</b>				
New Westminster .....	66 × 40	.....	Government property, 1 chain × $1\frac{1}{2}$ chain, Lot X, Block XIII.....	.....
Victoria .....	110 × 35	110 × 15	Government property, S.W. corner of Provincial Government grounds and Menzies Street .....	.....
<b>PROV. OF P. EDWARD ISLAND.</b>				
Charlottetown, Co. Queens...	60 × 180	20 × 75	Government property, 60 × 180, Kent and West Streets .....	.....
Georgetown, Co. Kings .....	80 × 40	.....	Government property, Kent Square .....	.....

HEADQUARTERS,

OTTAWA, 30th December, 1882.

---

CANADA.

---

ANNUAL REPORT

OF THE

MINISTER OF PUBLIC WORKS

FOR THE

FISCAL YEAR 1881-82

ON THE WORKS UNDER HIS CONTROL.

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SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF THE ACT THIRTY-FIRST  
VICTORIA, CHAPTER TWELVE, SECTION NINETEEN, AS AMENDED BY  
THE ACT FORTY-SECOND VICTORIA, CHAPTER SEVEN.

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*PRINTED BY ORDER OF PARLIAMENT.*

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OTTAWA:

PRINTED BY MACLEAN, ROGER & CO., WELLINGTON STREET

1883.





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 TABLE OF CONTENTS.
 

---

	PAGE
INTRODUCTION .....	xiii
PUBLIC WORKS OF CANADA .....	xiii
PUBLIC BUILDINGS:—	
HALIFAX, N. S.—Dominion Building.....	xiii
PICTOU—Marine Hospital.....	xiv
CHARLOTTETOWN, P.E.I.—Dominion Building.....	xiv
DORCHESTER, N.B.—General Penitentiary for the Maritime Provinces..	xiv
ST. JOHN—Custom House .....	xiv
“ New Marine Hospital. ....	xiv
SUSSEX—Post Office, Custom House, &c .....	xv
WOODSTOCK—Post Office, Custom House, &c .....	xv
QUEBEC, P.Q.—Citadel .....	xv
“ “ Fortifications .....	xv
“ “ Wall under Dufferin Terrace.....	xv
“ “ Kent and St. Louis Gates.....	xv
“ “ Cartridge Factory.....	xvi
“ “ Laboratory, &c.....	xvi
“ “ Champlain Street Rock.....	xvi
“ “ Custom House.....	xvi
“ “ Post Office .....	xvi
“ “ Marine Hospital.....	xvi
“ “ Lévis Forts.....	xvi
MONTREAL—Inland Revenue Office.....	xvi
“ Barracks, St. Helen's Island.....	xvi
THREE RIVERS—Old Barracks.....	xvii
ST. VINCENT DE PAUL—Penitentiary.....	xvii
HULL—Post Office and Inland Revenue Office.....	xvii
GROSSE ISLE—Quarantine Station. ....	xvi <sup>i</sup>
ST. JOHN'S—Post Office, Custom House, &c.....	xvii
SHERBROOKE—Post Office, Custom House, &c.....	xvii
CHICOUTIMI—Marine Hospital.....	xviii
OTTAWA, ONT.—Parliament Building.....	xviii
“ “ Departmental Building, Eastern Block.....	xviii
“ “ Departmental Building, Western Block.....	xviii
“ “ Parliament Grounds .....	xviii
“ “ Monument to Sir George E. Cartier, Bart .....	xviii
“ “ New Supreme Court.....	xviii

	PAGE
<b>PUBLIC BUILDINGS—<i>Concluded.</i></b>	
OTTAWA, ONT.—Geological Museum.....	xviii
“ “ Drill Shed.....	xix
“ “ Rideau Hall .....	xix
CORNWALL.—Post Office, Custom House, &c.....	xix
BROCKVILLE.—Post Office, Custom House, &c.....	xix
KINGSTON.—Post Office.....	xix
“ Penitentiary .....	xix
“ Military College.....	xix
BELLEVILLE.—Post Office, Custom House and Inland Revenue Office...	xx
ST. CATHERINE'S, do do do do	xx
HAMILTON, do do do do	xx
STRATFORD, do do do do	xx
CHATHAM, do do do do	xx
WINDSOR, do do do do	xx
WINNIPEG, MAN.—Parliament Building.....	xxi
“ “ Lieutenant-Governor's Residence .....	xxi
“ “ Post Office.....	xxi
“ “ Immigrant Shed.....	xxi
“ “ Stony Mountain Penitentiary.....	xxi
BRANDON—Immigrant Station.....	xxi
EMERSON—Immigration Agent's Office.....	xxi
VICTORIA, B.C.—Post Office.....	xxii
NEW WESTMINSTER—Penitentiary .....	xxii
“ Post Office, Custom House, &c.....	xxii
*NANAIMO—Post Office, Custom House, &c. ....	xxii

**HARBORS AND RIVERS :—**

**PRINCE EDWARD ISLAND :**

Campbell's Cove.....	xxii
Colville Bay.....	xxii
South River, Murray Harbor .....	xxiii
Pinnette River.....	xxiii
Hillsborough River.....	xxiii
Nine Mile Creek.....	xxiii
Crapaud .....	xxiii
Grand Rustico.....	xxiii
New London.....	xxiii
Tignish.....	xxiv
Miminigash .....	xxiv

## HARBORS AND RIVERS—Continued.

PAGE

## NOVA SCOTIA :

Main-à-Dieu .....	xxiv
Cow Bay.....	xxiv
Port Caledonia .....	xxiv
Little Glace Bay.....	xxiv
North Sydney.....	xxiv
South Ingonish.....	xxiv
Indian Islands Beach. ....	xxv
Benacadie .....	xxv
Mabou .....	xxv
Port Hood.....	xxv
Ragged Pond.....	xxv
Petit de Grat.....	xxv
Burying Island .....	xxv
New Glasgow.....	xxvi
River John.....	xxvi
Tête-à-ma-gauche.....	xxvi
Parrsboro' .....	xxvi
Hampton.....	xxvi
Digby .....	xxvi
Trout Cove.....	xxvi
Metoghan River.....	xxvi
Cape St. Mary.....	xxvii
Yarmouth .....	xxvii
Brooklyn.....	xxvii
Vogler's Cove. ....	xxvii
Little Harbor.....	xxvii
Porter's Lake.....	xxvii

## NEW BRUNSWICK :

Clifton.....	xxvii
Shippegan .....	xxvii
Horse Shoe Shoal.....	xxviii
Richibuctou.....	xxviii
Buctouche.....	xxviii
Cocagne .....	xxviii
Pointe-du-Chêne .....	xxviii
Quaco.....	xxviii
St. John.....	xxviii
Fort Dufferin.....	xxviii
Harbor of St. Andrew's .....	xxix
River St. John.....	xxix
River Tobique.....	xxix
River Madawaska .....	xxix

## PROVINCE OF QUEBEC :

Etang du Nord.....	xxix
Percé .....	xxix
New Carlisle.....	xxix
Matane.....	xxx
Trois Pistoles.....	xxx
Tadoussac.....	xxx
Anse du Portage.....	xxx
Anse St. Jean.....	xxx

HARBORS AND RIVERS—*Continued.*

PAGE

PROVINCE OF QUEBEC—*Concluded.*

St. Alphonse de Bagotville.....	xxx
River Saguenay.....	xxx
Grande Décharge.....	xxx
Rivière-du-Loup ( <i>en bas</i> ).....	xxx
Cap à L'Aigle.....	xxx
Murray Bay.....	xxx
River Ouelle.....	xxx
Les Eboulements.....	xxx
Ile aux Coudres.....	xxx
Bay Saint Paul.....	xxx
Crane Island.....	xxx
Grosse Isle.....	xxx
Sainte Famille.....	xxx
Les Beureuils.....	xxx
River Nicolet.....	xxx
River Yamaska.....	xxx
River Richelieu.....	xxx
Berthier ( <i>en haut</i> ).....	xxx
River l'Assomption.....	xxx
Channel between Long Point and Boucherville.....	xxx
Isle aux Noix.....	xxx
Laprairie.....	xxx
Beuharnois.....	xxx
Bacot Hayes Shoal—River Saint Lawrence.....	xxx
The Cedars.....	xxx
St. Placide.....	xxx
Rivière à la Graisse ( <i>Rigaud</i> ).....	xxx
River du Nord.....	xxx
River du Lièvre.....	xxx
River Gatineau.....	xxx

## PROVINCE OF ONTARIO :

Union Suspension Bridge.....	xxx
Reef below Suspension Bridge—Ottawa River.....	xxx
Portsmouth.....	xxx
Salmon River.....	xxx
Belleville.....	xxx
Trenton.....	xxx
Picton.....	xxx
Consecon.....	xxx
Cobourg.....	xxx
Port Hope.....	xxx
Toronto.....	xxx
Port Stanley.....	xxx
Goderich.....	xxx
Port Albert.....	xxx
Kincairdine.....	xxx
Port Elgin.....	xxx
Southampton.....	xxx
Tobermory.....	xxx
Bruce Mines.....	xxx
Little Current.....	xxx
Owen Sound.....	xxx

	PAGE
<b>HARBORS AND RIVERS—</b> <i>Concluded.</i>	
<b>PROVINCE OF ONTARIO—</b> <i>Concluded.</i>	
Thornbury .....	xxxvii
Collingwood .....	xxxvii
<b>PROVINCE OF MANITOBA :</b>	
Lake Manitoba .....	xxxvii
<b>PROVINCE OF BRITISH COLUMBIA</b> .....	xxxvii
<b>SURVEYS</b> .....	xxxviii
<b>DREDGING</b> .....	xxxixiii
<b>SLIDES AND BOOMS</b> .....	xxxix
River Saguenay .....	xxxix
" St. Maurice. ....	xl
Ottawa District .....	xl
River Ottawa .....	xlii
" Gatineau .....	xliii
" Madawaska .....	xliii
" Coulonge .....	xliv
" Black .....	xliv
" Petewawa .....	xlv
" Du Moine .....	xlvi
<b>TRENT RIVER NAVIGATION</b> .....	xlvi
<b>TELEGRAPH AND SIGNAL SERVICE:—</b>	
British Columbia .....	xlix
Gulf of St. Lawrence .....	xlix
Bay of Fundy .....	l
The Atlantic Coast .....	l
North Shore, River St. Lawrence,—Newfoundland .....	l
Signal Service .....	l
Manitoba and the North-West Territories .....	l
<b>GRAVING DOCK AT ST. JOSEPH DE LÉVIS</b> .....	l
<b>THE PRINCESS LOUISE WHARF AND DOCKS, RIVER ST. CHARLES, HARBOR OF QUEBEC</b> .....	l
<b>DEEPENING THE CHANNEL BETWEEN MONTREAL AND QUEBEC</b> .....	l
<b>PURCHASES AND SALES</b> .....	li
<b>ARBITRATIONS</b> .....	li
<b>OPENING AND CLOSING OF NAVIGATION</b> .....	li
<b>DEPARTMENTAL STAFF</b> .....	li



CANADA.

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REPORT

OF THE

MINISTER OF PUBLIC WORKS.

FOR THE

FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1882.

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*To His Excellency the Right Honorable Sir John Douglas Sutherland Campbell, Marquis of Lorne, one of Her Majesty's Most Honorable Privy Council, Knight of the Most Ancient and Most Noble Order of the Thistle, and Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor General of Canada and Vice Admiral of the same.*

**MAY IT PLEASE YOUR EXCELLENCY :**

In accordance with the 19th section of the Act 31 Victoria, Chapter 12, I have the honor to submit the Annual Report of the Department of Public Works, for the fiscal year ending 30th June, 1882.

It contains an abstract of the operations and a statement of the general expenditure and cost of maintenance, during the last fiscal year, connected with the various public works placed under the control of the Department.

To it is attached a supplement, containing an historical sketch and general summaries of the operation and expenditure of the Department from 1867 to 1882.

In Appendix No. 1, to the Annual Report, on page 5, will be found, in detail, the expenditure of the last fiscal year. It is followed by the Annual Reports of the Chief Architect, the Chief Engineer and several Agents attached to the Department of Public Works.

The Buildings and Works under the control of the Department are :—

PUBLIC BUILDINGS.

HARBORS AND RIVERS.

DREDGING.

SLIDES AND BOOMS.

TELEGRAPHS.

— — —  
PROVINCE OF NOVA SCOTIA.

— — —  
HALIFAX.

— — —  
DOMINION BUILDING.

The works mentioned in the Report of last year have been executed.  
(Appendix 3, page 19.)

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 PICTOU.
 

---

## MARINE HOSPITAL.

The plans of this building are ready and tenders will shortly be called for. (Appendix 3, page 19.)

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 PRINCE EDWARD ISLAND.
 

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---

 CHARLOTTETOWN.
 

---

## DOMINION BUILDING.

The repairs mentioned in the Report of last year have been made. (Appendix 3, page 19.)

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 PROVINCE OF NEW BRUNSWICK.
 

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---

 DORCHESTER.
 

---

## GENERAL PENITENTIARY FOR THE MARITIME PROVINCES.

Mr. A. E. Killam has executed the contract mentioned in the Report of last year.

The work undertaken by Messrs. T. McManus & Son, is less advanced than it ought to be.

Work is being done for the purpose of completing the water service, and the drainage. (Appendix 3, p. 20.)

---



---

 ST. JOHN.
 

---

## CUSTOM HOUSE.

The works mentioned in the Report of last year have been completed. (Appendix 3, p. 20.)

---

## NEW MARINE HOSPITAL.

The contract in course of execution includes the offices and a ward. According to the plan adopted, two other hospital wards may be constructed when they are required.

The new hospital is situated on land adjacent to the present Marine Hospital which it will replace. (Appendix 3, p. 20.)

---

SUSSEX.

---

POST OFFICE, CUSTOM HOUSE, &c.

A contract has been entered into for the erection of this building, the plans for which have been prepared by the Department. (Appendix 3, p. 20.)

---

WOODSTOCK.

---

POST OFFICE, CUSTOM HOUSE, &c.

The Architect of the Department has been instructed to prepare plans for this building, for the construction of which an appropriation was voted during the last Session of Parliament. (Appendix 3, p. 20.)

---

PROVINCE OF QUEBEC.

---



---

QUEBEC.

---

CITADEL.

General repairs have been made during the course of the year.

A reception hall has been constructed at the eastern end of the portion reserved for His Excellency the Governor General. (Appendix 3, p. 21.)

QUEBEC FORTIFICATIONS.

Three sections of the fortification walls have been repaired with the materials which had fallen from them. (Appendix 3, p. 21.)

WALL UNDER DUFFERIN TERRACE.

The works mentioned in connection with this subject in the Report of last year have been continued. (Appendix 3, p. 21.)

KENT AND ST. LOUIS GATES.

The pointing mentioned in the Report of last year has been done. (Appendix 3, p. 21.)

## CARTRIDGE FACTORY.

The old " Artillery Barracks " are completely converted into a cartridge factory, and are occupied as such. (Appendix 3, p. 21.)

## LABORATORY, &amp;c.

The works mentioned in the Report of 1880-81, have been completed, and a heating apparatus is now being constructed in accordance with plans and designs furnished by the Department of Militia and Defence. (Appendix 3, p. 21.)

## CHAMPLAIN STREET ROCK.

The retaining wall, of which mention is made in the Report of last year, has been completed and it is proposed to prolong it in the direction of Mountain Hill. (Appendix 3, p. 22.)

## CUSTOM HOUSE.

The attic rooms, of which mention is made in last year's Report, have been completed. (Appendix 3, p. 22.)

## POST OFFICE.

The work of grading and the building of the retaining wall, of which mention is made in the Report of last year, have been completed. (Appendix 3, p. 22.)

## MARINE HOSPITAL.

The repairs mentioned in the Report of last year have been completed. (Appendix 3, p. 22.)

## LEVIS FORTS.

A contract has been entered into for the construction of wooden roofs on Forts Nos. 2 and 3, to prevent water from penetrating the casemates. (Appendix 3, p. 22.)

## MONTREAL.

## INLAND REVENUE OFFICE.

The work of constructing the addition to this building, mentioned in the Report of last year, is in course of execution.

Plans for a heating apparatus are being prepared. (Appendix 3, p. 22.)

## ST. HELEN'S ISLAND, MONTREAL.

## BARRACKS, ETC.

A contract will be entered into for the repairs of the barracks, magazine, &c. (Appendix 3, p. 22.)

---

 THREE RIVERS.
 

---

 OLD BARRACKS.
 

---

The works undertaken to convert the old barracks into Government Offices and Customs and Inland Revenue Offices are now being completed. (Appendix 3, p. 22.)

---

 ST. VINCENT DE PAUL.
 

---

 PENITENTIARY.
 

---

The construction of the western wing, containing 132 cells, has been completed. Various repairs have been made to the residences of the Warden and Deputy Warden as well as to the guards' houses. (Appendix 3, p. 23.)

---

 HULL.
 

---

 POST OFFICE AND INLAND REVENUE OFFICE.
 

---

The Department has caused plans to be prepared for the building to be constructed on the lot granted by the Wright Estate and intended to contain the Post Office and the Inland Revenue Office. (Appendix 3, p. 23.)

---

 GROSSE ISLE.
 

---

 QUARANTINE STATION.
 

---

The construction of the hospital mentioned in last year's Report has been completed. (Appendix 3, p. 23.)

---

 ST. JOHN'S.
 

---

 POST OFFICE, CUSTOM HOUSE, &C.
 

---

The heating apparatus has been put in and the offices furnished. (Appendix 3, p. 23.)

---

 SHERBROOKE.
 

---

 POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICE.
 

---

The building in which these offices will be installed is in course of erection. (Appendix 3, p. 23.)

## CHICOUTIMI.

## MARINE HOSPITAL.

This building is in course of erection. (Appendix 3, p. 24.)

## PROVINCE OF ONTARIO.

## OTTAWA.

## PARLIAMENT BUILDING.

The hall temporarily occupied by the Supreme Court has been converted into a reading room for the House of Commons. The old reading room has been altered into a room for the accommodation of newspaper reporters. By lowering the ceiling it has also been possible to construct a room overhead for the Sessional Translators (Appendix 3, p. 24.)

## DEPARTMENTAL BUILDINGS—EASTERN BLOCK.

Various repairs have been made to the interior of this building. (Appendix 3, p. 24.)

## DEPARTMENTAL BUILDINGS—WESTERN BLOCK.

Various repairs have been made to the interior of this building. (Appendix 3, p. 24.)

## PARLIAMENT GROUNDS.

The new green house mentioned in the Report of last year has been erected. (Appendix 3, p. 24.)

## MONUMENT IN MEMORY OF SIR GEORGE E. CARTIER, BART.

A notice will shortly be published inviting artists to submit models for this monument, for the approval of the Dominion Government. (Appendix 3, p. 24.)

## NEW SUPREME COURT.

This building has been completed and furnished in accordance with the arrangements stated in the Report of last year. (Appendix 3, p. 25.)

## GEOLOGICAL MUSEUM.

The glass cases, shelves, &c., have been completed, and a heating apparatus has been constructed. (Appendix 3, p. 25.)



## DRILL SHED.

A contract has been entered into for the construction of cesspools and of double windows. (Appendix 3, p. 25.)

## RIDEAU HALL.

Ordinary repairs have been made in the course of the year (Appendix 3, p. 25.)

General improvements and repairs have been made in the heating apparatus of the buildings above mentioned (Ottawa.) (Appendix 4, pp. 30-31.)

## CORNWALL.

## POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICE.

A lot has been acquired by the Department, on which will be constructed a building, plans of which are being prepared, which will provide accommodation for the Post Office and the Customs and Inland Revenue Offices. (Appendix 3, p. 25.)

## BROCKVILLE.

## POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICE.

The architect of the Department has been instructed to prepare plans of the building in which these offices are to be installed, and for the erection of which an appropriation was included in the Estimates for 1881-82. (Appendix 3, p. 25.)

## KINGSTON.

## POST OFFICE.

The changes pointed out in the Report of last year have been completed. (Appendix 3, p. 25.)

## PENITENTIARY.

The north wing of the southern work-shop has been completed. Work is being done on the apparatus intended to heat the three work-shops and the dining hall. The roof of this wing has been repaired, and a wood shed erected. (Appendix 3, p. 25.)

## MILITARY COLLEGE.

The room mentioned in the Report of last year has been completed; and various repairs have been made to the barracks, &c. (Appendix 3, p. 26.)

BELLEVILLE.

POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICE.

The building for the accommodation of these offices is in course of construction.  
(Appendix 3, p. 26.)

ST. CATHARINES.

POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICE.

The building for the accommodation of these offices is in course of construction.  
(Appendix 3, p. 26.)

HAMILTON.

POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICE.

The architect of the Department has been instructed to prepare plans of a building in which will be contained the Post Office, and the Custom House and Inland Revenue offices. (Appendix 3, p. 26.)

STRATFORD.

POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICE.

The building for the accommodation of these offices is in course of erection.  
(Appendix 3, p. 27.)

CHATHAM.

POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICE.

The Department has purchased the land on which the building is to be erected to contain these offices, and it is hoped that it will be commenced this autumn.  
(Appendix 3, p. 27.)

WINDSOR.

POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICE.

The attics have been arranged and are now inhabited by the caretaker; the approaches to the building have been levelled and the surrounding wall and the side walks have been constructed. (Appendix 3, p. 27.)

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**PROVINCE OF MANITOBA.**


---

**WINNIPEG.**


---

**PARLIAMENT BUILDING.**

The erection of this building is not as far advanced as could be wished; it is, however, hoped that in the course of the season the masonry of the foundations will be built up to the level of the ground floor. (Appendix 3, p. 27.)

**LIEUTENANT-GOVERNOR'S RESIDENCE,**

This building, a description of which is given in the Report of last year, is in course of construction, and will be completed before 1st July, 1883. (Appendix 3, p. 28.)

**POST OFFICE.**

An addition in the rear has been erected, and various improvements have been made in the interior of the office. (Appendix 3, p. 28.)

**IMMIGRANT SHED.**

This building has been constructed in accordance with plans and specifications prepared by the Department. (Appendix 3, p. 28.)

**STONY MOUNTAIN PENITENTIARY.**

The heating apparatus will shortly be completed. The outbuildings mentioned in last year's Report, are partly constructed and partly in course of being so. (Appendix 3, p. 28.)

---

**BRANDON.**


---

**IMMIGRANT STATION.**

This building has been constructed in accordance with plans and specifications prepared by the Department. (Appendix 3, p. 28.)

---

**EMERSON.**


---

**IMMIGRATION AGENT'S OFFICE.**

This building has been completed and is occupied. (Appendix 3, p. 28.)

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---

 PROVINCE OF BRITISH COLUMBIA.
 

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 -----
   
 VICTORIA.
   
 -----

## POST OFFICE.

. The front of this building has been re-built, and general repairs to the interior will be made in the course of the coming fiscal year. (Appendix 3, p. 29.)

 -----
   
 NEW WESTMINSTER.
   
 -----

## PENITENTIARY.

A workshop has been erected near the prison. (Appendix 3, p. 29.)

## POST OFFICE AND CUSTOM HOUSE.

The building which is to contain these offices is in course of construction. (Appendix 3, p. 29.)

 -----
   
 NANAIMO.
   
 -----

## POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICE.

The architect has received instructions to prepare plans for the building in which these offices will be installed, and the erection of which will be begun in the coming fiscal year. (Appendix 3, p. 29.)

 -----
   
 HARBORS AND RIVERS.
   
 -----

 PRINCE EDWARD ISLAND.
   
 -----

## CAMPBELL'S COVE.

On the north-west coast, about nine miles from East Point.

A breakwater 300 feet long, constituting a prolongation of that erected by the Provincial Government in 1872, has been constructed. The old breakwater has been raised to the level of the new part. (Appendix 5, p. 32.)

## COLVILLE BAY.

Some indispensable repairs have been made to the breakwater mentioned in last year's Report. (Appendix 5, p. 32.)

## SOUTH RIVER, MURRAY HARBOR.

Murray Harbor is a large natural bay situated in the south-eastern part of the County of King's, and opening into the Gulf of St. Lawrence.

The dredge "Prince Edward" has been employed during the season in straightening the channel and giving it a depth of eight feet of water at low tide. (Appendix 5, p. 32.)

## PINNETTE RIVER.

This falls into the Strait of Northumberland to the east of Point Prim.

In October and November, 1881, the dredge "Prince Edward" was employed in straightening the channel and deepening the basin near the wharf. (Appendix 5, p. 33.)

## HILLSBOROUGH RIVER.

Opposite Charlottetown.

In May, 1882, the dredge "Prince Edward" was employed in deepening the basin near the wharf at Fort Augustus. (Appendix 5, p. 33.)

## NINE MILE CREEK.

At the entrance of Hillsborough Bay.

The dredge "Prince Edward" has been employed in completing the channel mentioned in the Report of last year. (Appendix 5, p. 33.)

## CRAPAUD.

A small harbor at the mouth of the Brocklesby River.

On the 8th August, 1881, the channel was completed as far as the wharves of the village. (Appendix 5, p. 33.)

## GRAND BUSTICO.

On the north coast, nearly half-way between North and East Points.

In the month of December the Department entered into a contract for the construction of two breakwaters, one 1,200 feet and the other 450 feet in length, which will have the effect of narrowing the entrance of the harbor, and thereby increasing the force of the current. (Appendix 5, p. 33.)

## NEW LONDON.

On the north coast, about nine miles east of Cascumpec.

The part of the breakwater constructed by the Local Government before the Province entered the Confederation has been repaired and prolonged 93 feet. (Appendix 5, p. 33.)

## TIGNISH.

On the north coast, about eight miles from North Point.

A contract has been entered into by the Department for the construction of a breastwork to protect the beach and for the re-construction of the end of the breakwater. (Appendix 5, p. 33.)

## MIMINIGASH.

On the western coast of the Island. The facing of the breastwork has been renewed. (Appendix 5, p. 33.)

## NOVA SCOTIA.

## MAIN-À-DIEU.

A small harbor in the County of Cape Breton. The construction of the breakwater mentioned in the report of 1880-81 has been continued. (Appendix 5, p. 34.)

## COW BAY.

Thirty miles south-east of Sydney, C. B. The repairs to the breakwater injured by a storm in 1880 have been continued. (Appendix 5, p. 34.)

## PORT CALEDONIA.

Nineteen miles south of the harbor of Sydney, C. B.

The dredge "St. Lawrence" was employed in the month of June, 1882, in deepening the harbor, which will now admit large vessels engaged in the coal trade. (Appendix 5, p. 34.)

## LITTLE GLACE BAY.

Fourteen miles south of the harbor of Sydney, C. B.

In the spring of 1881 the dredge "St. Lawrence" was engaged in deepening the entrance to the harbor. (Appendix 5, p. 34.)

## NORTH SYDNEY.

This is the principal port on the east coast of Cape Breton.

The amount voted by Parliament and the sum supplied by the Sydney Harbor Commissioners have been applied to the construction, in part, of a breakwater which will prevent the accumulation of sand in the harbor. (Appendix 5, p. 34.)

## SOUTH INGNISH.

On the eastern coast of Cape Breton, about half way between the harbor of Sydney and Cape North.

The breakwater on the north side of the entrance to this harbor has been repaired. (Appendix 5, p. 34.)

INDIAN ISLANDS BEACH.

These islands are situated in the north part of East Bay, which is a continuance of the Bras d'Or, Cape Breton.

The passage through the beach mentioned in the Report of last year has been completed. (Appendix 5, p. 34.)

BENACADIE.

In the County of Cape Breton.

The necessary works for opening and protecting the entrance to this little harbor have been commenced. (Appendix 5, p. 35.)

MABOU.

On the west coast of Cape Breton, 6 miles north of Port Hood, the chief town of the county.

Work has been done towards opening a passage through the shoal which is situated at the entrance of the harbor. (Appendix 5, page 35.)

PORT HOOD.

On the west coast of Cape Breton.

Provisional repairs have been made to the pier, which will have to be re-built and solidly protected by a stone slope. (Appendix 5, page 35.)

RAGGED POND.

In Chedabucto Bay, north side.

Efforts were made in vain to open a channel to give access to this little harbor. (Appendix 5, page 35.)

PETIT DE GRAT.

In Ile Madame, County of Richmond, C. B.

The channel mentioned in the Report of last year, has been completed. (Appendix 5, page 35.)

BURYING ISLAND, CANSO HARBOR.

Canso Harbor is situated at the eastern extremity of Guysborough, and south of the entrance to the Strait of Canso.

The breakwater, the building of which was mentioned in the Report of last year, has greatly improved the Harbor of of Canso. (Appendix 5, page 35.)

## NEW GLASGOW.

On East River, 8 miles above the Harbor of Pictou.

The improvements mentioned in the Report of last year, have been completed. (Appendix 5, page 35.)

## RIVER JOHN.

It falls into John Bay, 12 miles to the north of the Harbor of Pictou.

The channel work mentioned in last year's Report was continued. (Appendix 5, p. 36.)

## TÊTÉ À MA-GAUCHE.

The river Tête-à-ma-Gauche falls into the bay of that name, on the Northumberland Strait.

The dredge "Cape Breton" was employed in opening a channel through the shoals which obstruct the entrance to the river. (Appendix 5, p. 36.)

## PARRSBORO'.

In the County of Cumberland.

Piles were driven at the end of the pier.

The improvement of the channel of Partridge River was continued. (Appendix 5, p. 36.)

## HAMPTON.

In the County of Annapolis.

A new wharf was built in place of that erected by the Local Government, which was in a ruinous condition. (Appendix 5, p. 36.)

## DIGBY.

At the western extremity of the basin of Annapolis.

The wharf constructed by the Local Government prior to Confederation underwent various repairs. The steamer which does the mail service between Annapolis and St. John, N.B., touches at this wharf. (Appendix 5, p. 36.)

## TROUT COVE.

On the south coast of the Bay of Fundy.

Considerable repairs have been made to the breakwater. (Appendix 5, p. 36.)

## METEGHAN RIVER.

In the County of Digby.

The north and south breakwaters underwent sundry repairs. (Appendix 5, p. 36.)



## CAPE ST. MARY.

On the south shore of the entrance to Bay St. Mary, County of Digby.  
The wharf underwent various repairs. (Appendix 5, p. 37.)

## YARMOUTH.

At the western extremity of the peninsula of Nova Scotia.  
The sea wall constructed on the beach in 1874 was repaired. (Appendix 5, p. 37.)

## BROOKLYN.

At the head of Liverpool Bay, County of Queens.  
The breakwater underwent various repairs. (Appendix 5, p. 37.)

## VOGLER'S COVE.

At the south-western extremity of the County of Lunenburg.  
From the 17th September to the 6th December, 1881, the dredge "Canada" was employed in deepening the channel leading to this harbor. (Appendix 5, p. 37.)

## LITTLE HARBOR.

In the County of Lunenburg, on the coast of the Atlantic.  
The entrance was deepened, and fishing boats can enter at all times. (Appendix 5, p. 37.)

## PORTER'S LAKE.

This is a large sheet of water, 13 miles long, with an average width of one half a mile, separated from the Atlantic by several small islands connected with one another by sand bars.

A passage has been made for fishing boats through one of these sand banks (Appendix 5, p. 37.)

## NEW BRUNSWICK.

## CLIFTON.

Fifteen miles east of Bathurst, on the Bay of Chaleurs.  
The breakwater, damaged during the winter of 1880-81, was repaired. (Appendix 5, p. 38.)

## SHIPPEGAN.

At the north-eastern extremity of New Brunswick.  
The dam which closes the eastern gully was repaired and raised. (Appendix 5 p. 38.)

## HORSE SHOE SHOAL.

At the entrance to the Miramichi, by the Gulf of St. Lawrence.

The dredging work mentioned in last year's Report was continued. (Appendix 5, p. 38.)

## RICHIBUCTOU.

On the west shore of the Gulf of St. Lawrence, County of Kent.

The breast wall protecting the beach was lengthened 220 feet. (Appendix 5, p. 38.)

## BUCTOUCHE.

Twenty-one miles north of the Harbor of Shediac.

The dredge "Canada," was employed in opening a passage through a bank of shells which obstructed the entrance of the harbor. (Appendix 5, p. 38.)

## COCAGNE.

This harbour is situated ten miles north of Shediac, on the Strait of Northumberland.

A landing pier is being built here, on the north side.

During the month of August, 1881, the dredge "Canada" was employed at the entrance of the harbor. (Appendix 5, p. 38.)

## POINT DU CHÊNE.

The extension of the breakwater which protects the railway wharf, is almost finished. (Appendix 5, p. 38.)

## QUACO.

Thirty miles to the east of the City of St. John, in the Bay of Fundy.

In 1873 a breakwater 300 feet in length was built on the east side of the harbor. During the past fiscal year a similar work was commenced on the west side of the harbor, and on the 30th June last it was almost completed. (Appendix 5, p. 39.)

## ST. JOHN.

The Department has entered into a contract for rebuilding the breakwater.

The dredges "Canada" and "New Dominion" were employed in the port (Appendix 5, p. 39.)

## FORT DUFFERIN.

On Negro Point, at the entrance of the port of St. John.

A block of crib work has been built to protect the base of the rock which was being undermined by the water. (Appendix 5, p. 39.)

## HARBOR OF ST. ANDREW'S.

Between Passamaquoddy Bay and River St. Croix.

A contract has been entered into for the construction of a lighthouse on a rock at the entrance to the harbor from the west side; this contract is in course of execution. (Appendix 5, p. 39.)

## RIVER ST. JOHN.

The navigation of this river has been improved by the removal of rocks at various points.

The Oromocto sheer dam has been extended to Thatch Island, and an apron of brush and stones constructed in order to protect the outer part of the dam. (Appendix 5, p. 39.)

## RIVER TOBIQUE.

A tributary of the River St. John.

Rocks have been removed at several points to facilitate the descent of timber (Appendix 5, p. 39.)

## RIVER MADAWASKA.

It takes its rise in Lake Temiscouata and falls into the St. John at Edmondston.

Rocks have been removed at various points in this river, in the Province of New Brunswick and in the Province of Quebec. (Appendix 5, p. 40.)

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 QUEBEC.
 

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## ETANG DU NORD.

At the western extremity of Grindstone Island, one of the Magdalen Islands.

The construction of the breakwater mentioned in last year's Report has been continued; it already affords shelter to fishing boats. (Appendix 5, p. 40.)

## PERCÉ.

Chef lieu of the County of Gaspé.

During the season of 1881, surveys were made and bearings taken in order to determine the position and cost of the works required for the protection during storms of the large fleet of fishing boats frequenting the Gulf of St. Lawrence. (Appendix 5, p. 40 and pp. 75, 76.)

## NEW CARLISLE.

Chef lieu of the County of Bonaventure, north of the Bay of Chaleurs.

A length of 180 feet of breakwater has been built. (Appendix 5, p. 40.)

## MATANE.

On the south shore of the St. Lawrence, in the County of Rimouski, 240 miles below Quebec.

The wharf which had been damaged by the ice in 1881 has been repaired. (Appendix 5, p. 40.)

## TROIS PISTOLES.

On the south side of the St. Lawrence, in the County of Temiscouata, 148 miles below Quebec.

The building of a small wharf has been commenced, and a number of rocks removed from the harbor. (Appendix 5, p. 40.)

## TADOUSAC.

At the mouth of the Saguenay.

The dams which form the ponds of the fish breeding establishment have been rebuilt. (Appendix 5, p. 41.)

## ANSE DU PORTAGE.

Opposite Tadousac at the mouth of the Saguenay.

The construction of a landing has been commenced, in order to facilitate the carrying of the mails between Tadousac and the Cove during winter.

This landing will be finished for the winter of 1882-3. (Appendix 5, p. 41.)

## ANSE ST. JEAN.

On the south side of the Saguenay, 24 miles from the mouth.

Work at the wharf has been continued, and will be carried on again during the winter of 1882-3. (Appendix 5, p. 41.)

## ST. ALPHONSE DE BAGOTVILLE.

At the head of Ha! Ha! Bay, on the south side of the Saguenay, 66 miles from the mouth.

A length of 378 feet of the wharf burnt a few years ago, has been rebuilt. (Appendix 5, p. 41.)

## RIVER SAGUENAY.

The dredging work mentioned in last year's Report has been continued. (Appendix 5, page 42.)

## GRANDE DÉCHARGE.

This is the larger of the two channels by which the waters of Lake St. John flow into the River Saguenay.

The widening of the channel has been undertaken. (Appendix 5, page 42.)

## RIVIÈRE DU LOUP (EN BAS).

On the south side of the St. Lawrence, 108 miles from Quebec.

The work of repairing the wharf has been continued. (Appendix 5, p. 42.)

## CAP À L'AIGLE.

On the north side of the St. Lawrence, 3 miles from Murray Bay.

The wharf was finished at the end of the year 1881. (Appendix 5, p. 42.)

## MURRAY BAY.

Ninety miles from Quebec, on the north shore of the St. Lawrence.

The wharf has undergone the repair needed, and a store house has been built on it. (Appendix 5, p. 43.)

## RIVIÈRE OUELLE.

On the south shore of the St. Lawrence, 75 miles from Quebec.

The grant voted for raising the pier has been expended, but it is yet too low (Appendix 5, p. 43.)

## LES EBOULEMENTS.

Sixty-nine miles from Quebec, on the north shore of the St. Lawrence.

The wharf has undergone various repairs. (Appendix 5, p. 43.)

## ILE AUX COUDRES.

Twelve miles from Bay St. Paul, County of Charlevoix, on the north side of the St. Lawrence.

The wharf mentioned in last year's Report was finished at the close of the year 1881. (Appendix 5, p. 43.)

## BAY ST. PAUL.

Sixty miles from Quebec, on the north shore of the St. Lawrence.

The building of a wharf has been commenced at Pointe Rouge, Cap aux Corbeau. (Appendix 5, p. 43.)

## CRANE ISLAND.

Thirty-six miles from Quebec, opposite Cap St. Ignace.

The construction of a pier 171 feet in length, starting from the lighthouse, has been commenced. (Appendix 5, p. 43.)

## GROSSE ISLE.

Twenty-nine miles from Quebec.

The eastern pier leading to the quarantine establishment has been extended, raised and repaired. (Appendix 5, p. 43.)

## SAINTE FAMILLE.

On the north shore of Orleans Island, 17 miles from Quebec.

Two blocks, constructed in 1879 and 1880, have been connected together, and small steamers can now use the wharf. (Appendix 5, p. 44.)

## LES ECUREUILS.

In the County of Portneuf, on the north shore of the St. Lawrence, 25 miles above Quebec.

A small wharf has been constructed at this place. (Appendix 5, p. 44.)

## RIVER NICOLET.

Falls into the St. Lawrence from the south, at the lower extremity of Lake St. Peter.

In the month of October, 1881, a contract was made for certain improvements in the harbor, but the water was so high last summer, that so far it has been impossible to do more than collect the necessary materials on the spot. (Appendix 5, p. 44.)

## RIVER YAMASKA.

It takes its rise in the County of Brome, and after a course of over 90 miles, falls into the St. Lawrence at the upper extremity of Lake St. Peter.

In the month of August, 1881, a contract was made for the construction of a lift lock and a dam at Ile Cardin.

When these works shall have been finished and the channel dredged, the river will be navigable for vessels of medium tonnage as far as Grosse Roche Rapids.

These works are being carried out. (Appendix 5, p. 44.)

## RICHELIEU RIVER.

It falls into the St. Lawrence at Sorel, 45 miles from Montreal.

During the months of July and August, the dredge "Nipissing" was employed in deepening the channel near the village of St. Ours. (Appendix 5, p. 44.)

## BERTHIER (EN HAUT.)

Nearly opposite Sorel, 45 miles from Montreal.

On the 5th July, 1881, the work of deepening the channel was completed. (Appendix 5, p. 44.)

## L'ASSOMPTION RIVER.

It falls into the St. Lawrence near the village of Repentigny.

Dredging has been done at the mouth of this river. (Appendix 5, p. 44.)

## CHANNEL BETWEEN LONG POINT AND BOUCHERVILLE.

Dredging has been done in the channel of the River St. Lawrence between these two points. (Appendix 5, p. 45.)

## ISLE AUX NOIX.

In the Richelieu river, near the southern frontier of the Province of Quebec.

A bridge spanning a ravine on the road leading to the island ferry has received extensive repairs. (Appendix 5, p. 45.)

## LAPRAIRIE.

Chief town of the county of that name, 7 miles above Montreal, on the south side of the St. Lawrence.

In the month of May, 1882, dredging was done at the approaches to the wharf. (Appendix 5, p. 45.)

## BEAUHARNOIS.

Chief town of the county of that name, 20 miles above Montreal, on the south side of the St. Lawrence.

Dredging has been done in the vicinity of the wharf and in the channel leading to the main channel of the St. Lawrence. (Appendix 5, p. 45.)

## BACOT HAYES SHOAL.—RIVER ST. LAWRENCE.

This shoal,  $2\frac{1}{2}$  miles below the Village of Cedars, County of Soulanges, is an obstacle to steam navigation.

The opening of a new channel 150 feet wide, about 200 feet, north of the old channel, has been undertaken. (Appendix 5, p. 45.)

## THE CEDARS.

The Village of Cedars is situated on the north side of the St. Lawrence, 30 miles above Montreal.

The old wharf has received extensive repairs in place of constructing a new one, in accordance with the plan mentioned in last year's Report. (Appendix 5, p. 45.)

## ST. PLACIDE.

In the County of Two Mountains, on the Ottawa River, about 9 miles from St. Andrews.

The work of opening a channel from the wharf at St. Placide to the main channel of the Ottawa has been continued. (Appendix 5, p. 46.)

## RIVER À LA GRAISSE (RIGAUD).

It falls into the Ottawa River, 15 miles from Rigaud.

The work of dredging has been continued. (Appendix 5, p. 46.)

## RIVER DU NORD.

It falls into the Ottawa River at the head of the Lake of Two Mountains.

The dredging work has been continued. (Appendix 5, p. 46.)

## RIVER DU LIÈVRE.

It falls into the Ottawa 19 miles below the City of Ottawa.

Dredging work has been done at Little Rapids and at Long Rapids. (Appendix 5, p. 46.)

## THE GATINEAU.

The principal tributary of the Ottawa River, into which it falls at a short distance from the City of Ottawa.

The water was so low during the fall of 1881, that it became necessary to open a channel through the sand banks near the railway bridge, in order to facilitate the passage of barges. (Appendix 5, p. 46.)

## PROVINCE OF ONTARIO.

## UNION SUSPENSION BRIDGE.

This bridge connects the cities of Ottawa and Hull.

In 1881-2 it underwent extensive repairs and the roadway was entirely renewed. (Appendix 5, p. 46.)

## REEF BELOW SUSPENSION BRIDGE—OTTAWA RIVER.

This reef is at a short distance below the Suspension bridge.

At low water the bed of the reef was removed to a depth of 3 feet below the water level. This is a great advantage to the navigation of this part of the river. (Appendix 5, p. 47.)

## PORTSMOUTH.

On the bay of that name, 2 miles west of Kingston.

Dredging has been done in this harbor. (Appendix 5, p. 47.)



## SALMON RIVER.

It falls into the Bay of Quinté at Shannonville, 40½ miles west of Kingston.

Dredging has been done in the shoals which obstructed the entrance of the river. (Appendix 5, p. 47.)

## BELLEVILLE.

County town of the County of Hastings, on the Bay of Quinté, 43 miles west of Kingston.

Dredging has been done in the harbor, near the east wharf and south of the island, as far the western wharves. (Appendix 5, p. 47.)

## TRENTON.

At the mouth of the River Trent.

An old cribwork pier which obstructed the navigation, has been removed from the channel of the river. (Appendix 5, p. 47.)

## PICTON.

County town of Prince Edward County, on the Bay of Quinté.

Dredging has been done in this harbor. (Appendix 5, p. 47.)

## CONSECON.

At the head of Weller's Bay, Lake Ontario, County of Prince Edward.

Dredging has been done on the shoal which obstructed the entrance to this harbor. (Appendix 5, p. 47.)

## COBOURG.

On Lake Ontario, 92 miles west of Kingston.

Work has been continued on the western wharf, the contract for which was taken from the contractor; a contract was also entered into for the extension of the eastern wharf. (Appendix 5, p. 47.)

## PORT HOPE.

On the north shore of Lake Ontario, in the County of Durham, 63 miles east of Toronto.

Dredging has been done in this harbor, and the work of extending the eastern wharf commenced. (Appendix 5, p. 48.)

## TORONTO.

Dredging has been done at the western entrance of this harbor.

During the summer of 1881, Mr. J. B. Eads, C.E., made an examination and survey of this harbor, and his Report will be found after Appendix 5, pp. 77-95.

## PORT STANLEY.

Terminus of the London and Port Stanley Railway on Lake Erie.

The works erected heretofore for the protection of the harbor, on the west side of the entrance, have been of the greatest benefit.

A channel has been opened from the harbor through Mill Creek. (Appendix 5, p. 48.)

## GODERICH.

On the east side of Lake Huron, 68 miles from Sarnia.

In February last the Department contracted for works for the protection of the beach between the north wharf and the breakwater, and for repairs to the south wharf.

Dredging has been done alongside the wharves and breakwater. (Appendix 5, p. 48.)

## PORT ALBERT.

At the mouth of Nine Mile Creek, which falls into Lake Huron, nine miles north of Goderich.

Dredging has been done in the harbor. (Appendix 5, p. 49.)

## KINCARDINE.

Thirty-one miles north of Goderich, on Lake Huron.

Pile protection work, 790 feet in length, is being constructed, under contract, for the protection of the south wharf at the entrance of the harbor; one-half of the work is finished. (Appendix 5, p. 49.)

## PORT ELGIN.

On Lake Huron 24 miles from Kincardine.

The Department has contracted for a breakwater, and the necessary dredging to form a harbor at this point. (Appendix 5, p. 49.)

## SOUTHAMPTON.

On Lake Huron at the mouth of the Saugeen River.

The superstructure of the western breakwater has been repaired, and the building of a small breakwater, 155 feet in length, opposite the lighthouse has been commenced. (Appendix 5, p. 49.)

## TOBERMORY.

A natural harbor on the channel leading from Lake Huron to the Georgian Bay.

Iron rings and fenders have been inserted in the face of the rocks surrounding the harbor, for the mooring and protection of vessels. (Appendix 5, p. 49.)

## BRUCE MINES.

On the north shore of Lake Huron, 45 miles from Sault St. Marie.

A channel 14 feet in depth has been opened up to the wharf, and the largest steam vessels navigating the lakes can now approach it. (Appendix 5, p. 49.)

## LITTLE CURRENT.

Between Cloche Island and Great Manitoulin Island.

A bed of rock, which obstructed the channel, has been partially removed. (Appendix 5, p. 49.)

## OWEN SOUND.

County town of Grey, at the mouth of the River Sydenham, on the Georgian Bay.

The works mentioned in last year's Report have been completed.

The amount voted in the Estimates of 1881-2, has been expended in dredging, giving a depth of 14 feet to this harbor. (Appendix 5, p. 50.)

## THORNBURY.

At the mouth of the Beaver River on the Georgian Bay.

The town of Thornbury has voted a sum of \$7,000, and Parliament a grant, which will be expended in re-building the old wharf and excavating a basin in the harbor. A contract has been signed for the work. (Appendix 5, p. 50.)

## COLLINGWOOD.

In the County of Simcoe, on the south shore of the Georgian Bay.

Dredging has been continued. (Appendix 5, p. 50)

## PROVINCE OF MANITOBA.

## LAKE MANITOBA.

During the season of 1881, surveys and examinations have been made in order to ascertain the cause of the overflow of Lake Manitoba and the means of preventing it for the future. (Appendix 5, p. 50 and pp. 96-116.)

## BRITISH COLUMBIA.

The work undertaken for the removal of Beaver Rock has been finished and dredging has been done in the harbor. (Appendix 5, p. 50, and Appendix 6, pp. 117-132.)

## SURVEYS.

During the fiscal year surveys and examinations have been made in various localities in the Provinces of Prince Edward Island, Nova Scotia, New Brunswick, Quebec and Ontario. Reports of this work, with a few exceptions, have been forwarded to the Department. (Appendix 5, p. 51.)

## DREDGING.

The Department possesses the following dredging plant :—

## IN THE MARITIME PROVINCES.

The hopper dredge	"St. Lawrence."		
"	"	"Canada."	
The dipper	"	"New Dominion,"	and 10 scows.
"	"	"Cape Breton,"	7 "
"	"	"Prince Edward,"	3 "
"	"	"George McKenzie,"	3 "

## IN THE PROVINCE OF QUEBEC.

The dipper dredge	"Queen of Canada,"	2 scows and lifting barge.
"	"	"Nipissing," and 2 "
"	steam tug	"Dennis."

## IN ONTARIO.

The dipper dredge	"Challenge,"	and 3 scows.
The tug	"Trudeau."	

## IN BRITISH COLUMBIA.

A hopper dredge	and 4 scows.
The tug	"Georgia."

The Department has contracted with Messrs. D. & A. Campbell for the construction of four scows, three of which will work with the dredge "Prince Edward," and one with the dredge "Cape Breton." These scows are now being built at Tete-à-ma-Gauche.

The dredges worked at the following places during the fiscal year :—

The "St. Lawrence" at Horse Shoe Shoal, N.B., and at Sydney, Port Caledonia, and Little Glace Bay, C.B.

It removed a total of 50,313 cubic yards of material. (Appendix 5, p. 52.)

The "Canada" at Buetoche and Cocagne, N.B., Pictou, N.S., St. John, N.B., and River St. Mary, County of Guysboro', N.S.

It removed a total of 28,080 cubic yards of material. (Appendix 5, p. 52.)

The "New Dominion" at Marble Cove, St. John, N.B., Murray & Burnhill's wharf, near St. John and on the Oromocto Shoals.

It removed a total of 47,180 cubic yards of material. (Appendix 5, p. 53.)

The "Cape Breton," at New Glasgow, River John and River Tête-a-ma-Gauche, N. S.

It removed a total of 30,910 cubic yards of material. (Appendix 5, p. 53.)

The "Prince Edward," at Crapaud, Nine Mile Creek, Pinnette, Fort Augustus and South Murray Harbor, P. E.I.

It removed, in all, 47,325 cubic yards of material. (Appendix 5, p. 54.)

The "George McKenzie," at Mabou, N.S., where it removed 12,724 cubic yards of material. (Appendix 5, p. 54.)

The "Challenge," at Port Albert, Bruce Mines and Goderich, Ont.

It removed a total of 53,342 cubic yards of material. (Appendix 5, p. 54.)

The "Nipissing," at Levesque Shoal, near Berthier (*en haut*), on the shoals near St. Ours, at Charlemagne, River l'Assomption, and St. Placide.

It removed a total of 28,237 cubic yards of material. (Appendix 5, p. 55.)

The "Queen of Canada," at Beauharnois, River à la Graisse, Gatineau River and Laprairie.

It removed a total of 53,342 cubic yards of material. (Appendix 5, p. 55.)

The "Dredger" in the harbor of Victoria, B.C., where it removed 22,356 cubic yards of material. (Appendix 5, p. 56.)

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#### SLIDES AND BOOMS.

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The Government slides were constructed to facilitate the floating of timber in places where nature presents obstructions to navigation.

The districts where lumbering is carried on and where the Government has constructed works, are situated on the Rivers Saguenay, St. Maurice, Ottawa and Trent, and in the Georgian Bay, and on some of their tributaries.

#### RIVER SAGUENAY.

The works on this river consist of a slide 5,840 feet long, 1,344 feet of boom, bulkheads, piers and dams. The slide was made in order to avoid the rapids located between Lake St. John and the Saguenay.

The works cover a distance of some six miles, and are located in the Petite Décharge, the smaller of the two outlets of Lake St. John. These works were commenced in 1856 and finished in 1860.

The head of the slide has been re-built, as also dam No. 7 and 669 feet of the slide, and 2,000 feet of the slide have been repaired.

Thirty-eight thousand pieces of timber passed through the slide during the fiscal year 1881-82. (Appendix 7, p. 133.)

RIVER ST. MAURICE.

The slides and booms on this river and on the Vermillion, one of its tributaries, are located in the following order:—

Stations.	Distance from Three Rivers.
Booms at the mouth.....	0 miles.
Grès Falls .....	16 “
Shawinigan Falls .....	20 “
Grand Mère “ .....	29 “
Little Piles “ .....	31½ “
La Tuque “ .....	100 “
Plamonden Eddy.. .....	106 “

*Vermillion River.*

Mouth of River .....	116 “
Iroquois Falls.....	121 “

The height of water has been very favorable, and over 500,000 logs passed through the slides.

The pay of staff and cost of maintenance amounted to \$16,579.20 for the year.

A sum of \$2,993 was placed at the disposal of the superintendent to cover the cost of repairs. Out of this vote, \$203.40 remains available.

At the mouth of the St. Maurice two piers were constructed under contract, and seven more were repaired. These works cost \$7,142.00. (Appendix 8, pp. 134-135.)

OTTAWA DISTRICT.

The Government works for the floating of timber in this district are located on the following rivers:—

On the Ottawa .....	11 stations.
“ Gatineau.....	1 “

On the Madawaska.....	15 stations.
“ Coulonge.....	2 “
“ Black.....	1 “
“ Petewawa.....	31 “
“ Dumoine.....	12 “

The following is a table of distances from St. Ann's Lock, at the mouth of the Ottawa, to the mouths of the principal tributaries ; also to the stations where there are slides or other works:—

Places.	Distance from St. Ann.
Carillon.....	27 miles.
Grenville.....	40 “
Nation River.....	63 “
River du Lièvre.....	79 “
“ Gatineau.....	96 “
Chaudière Falls.....	98 “
Little Chaudière.....	100 “
Remous.....	102 “
Lake Deschènes.....	105 “
River Quio.....	129 “
Chats Station.....	131 “
Head of Chats.....	134 “
River Mississippi.....	134 “
“ Madawaska.....	136 “
“ Bonnechère.....	148 “
Les Chenaux.....	152 “
Portage-du-Fort.....	156 “
Mountain Station.....	161 “
Calumet.....	163 “
River Coulonge.....	184 “
“ Black.....	193 “
“ Snake.....	204 “
“ Petewawa.....	218 “
Des Joachims.....	236 “
River du Moine.....	244 “
Rocher Capitaine.....	253 “
Deux Rivières.....	266 “
River Mattawan.....	286 “
“ Antoine.....	293 “
“ Beauchène.....	315 “
“ Pore-Epic.....	326 “
“ Grand Opemiconne.....	333 “

River Keepawa.....	349	miles.
“ Montreal.....	355	“
Fort Temiscamingue.....	367	“
River Ottetail.....	381	“
“ Blanche.....	386	“
“ des Quinzo.....	389	“

RIVER OTTAWA.

List of slide and boom stations on the River Ottawa.

The distances given are measured on the latest maps, following the channel by which lumber is floated down the river.

Names of Stations.	Distance from mouth of Ottawa at St. Ann.
1. Carillon .....	27 miles.
2. Chaudière { North side, Hull, { South side, Ottawa. }	98 “
3. Chaudière (Little).....	100 “
4. Remous .....	102 “
5. Deschênes .....	104 $\frac{3}{4}$ “
6. Chats Station.....	131 “
7. Head of Chats .....	134 “
8. Chenaux... ..	152 “
9. Portage-du-Fort .....	156 “
10. Mountain.....	161 “
11. Calumet .....	163 “
12. Joachims Rapids.....	249 “
13. Rocher Capitaine.....	253 “

The works at these thirteen stations consist of:—

2,000	lineal feet of canal.
4,234	“ “ slides.
29,855	“ “ booms.
8,665	“ “ dams.
405	“ “ bulkheads.
1,981	“ “ bridges.
52	piers.
4	slide-keepers' houses.
3	storehouses.



The following works were executed during the fiscal year ended 30th June last.

At Sault-au-Recollet, general repairs to the piers and slides.

At Hull, general repairs to the piers and slides.

At the Chaudière, repairs to the head of the slides, to the piers and to the booms; the wires and cables of the so-called "Union Bridge" have been minutely inspected, and measures taken to prevent corrosion.

Considerable repairs had to be executed at the following stations:—The Chats, the Chenaux, Portage-du-Fort, Calumet, Des Joachims and Rocher Capitaine. (Appendix 9, page 136).

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#### RIVER GATINEAU.

The River Gatineau flows from the north, and discharges into the Ottawa at a point about 96 miles above the junction of that river with the St. Lawrence at St. Ann, and 2 miles below the City of Ottawa. The length of the Gatineau is about 400 miles, and it drains an area of about 9,000 square miles.

The Government works are all situated at one station, about a mile from its confluence with the Ottawa. They consist of:—

3,071 lineal feet of canal.

4,133 " " booms.

150 " " bridge.

10 piers.

1 boom-men's house.

1 storehouse.

Important repairs have been made to the boom and the piers; the channel has been cleansed, and the fences and bridge repaired. (Appendix 9, page 136.)

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#### RIVER MADAWASKA.

The River Madawaska is 240 miles long. It waters an area of about 4,100 square miles, and discharges into the River Ottawa 136 miles above St. Ann.

List of the slide and boom stations on the Madawaska, numbered from the mouth of the river upward:

- |                     |                      |
|---------------------|----------------------|
| 1. Mouth of river.  | 9. High Falls.       |
| 2. Arnprior.        | 10. Ragged Chute.    |
| 3. Flat Rapids.     | 11. Boniface Rapids. |
| 4. Bulmer's Island. | 12. Duck Island.     |
| 5. Burnstown.       | 13. Bailey's Chute.  |
| 6. Long Rapids.     | 14. Chain Rapids.    |
| 7. Springtown.      | 15. Opeongo Creek.   |
| 8. Calabogie Lake.  |                      |

The works at these stations consist of:—

1,750	lineal feet of slides.
18,179	“ “ booms.
4,080	“ “ dams.
182	“ “ bridges.
42	piers.
1	storehouse.

At Ragged Chute the channel has been dredged and straightened by lifting out the rocks which impeded the passage of timber, and the lateral piers and booms have been repaired.

At the High Falls, a little lower down, the booms and the piers have been repaired. At Bailey's Falls new aprons have been placed in the lateral dams.

At Springtown the boom and piers have been repaired for the season.

At Chats Lake, at the mouth of the Madawaska, the position of the booms and piers has been altered to suit the convenience of the proprietor of a large saw mill situated on the lot adjoining the Government booms. (Appendix 5, page 137.)

#### RIVER COULONGE.

This river waters an area of 1,800 square miles, and its length is 160 miles. It discharges into the River Ottawa, 184 miles above St. Ann, on the north shore.

The following is a list of the Government works on the river:—

Boom at mouth.....	300 feet long and 1 support pier.
Booms at Romain's rafting ground.....	400 “ “ 3 “ “
Booms at head of High Falls' Slide.....	1,848 “ “ 6 “ “
Single Stick Slide.....	2,900 “ “

The repairs to the slides at High Falls mentioned in the Report of last year have been completed in a permanent manner. (Appendix 5, page 137.)

#### BLACK RIVER.

This river empties into the Ottawa at a point about 193 miles above St. Ann. Its length is 128 miles, and the area which is watered by it is about 1,120 square miles on the north shore.

The works consist of:—

1,139	lineal feet of single stick boom.
873	“ “ slide.
346	“ “ glance pier.
135	“ “ flat dam.

The slide, which having a sharp pitch is very greatly damaged by the timber which passes through it, and which was detained in it for several days during the last season, has been repaired and strengthened. (Appendix 5, page 137.)

#### RIVER PETEWAWA.

The length of the Petewawa is about 138 miles, and the area of the territory watered by it is 2,200 square miles.

It flows from the south and discharges into the Ottawa, 219 miles above St. Ann. Seven miles from its mouth it separates into two branches. On these seven miles there are five stations; on the north branch 19 stations. All the works on the south branch were abandoned in accordance with an Order in Council, dated 27th July, 1871.

List of the slides and booms on this river, in the order in which they occur from the mouth upwards:—

1. Mouth of the River.
2. First Chute.
3. Second Chute.
4. Third Chute.
5. Bois Dur.

#### *North Branch.*

- |   |  |
|---|--|
| 1. Half Mile Rapid.   | 11. Foot of Devil's Chute.                           |
| 2. Crooked Chute.   | 12. Devil's Chute.                                   |
| 3. Between High Falls and Lake Traverse (a slide and series of dams and booms.) | 13. Elbow of Rapids.                                 |
| 4. Thompson's Rapids.   | 14. Foot of Long Sault.                              |
| 5. Lake Traverse Slides.  | 15. Middle of Long Sault.                            |
| 6. Sawyer's Rapids.   | 16. Head of Long Sault.                              |
| 7. Meno Rapids.   | 17. Between Long Sault and Cedar Lake (south shore.) |
| 8. Below Trout Lake.  | 18. Between Long Sault and Cedar Lake (north shore.) |
| 9. Strong Eddy.   | 19. Cedar Lake.                                      |
| 10. Cedar Island.   |  |

The works at these 24 stations are as follows:—

#### *On the Main River.*

2,963	linear feet of slides.
8,469	“ “ booms,
2,077	“ “ dams.
10	piers.

*On the North Branch.*

1,080	lineal feet of slides.
2,671	“ “ booms.
1,131	“ “ dams.
23	piers.

The employees had to expend much labor in order to stop the leaks which existed in the dams and slides at this station, which have now been in operation for twenty-four years. (Appendix 5, page 137.)

## RIVER DU MOINE.

The length of this river is about 120 miles, and it waters to the north an area of about 1,600 square miles. It flows into the River Ottawa at a point about 256 miles above Ste. Anne.

The works on this river are: a pier and a boom at the mouth, a single stick slide and a series of dams from the mouth upwards. These works may be detailed as follows:—

4,000	lineal feet of slides,
800	“ “ booms,
1,324	“ “ dams, and
6	piers.

Repairs have been made to the long slide and dams at Chuto No. 1. (Appendix 5, page 137.)

## TRENT RIVER NAVIGATION.

The booms, piers and slides and all such portions of the works as are connected with the lumbering operations on the River Trent at Chisholm's Rapids, Ranney's Falls, Middle Falls, and Crook's Rapids, were transferred to a company formed purposely for the management and maintenance of those works, with the right of levying tolls thereon, at the rate of five shillings per crib, at each of the slides, except at Chisholm's and at Crook's Rapids, where the works constructed do not facilitate the descent of timber.

This rate was altered by an Order in Council, on the 8th of December, 1866, fixing the tolls to be levied at Ranney's Falls, Middle Falls, and Heely's Falls, at one cent for each log of 13 feet in length, and a proportionate sum on pieces of greater length; and one dollar on each crib of square timber.

The Company are not liable for the renewal of the works, in case of their failure from decay of materials, or their destruction by fire, flood or any other cause. It is

their duty to keep an exact account of all the moneys collected by them, and to transmit the same to the Minister of Public Works, as provided by the Orders in Council passed on the subject.

The extraordinary repairs which from time to time were required have been executed at the expense of the Government, as also new works at localities other than those mentioned.

The following table gives the distances of navigable and unnavigable reaches:—

	Navigable.	Unnavigable.
From Trenton, Bay of Quinté, to Nine Mile Rapids .....		9
“ Nine Mile Rapids to Percy Landing.....	19½	
“ Percy’s Landing to Heely’s Falls Dam.....		14¼
“ Heely’s Falls Dam to Peterboro.....	51¾	
“ Peterboro to Lakefield. .. .. .		9½
“ Lakefield to Burleigh .. .. .	12	
“ Burleigh Rapids .. .. .		1
“ Burleigh Rapids to Buckhorn Rapids .. .. .	7	
“ Buckhorn Rapids.....		1
“ Buckhorn Dam to Lindsay .. .. .	36½	
	<hr/>	<hr/>
	126½	34¾
“ Lindsay to Port Perry at the head of Lake Scugog.	28¾	
	<hr/>	<hr/>
	155¼	34¾
Total distance, Bay of Quinté to Port Perry.....	190 miles.	
Passing to Fenelon Falls the distance from Buckhorn Dam to Fenelon is.....		31½

The following is a list of the works now in use:—

*Chisholm’s Rapids.*

	Distance from Trenton in Miles.
The works here consist of a canal and lock, a dam and slide...	15½

*Percy Landing.*

A retaining boom for saw logs here.....	28½
---	-----

*Campbellford.*

Guide booms.....	34¾
------------------	-----

*Middle Falls.*

The works consist of 4 dams and 2 slides... ..	37¾
--	-----

*Crow Bay.*

A retaining boom.....	38
-----------------------	----

<i>Heely's Falls.</i>		Distance from Trenton in Miles.
A dam and one slide are in operation here.....	42 $\frac{3}{4}$	
<i>Crook's Rapids, Hastings.</i>		
The works consist of a lock, dam, and slide for timber.....	92 $\frac{5}{8}$	
<i>Whitlaw's Rapids.</i>		
These works, situated below Peterboro, consist of a lock, dam, and canal.....	92 $\frac{7}{8}$	
<i>Little Lake.</i>		
These works consist of three piers and a boom. ....	94	
<i>Burleigh.</i>		
Timber slides.....	116	
<i>Buckhorn Rapids.</i>		
This dam is important in keeping to a high level the water of the lakes west of it as far as Bobcaygeon, including Lakes Pigeon, Ball, Buckhorn, and Chemong. The dam is effective .....	125	
<i>Bobcaygeon.</i>		
There are two dams here with canal, lock, and slide. The dams keep up the water to the same level as far as Fene- lon Falls, and to the reach as far as Lindsay Lock .....	140 $\frac{3}{4}$	
<i>Fenelon Falls.</i>		
A large slide and booms .....	154 $\frac{3}{4}$	

In accordance with the terms of the Act 42 Vic., Chap. 7, the canals and locks in the District of Newcastle are now under the control of the Department of Railways and Canals; whereas the slides, dams, and booms remain under the control of the Department of Public Works.

The following repairs have been effected at the various stations:—

At Fenelon Falls, while making temporary repairs, it was ascertained that the slide was in a very bad condition, and repairs were initiated which could not be completed, as it was not desirable to exceed the credit voted. (Appendix 10, page 143.)

In the Scugog River, a great number of saw-logs sunken in the bed of the river, and which impeded navigation, were removed. There is now a depth of five feet at low water. (Appendix 10, page 143.)

At Bobcaygeon the Department has removed obstacles hindering navigation at the entrance to the canal. (Appendix 10, page 143.)

At Buckhorn, repairs are being made to the head of the slide. (Appendix 10, page 143.)

At Lakefield the dam and slide require considerable repairs. (Appendix 10, page 144.)

At Peterborough, work is going on for removing the refuse and saw-dust from the river near the town. (Appendix 10, page 144.)

At Little Lake it is necessary to renew the boom. (Appendix 10, page 144.)

At Whitlaw's Rapids the guiding boom and the slide planking were repaired. (Appendix 10, page 144.)

At the River Otonabee the refuse and saw-dust have accumulated in such quantities that it is necessary to remove them in order not to hinder the running of the steamboats. (Appendix 10, page 145.)

At Hastings, general repairs to the slide have been effected, and the upper portion of the piers has been renewed. It is necessary to have the guiding booms renewed. (Appendix 10, page 145.)

At Heeley's Falls considerable repairs are now being made on the slide, and a coffer dam had to be constructed at the head of the slide, the planking of which has been repaired. (Appendix 10, page 145.)

At Middle Falls no repairs have been made, but next year they will be indispensable. (Appendix 10, page 145.)

At Chisholm's Rapids some repairs to the dam have been made, and the slide is also in need of repairs. (Appendix 10, page 145.)

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## TELEGRAPH AND SIGNAL SERVICE.

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### BRITISH COLUMBIA.

The system of telegraph lines in this Province has worked well; interruptions have been much less frequent and repairs promptly made. The receipts amounted to \$18,414.24 as against \$10,544, for the previous year. (Appendix 11, page 147.)

### THE GULF OF ST. LAWRENCE.

All the cables have worked well, with the exception of that of the Bird Rocks which will be shortly repaired. (Appendix 11, page 147.)

## BAY OF FUNDY.

The cable between the Grand Manan Island and Campo Bello was damaged by a wrecked vessel; but it has been repaired in a satisfactory manner. (Appendix 11, page 147.)

## THE ATLANTIC COAST.

The line between Canso and Halifax has worked well. (Appendix 11, p. 148)

## NORTH SHORE, RIVER ST. LAWRENCE, NEWFOUNDLAND.

A cable has been laid at the mouth of the Saguenay, between Portage Bay and Water Bay near Tadousac, in order to connect the telegraph lines between Murray Bay and Mille Vaches, and this cable works well. (Appendix 11, page 148.)

The land line fourteen miles long between Port au Basque and Capo Ray is now in course of construction. (Appendix 11, page 148.)

## SIGNAL SERVICE.

Twenty-three signal stations have been established at the points mentioned in Appendix 11, page 148.

## MANITOBA AND THE NORTH-WEST TERRITORIES.

By Order in Council the telegraph lines of these regions have been placed under the control of the Department of Public Works since the 30th June, 1882, and active steps are being taken to organize the service. (Appendix 11, page 148.)

## GRAVING DOCK AT ST. JOSEPH DE LEVIS.

The extra works considered necessary at the entrance and mentioned in last year's Report, have been executed in part. The machinery, boilers, &c., which Messrs. Carrier, Lainé & Co., built in their workshops, have still to be placed in position. (Appendix 12, page 149-150.)

THE PRINCESS LOUISE WHARF AND DOCKS, RIVER ST. CHARLES,  
HARBOR OF QUEBEC.

The second portion of this immense undertaking is completed, and there remains to be done the dredging, the building of a cross-wall and other works which will go to make the tidal basin which it is proposed to establish at this place. (Appendix 12, page 150-151.)

## DEEPENING THE CHANNEL BETWEEN MONTREAL AND QUEBEC.

By the Act 36 Victoria, chapter 60 (1873), and by Order in Council of 31st May, 1873, the Harbour Commissioners of Montreal were empowered to carry out these works.

The work of dredging the ship channel in order to give it a depth of 25 feet has been continued.



The places where the most considerable work has been done, are the following: Cape Charles, Pouillier Rayer, Cap la Roche, Becancour upper traverse, Port St. Francis, Lake St. Peter, Isle de Grâce, Contrecoeur Channel, Cape St. Michel, Varennes, Pointe-aux-Trembles and Montreal.

The dredging at all points represents a total quantity of 1,453,788 cubic yards for the last fiscal year.

The accounts of expenditure by the Harbor Commissioners are only closed on the 31st December of each year. (Appendix 13, pp. 152-154.)

#### PURCHASES AND SALES.

Appendix 14 (p. 155), gives a statement of sales and purchases effected by the Department during the last fiscal year.

#### ARBITRATIONS.

During the fiscal year only three claims were referred to the official arbitrators. (Appendix 15, pp. 156, 157.)

#### OPENING AND CLOSING OF NAVIGATION.

Appendix 16 (pp. 153, 159,) gives the dates of the closing of navigation at the most important ports of the Dominion, and shows the depth of water at low tide at those ports.

#### THE DEPARTMENTAL STAFF.

Appendix 17 (page 160.) gives a list of persons who filled, in the Department, from 1st July, 1867, to 30th June, 1882, the offices of Minister, Deputy Minister, Secretary, Chief Engineer and Chief Architect.

Respectfully submitted,

HECTOR L. LANGEVIN,

*Minister of Public Works.*

Ottawa, 20th January, 1883.

DOMINION OF CANADA.

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REPORT

OF THE

MINISTER OF PUBLIC WORKS

FOR THE

FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1882.

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APPENDICES.

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## TABLE OF APPENDICES.

		PAGE
Appendix No. 1.	Statement of expenditure during fiscal year.....	1
“ 2.	Tables of distances.....	9
“ 3.	Report on Public Buildings, by Thomas Fuller, Chief Architect.	19
“ 4.	Report on Heating, &c., Public Buildings, by J. R. Arnoldi, Mechanical Engineer.....	30
“ 5.	Report on Harbors and Rivers, Dredging and Surveys, by H. F. Perley, Chief Engineer ; with special reports on Toronto Harbor, by James B. Eads, C.E. ; on the Overflow of Lake Manitoba, by Thos. Guerin, C.E. ; and on Percé Breakwater, by C. F. Roy, C.E.....	32
“ 6.	Report on Public Works in British Columbia, by Hon. J. W. Trutch, C.M.G.....	117
“ 7.	Report on Slide, Booms, &c., River Saguenay, by H. F. Perley, Chief Engineer, and J. Rosa, Superintendent.....	133
“ 8.	Report on Slides and Booms, St. Maurice District, by Charles Lajoie, Superintendent.....	134
“ 9.	Report on Slides and Booms, Ottawa District, by G. B. Brophy, Superintendent.....	136
“ 10.	Report on Slides and Booms, Newcastle District, by Thos. D. Belcher, Superintendent.....	142
“ 11.	Report on Telegraph Lines and Signal Service, by F. N. Gisborne, Superintendent.....	147
“ 12.	Report on Quebec Harbor improvements, and Graving Dock at Levis, by the Quebec Harbor Commissioners.....	149
“ 13.	Report on the deepening of the Channel between Montreal and Quebec, by the Montreal Harbor Commissioners.....	152
“ 14.	Statement of property purchased or sold, by the Department, during the fiscal year.....	155
“ 15.	Statement of claims submitted to the Official Arbitrators.....	156
“ 16.	Statement of the opening and closing of Navigation.....	158
“ 17.	List of Ministers, Deputy Ministers, Secretaries, Chief Engineers and Chief Architects.....	160

## APPENDIX No. I.

STATEMENT showing the Amount expended by the Department of Public Works of Canada, during the Fiscal Year ended 30th June, 1882.

Name of Work.	Construction	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>PUBLIC BUILDINGS.</b>				
Generally.....	14,947 57			14,947 57
<i>Nova Scotia.</i>				
Halifax Dominion Buildings.....		5,869 47		5,869 47
do Drill Shed.....		2,260 67		2,260 67
do Penitentiary.....		990 12		990 12
do Quarantine Station (Lawlor's Island).....		50 00		50 00
Lunenburg Marine Hospital.....		116 00		116 00
Pictou Custom House.....		905 19		905 19
do Marine Hospital.....	1,613 00			1,613 00
Sydney Quarantine Hospital.....	236 82			236 82
<i>Prince Edward Island.</i>				
Charlottetown Dominion Building.....		4,240 82		4,240 82
do Drill Shed.....		26 25		26 25
do Marine Hospital.....	68 06			68 06
<i>New Brunswick.</i>				
Chatham Custom House.....		307 34		307 34
Dorchester Penitentiary.....	55,625 70			55,625 70
Fredericton Post Office.....	3,120 77	199 98		3,320 75
St. John Custom House.....	24,823 05	942 15		25,765 20
do Fort Dufferin, Negro Point.....		48 38		48 38
do Marine Hospital.....	861 43			861 43
do Military Buildings.....	2,000 00			2,000 00
do (Partridge Island) Quarantine Station.....		180 00		180 00
do Penitentiary.....		1,500 47		1,500 47
do Post Office.....	29,486 62	1,839 14		31,325 76
do Public Buildings.....		78 60		78 60
do Savings Bank.....		969 82		969 82
Sussex Post Office, Custom House, &c.....	1,918 30			1,918 30
Woodstock do do.....	1,680 22			1,680 22
<i>Quebec.</i>				
Beauport Rifle Range.....		893 49		893 49
Chicoutimi Marine Hospital.....	748 15			748 15
Dundee Custom House.....		87 89		87 89
Grosse Isle Quarantine Station.....	14,421 60			14,421 60
Hull Post Office, &c.....	793 59			793 59
Ile aux Noix Forts.....		151 75		151 75
Levis Fortifications.....	3,831 08			3,831 08
Carried over.....	156,175 96	21,657 53		177,833 49

## APPENDIX No. 1.—Continued.

Name of Work	Construction	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Forward .....	166,175 98	21,657 53		177,833 49
PUBLIC BUILDINGS—Continued.				
Quebec—Concluded.				
Montreal Custom House .....	4,071 00	7,247 76		11,318 76
do Examining Warehouse .....	2,447 72	1,473 43		3,921 15
do Immigrant Shed .....		575 69		575 69
do Inland Revenue Offices .....	10,353 87			10,353 87
do Military Cemetery .....		590 50		590 50
do Museum .....		216 40		216 40
do Post Office .....		2,474 92		2,474 92
Quebec Artillery Barracks .....	3,010 07			3,010 07
do Cartridge Factory .....	12,018 76	99 74		12,118 50
do Citadel .....	9,745 13			9,745 13
do do Cliff .....	10,377 61			10,377 61
do do Buildings .....	6,428 60	2,521 35		8,949 95
do Custom House .....	3,574 00	609 55		4,183 55
do Durban Terrace Extension .....	18,529 11			18,529 11
do Fortifications .....	18,017 59			18,017 59
do Marine Hospital .....		4,722 32		4,722 32
do Military Buildings .....		846 50		846 50
do Post Office .....		1,357 20		1,357 20
Sherbrooke Immigrant Shed .....		400 00		400 00
do Post Office, Custom House, &c. ....	5,806 09			5,806 09
St. Helen's Island Military Buildings. ....	144 63			144 63
St. John's Post Office .....	1,525 00	76 00		1,601 00
St. Regis Custom House .....		75 00		75 00
St. Vincent de Paul Penitentiary .....	16,575 16			16,575 16
Three Rivers Old Barracks .....	5,102 36			5,102 36
Ontario.				
Belleville Custom House, &c. ....	11,849 64	211 00		12,060 64
do Inland Revenue Office .....		118 85		118 85
Brantford Post Office, &c. ....	1,086 00	1,399 72		2,485 72
Brockville Custom House, &c. ....	3,090 00			3,090 00
Chatham do .....	8,137 88	3 78		8,141 66
Cornwall Post Office, &c. ....	8,233 97			8,233 97
Guelph Custom House, &c. ....		333 95		333 95
Hamilton do .....		569 50		569 50
do Immigrant Shed .....	1,450 00			1,450 00
do Post Office, &c. ....	37,941 70	205 56		38,147 26
Kingston Custom House .....		162 30		162 30
do Fortifications .....		9,919 78		9,919 78
do Military College .....	4,660 03			4,660 03
do Penitentiary .....	8,340 53			8,340 53
do Post Office .....		533 66		533 66
London Custom House .....		1,379 74		1,379 74
do Immigrant Shed .....		75 00		75 00
do Post Office .....		317 34		317 34
Niagara Military Buildings .....		637 25		637 25
Ottawa Drill Shed .....	327 16			327 16
do Geological Museum .....	10,073 12	5,778 77		15,851 89
do Public Buildings .....	24,934 96	97,428 58		122,363 54
do do Gas .....			19,517 70	19,517 70
do do Grounds .....			7,640 54	7,640 54
do do Heating .....			40,031 99	40,031 99
do do Improving Ventilation .....	9,998 96			9,998 96
do do Removal of Snow .....			503 01	503 01
Carried over .....	414,026 61	164,018 67	67,693 24	645,738 52

## APPENDIX No. 1—Continued.

Name of Work.	Construction	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Forward.....	414,026 61	164,018 67	67,693 24	645,738 52
<b>PUBLIC BUILDINGS—Concluded.</b>				
<i>Ontario—Concluded.</i>				
Ottawa Public Buildings, Telephonic Service.....			358 30	358 30
do do Water.....			11,433 25	11,433 25
do Supreme Court.....	13,972 17	801 92		14,774 09
Point Edward Cattle Quarantine Station.....	1,577 10			1,577 10
Prescott Fort Wellington Barracks.....		399 87		399 87
Rideau Hall.....		22,254 52		22,254 52
do Allowance for Fuel and Light.....			8,000 00	8,000 00
do Removal of Snow.....			425 01	425 01
St. Catharines Post Office, &c.....	11,687 34			11,687 34
St. Thomas do.....	7,331 37			7,331 37
Stratford do.....	7,213 37			7,213 37
Toronto Custom House.....		2,597 41		2,597 41
do Examining Warehouse.....		9,646 93		9,646 93
do Immigrant Shed.....		966 18		966 18
do Inland Revenue Office.....		879 78		879 78
do Military Buildings.....		24 00		24 00
do Post Office.....		2,798 34		2,798 34
do Public Buildings.....		161 96		161 96
do Receiver General's Office.....		2 70		2 70
Windsor Post Office, &c.....	6,704 37	1,229 74		7,934 11
<i>Manitoba.</i>				
Brandon Immigrant Shed.....	9,934 20			9,934 20
Emerson Immigrant Shed.....	1,186 10			1,186 10
do Post Office.....		79 10		79 10
Stoney Mountain Penitentiary.....	16,829 26	153 67		16,982 93
Winnipeg Architect's Office.....		583 15		583 15
do Assistant Receiver General's Office.....	5,025 00			5,025 00
do Custom House.....		1,298 20		1,298 20
do Fort Osborne Barracks.....		1,474 03		1,474 03
do Immigrant Shed.....	13,243 26			13,243 26
do Lieutenant Governor's Residence.....	5,668 08			5,668 08
do Parliament Buildings.....	17,017 90			17,017 90
do Post Office.....	7,505 88			7,505 88
<i>North West Territories.</i>				
Battleford Buildings.....	3,025 91			3,025 91
<i>British Columbia.</i>				
Nanaimo Post Office.....	25 33			25 33
New Westminster Penitentiary.....	6,781 17	104 36		6,885 53
do Post Office.....	848 57			848 57
Victoria Custom House.....		60 00		60 00
do Marine Hospital.....		1,163 00		1,163 00
do Post Office.....	4,430 70	157 37		4,588 07
do Public Buildings.....		158 00		158 00
do Savings Bank.....		267 52		267 52
Carried over.....	554,031 69	211,280 42	87 909 80	853,221 91

APPENDIX No. 1—Continued.

Name of Work.	Construction	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Forward.....	554,031 69	211,280 42	87,909 80	853,221 91
<b>HARBOURS AND RIVERS.</b>				
<i>Nova Scotia.</i>				
Benevadie Pond.....	716 20			716 20
Burying Island, Canso Harbour.....	4,000 00			4,000 00
Cape St. Mary.....	2,000 00			2,000 00
Cow Bay.....	6,000 00			6,000 00
Digby Pier.....	700 00			700 00
Hampton.....	1,572 37			1,572 37
Indian Island Beach.....	1,100 00			1,100 00
Ingonish South.....	1,500 00			1,500 00
Little Harbour.....	200 00			200 00
Liverpool (Brooklyn).....	8,927 76			8,927 76
Mabou Harbour.....	4,160 00			4,126 00
Main-à-Dieu.....	8,530 12			8,530 12
Meteghan Breakwater.....	2,165 00			2,165 00
do River.....	2,000 00			2,000 00
North Sydney Harbour.....	2,000 00			2,000 00
Paraboro' Pier.....		49 00		49 00
Partridge Island River.....	2,500 00			2,500 00
Petit de Grat.....	1,000 00			1,000 00
Porter's Lake.....	200 00			200 00
Port Hood Pier.....	1,000 00			1,000 00
Ragged Pond.....	500 00			500 00
Trout Cove.....		500 00		500 00
Yarmouth.....	1,700 00			1,700 00
<i>Prince Edward Island.</i>				
Campbell's Cove.....	7,291 20			7,291 20
Colville Bay, Souris East.....	1,254 09			1,254 09
Malpègue.....		43 00		43 00
Miminigash.....	1,500 00			1,500 00
New London.....		500 00		500 00
Rustico Harbour.....	4,549 60			4,549 60
St. Peter's Bay.....	302 79			302 79
Tignish.....	4,327 20			4,327 20
Wood Islands.....	1,956 52			1,956 52
<i>New Brunswick.</i>				
Campobello Breakwater (Wilson's Beach).....	207 11			207 11
Clifton.....		200 00		200 00
Cocagne.....	941 76			941 76
Madawaska River.....	1,037 06			1,037 06
Pointe-du-Chêne.....	11,072 69			11,072 69
Quaco.....	1,968 68			1,968 68
Richibucto.....	1,000 00			1,000 00
Shippegan Harbour.....	2,950 29			2,950 29
St. Andrews.....	72 52			72 52
St. John Harbour.....	5,299 55			5,299 55
do River.....	3,655 18			3,655 18
do do at Oromocto.....	714 58			714 58
Tobique River.....	1,000 00			1,000 00
<b>HARBOURS, &amp; C., MARITIME PROVINCES.....</b>		<b>1,507 28</b>		<b>1,507 28</b>
Carried over.....	657,569 96	214,079 70	87,909 80	959,559 46

## APPENDIX No. 1—Continued.

Name of Work.	Construction	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Forward.....	657,569 96	214,079 70	87,909 80	959,559 46
HARBORS AND RIVERS—Continued.				
<i>Quebec.</i>				
Anse du Portage Slip.....	584 43			584 43
Anse St. Jean Pier.....	1,091 72			1,091 72
Bagotville Pier.....	2,204 59			2,204 59
Baie St. Paul Pier.....	4,742 70			4,742 70
Berthier River ( <i>en haut</i> ).....	150 65			150 65
Cap-à-l'Aigle Pier.....	1,293 00			1,293 00
Carleton Pier.....	3,527 40			3,527 40
Cedars Pier.....	2,711 62			2,711 62
Chenal du Moine Pier.....		30 00		30 00
Chicoutimi Pier.....		824 30		824 30
Coteau Landing Pier.....		8 00		8 00
Eboulements Pier.....		272 97		272 97
Etang-du-Nord (Magdalen Islands) Pier.....	11,747 52			11,747 52
Grosse Isle Harbor.....	3,415 19			3,415 19
Harbors, &c., generally.....		1,597 51		1,597 51
Isle aux Coudres Pier.....	2,034 50			2,034 50
Isle aux Grues Pier.....	2,636 18			2,636 18
Les Ecureuils Pier.....	1,571 13			1,571 13
Malbaie Pier.....		778 77		778 77
Matane Pier.....	1,199 00			1,199 00
Montreal Harbour.....	601 25			601 25
New Carlisle Pier.....	4,220 20			4,220 20
Percé Breakwater (Examination and Survey).....	499 43			499 43
Piers below Quebec.....		1,696 39		1,696 39
Piers and Booms, Belœil.....		21 05	184 66	205 71
Rivière du Lièvre.....	711 91			711 91
Rivière du Loup Pier.....		4,360 00		4,360 00
River Nicolet (Harbor of Refuge).....	594 52			594 52
River Ottawa (Bristol and Portage du Fort).....	299 00			299 00
Rivière Quelle Pier.....		3,299 31	211 50	3,510 81
River Richelieu.....	799 20		358 75	1,157 95
do Saguenay below Chicoutimi.....	5,067 42			5,067 42
do do (Enlargement Grande Décharge, Lake St. John).....	6,303 16			6 303 16
do St. Lawrence.....	3,691 30	318 94		4,010 24
do do Removal of Chains and Anchors.....	10,041 11			10,041 11
St. Anne's Wharf, River Saguenay.....		128 20		128 20
St. Dominique Pier.....		26 75		26 75
St. Famille Pier.....	4,999 78			4,999 78
St. Jean Port Joli Pier.....		65 35		65 35
St. Timothée Pier.....		11 10		11 10
St. Zotique Pier.....	1,070 75			1,070 75
Tadoussac Fish Dams.....	3,464 32			3,464 32
Trois Pistoles Pier.....	3,500 00			3,500 00
Yamaska River.....	7,008 02			7,008 02
<i>Ontario.</i>				
Belleville Harbour.....	4,949 63			4,949 63
Cobourg Harbour.....	8,291 20			8,291 20
Collingwood Harbour.....	8,566 10			8,566 10
Goderich Harbour.....	2,387 06			2,387 06
Harbors and Rivers generally.....		6,194 43		6,194 43
Kincardine Harbour.....	3,486 48			3,486 48
Little Current.....	5,183 78			5,183 78
Meaford Harbour.....		10 00		10 00
Carried over.....	782,215 21	233,722 77	88,664 71	1,104,602 69



APPENDIX No. 1—Continued.

Name of Work.	Construction	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Forward.....	782,215 21	233,723 77	88,664 71	1,104,602 69
<b>HARBORS AND RIVERS—Concluded.</b>				
<i>Ontario—Concluded.</i>				
Neebish Rapids, St. Mary's River.....	500 00			500 00
Ottawa River, removal of reef below Suspension Bridge.....	4,933 19			4,933 19
Owen Sound Harbour.....	29,942 57			29,942 57
Port Albert do Lake Huron.....	1,040 35			1,040 35
Port Elgin do do.....	3,180 97			3,180 97
Port Hope do do.....	5,083 14			5,083 14
Port Stanley do do.....	600 00			600 00
Portsmouth do.....	3,390 40			3,390 40
Rondeau do.....	6,460 00			6,460 00
Southampton do.....	2,559 60			2,559 60
Thornbury do.....	3,469 98			3,469 98
Tobermora y do.....	349 20			349 20
Toronto do.....	14,280 49			14,280 49
<i>Manitoba.</i>				
Assiniboine River.....	160 00			160 00
Fairford and Partridge Crop River (Examination of question of overflow).....	3,951 43			3,951 43
Harbours generally.....	223 39			223 39
<i>North-West Territories.</i>				
Saskatchewan River.....	714 48			714 48
<i>British Columbia.</i>				
Courtenay River.....	474 65			474 65
Harbours generally.....	642 91			642 91
Nass River.....	380 25			380 25
Victoria Harbour.....	1,785 99			1,785 99
HARBOURS GENERALLY.....		6,083 25		6,083 25
<b>DREDGE VESSELS.</b>				
Dredges.....	3,150 00	21,406 91		24,556 91
New Dredging Plant.....	3,236 50			3,236 50
<b>DREDGING.</b>				
Maritime Provinces.....	45,742 64			
Quebec—				
Beauharnois.....	\$1,386 58			
Gatineau River.....	1,126 35			
Laprairie.....	325 73			
L'Assomption River.....	1,496 04			
Rivière à la Grasse (Rigaud).....	1,816 02			
Rivière du Nord.....	370 74			
Saguenay River (below Chicoutimi).....	565 43			
St. Lawrence River.....	2,212 50			
Generally.....	9,215 76			
	18,515 15			
Carried over.....	64,257 79	872,724 70	261,212 93	88,664 71
				1,223,602 34

## APPENDIX No. 1—Continued.

Name of Work.	Construction	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Forward.....	872,724 70	261,212 93	88,664 71	1,222,602 34
DREDGING—Concluded.				
Forward.....	64,257 79			
Ontario—				
Bruce Mines.....	1,581 33			
Consecon Harbour.....	3,236 13			
Goderich Harbour.....	418 00			
Hawkesbury (Ottawa River).....	159 23			
Roudeau Harbour.....	3,015 00			
Salmon River.....	1,088 43			
Picton Harbour.....	488 00			
Generally.....	1,311 48			
	11,277 80			
British Columbia.....	8 341 54			
	83,876 93			83,876 93
SLIDES AND BOOMS.				
Saguenay District Works.....	2,418 50	5,064 21	1,438 58	8,921 29
St. Maurice do.....	5,300 08	9,167 21	17,768 48	32,235 77
Ottawa do.....			22,103 22	22,103 22
Ottawa River.....	7,657 84	435 00		435 00
Gatineau River.....	1,128 92			
Madawaska River.....	4,398 22	4,317 81		4,317 81
Coulonge River.....	677 73			
Black River.....	587 56			
Petowawa River.....	990 53			
Dumoine River.....	2,192 05			
South Nation.....	528 66			
Sault au Recollet.....	301 68			
Ottawa Suspension Bridge.....	18 87	18,481 76		18,481 76
New Castle District Works.....	645 10	3,028 53	582 50	4,256 13
ROADS AND BRIDGES..				
Des Jochims Rapids Bridge.....	157 62			157 62
Portage du Fort Bridge.....		400 00		400 00
Ottawa Union Suspension Bridge.....	4,912 80			4,912 80
Métapédia Road.....		223 30		223 30
Temiscouata Road.....		3,049 15		3,049 15
MISCELLANEOUS.				
Arbitrations and Awards.....			3,901 51	3,901 51
Surveys and inspections.....			27,060 09	27,060 09
TELEGRAPH LINES.				
Telegraph Extension, Baie St. Paul to Chicoutimi.	11,676 83			11,676 83
do Lines, Maritime Provinces.....	4,486 23			4,486 23
do do British Columbia.....	4,709 51		38,646 87	43,356 38
Land and Cable Telegraph Lines, Lower St. Lawrence, &c.....	33,635 43		8,655 15	42,290 58
Telegraph and Signal Service generally.....		7,254 27		7,254 27
Agent and Contingencies, British Columbia.....			2,195 84	2,195 84
Totals.....				
Carried over.....	1,029,296 54	307,881 36	211,016 95	1,548,194 85

APPENDIX No. 1—*Concluded.*

Name of Work.	Construction	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Forward .....	1,029,296 54	307,881 36	211,016 95	1,548,194 85
WORKS AUTHORIZED BY SPECIAL ACTS OF PARLIAMENT.				
St. Lawrence River, deepening between Quebec and Montreal.....	194,000 00	.....	.....	194,000 00
Quebec Harbour Improvements .....	55,000 00	.....	.....	55,000 00
Levis Graving Dock.....	50,000 00	.....	.....	50,000 00
Esquimalt Graving Dock, B.C.....	37,769 22	.....	.....	37,769 22
Total .....	336,769 22	.....	.....	336,769 22
Grand Totals.....	1,366,065 76	307,881 36	211,016 95	1,884,964 07

O. DIONNE,  
*Accountant.*

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 20th November, 1882.

## APPENDIX No. 2

## TABLES OF DISTANCES.

## ST. LAWRENCE NAVIGATION.

FROM STRAITS OF BELLE-ISLE TO DULUTH, AT HEAD OF LAKE SUPEKIGR, BY WATER. A

From	To	Sections of Navigation.	Statute Miles.	
			Inter-mediate.	Total to Straits of Belle-Ile.
Straits of Belle-Ile.....	Cape Whittle.....	Gulf of St. Lawrence.....	240	240
Cape Whittle.....	West Light, Anticosti.....	do.....	201	441
West Light, Anticosti.....	Father Point.....	River St. Lawrence.....	202	643
Father Point.....	Rimouski.....	do.....	6	649
Rimouski.....	Bic.....	do.....	12	661
Bic.....	Isle Verte.....	do.....	39	700
Isle Verte (opp. Saguenay).....	Quebec.....	do.....	126	826
Quebec.....	Three Rivers.....	do to Tidewater.....	74	900
Three Rivers.....	Montreal.....	do.....	86	986
Montreal.....	Lachine.....	Lachine Canal.....	8½	994½
Lachine.....	Beauharnois.....	Lake St. Louis.....	15½	1,009½
Beauharnois.....	Ste. Cécile.....	Beauharnois Canal.....	11½	1,021
Ste. Cécile.....	Cornwall.....	Lake St. Francis.....	32½	1,053½
Cornwall.....	Dickinson's Landing.....	Cornwall Canal.....	11½	1,065½
Dickinson's Landing.....	Farran's Point.....	River St. Lawrence.....	5	1,070½
Farran's Point.....	Upper end of Croyle's Island.....	Farran's Point Canal.....	¾	1,071
Upper end Croyle's Island.....	Williamsburg or Morrisburgh.....	River St. Lawrence.....	10½	1,081½
Williamsburg.....	Rapid Plat.....	Rapid Plat Canal.....	4	1,085½
Rapid Plat.....	Point Iroquois Village.....	River St. Lawrence.....	4½	1,090
Point Iroquois Village.....	Upper end Presqu'Île.....	Point Iroquois Canal.....	3	1,093
Presqu'Île.....	Point Cardinal, Edwardsburgh.....	Junction Canal.....	2½	1,095½
Point Cardinal.....	Head of Galops Rapids.....	Galops Canal.....	2	1,097½
Galops Rapids.....	Prescott.....	River St. Lawrence.....	7½	1,105
Prescott.....	Kingston.....	do.....	59	1,164
Kingston.....	Port Dalhousie.....	Lake Ontario.....	170	1,334
Port Dalhousie.....	Port Colborne.....	Welland Canal.....	27	1,361
Port Colborne.....	Amherstburgh.....	Lake Erie.....	232	1,593
Amherstburgh.....	Windsor.....	River Detroit.....	18	1,611
Windsor.....	Foot of St. Mary's Island.....	Lake St. Clair.....	25	1,636
Foot of St. Mary's Island.....	Sarnia.....	River St. Clair.....	33	1,669
Sarnia.....	Foot of St. Joseph's Island.....	Lake Huron.....	270	1,939
Foot of St. Joseph's Island.....	Foot of Sault St. Mary.....	River St. Mary.....	47	1,986
Sault St. Mary.....	Head of Sault St. Mary.....	Sault St. Mary Canal.....	1	1,987
Head of Sault St. Mary.....	Point aux Pins.....	River St. Mary.....	7	1,994
Point aux Pins.....	Duluth.....	Lake Superior.....	390	2,384

Of the 2,384 miles from the Straits of Belle-Ile to the Head of Lake Superior, 71½ miles are artificial navigation, and 2,312½ open navigation.

Straits of Belle-Ile to Liverpool, 1,942 geographical, or 2,234 statute miles.

The total fall from Lake Superior to Tidewater is about 600 feet.

## APPENDIX No. 2.—Continued.

QUEBEC TO LIVERPOOL, *viâ* STRAITS OF BELLE-ILE AND MALIN HEAD, NORTH OF IRELAND.—B.

From	To	Sections of Navigation.	Geographical Miles.	Statute Miles.
Quebec.....	Saguenay.....	River St. Lawrence..	106	122
Saguenay .....	Father Point.....	do .....	53	61
Father Point.....	Lighthouse, west end Anticosti ...	do .....	176	202
West end of Anticosti....	Cape Whittle, Labrador Coast. ...	Gulf of St. Lawrence	175	201
Cape Whittle.....	Belle-Ile Lighthouse, east entrance of Straits.....	do .....	209	240
Belle-Ile.....	Malin Head, North of Ireland .....	Atlantic Ocean. ....	1,750	2,013
Malin Head.....	Liverpool.....	do and Irish Sea	192	221
Total from Quebec to Liverpool, <i>viâ</i> Belle-Ile and Malin Head, North of Ireland...			2,661	3,060

HEAD OF LAKE SUPERIOR TO LIVERPOOL, *viâ* STRAITS OF BELLE-ILE AND NORTH OF IRELAND.—C.

Sections of Navigation.	Geographical Miles.	Statute Miles.
Head of Lake Superior, at Fond du Lac, to Quebec .....	1,355	1,558
Quebec to Liverpool, <i>viâ</i> Straits of Belle-Ile and North of Ireland.....	2,661	3,060
Total from head of Lake Superior to Liverpool, <i>viâ</i> Belle-Ile and Malin Head, North of Ireland.....	4,016	4,618
N.B.—Route <i>viâ</i> Straits of Belle-Ile shorter than <i>viâ</i> Cape Race.....	158	182

Straits of Belle-Ile, 80 miles long by 14 average breadth.

## APPENDIX No. 2—Continued.

QUEBEC TO LIVERPOOL, *viâ* CAPE RACE AND MALIN HEAD, NORTH OF IRELAND.—D.

From	To	Sections of Navigation.	Geographical Miles.	Statute Miles.
Quebec .....	Saguenay .....	River St. Lawrence..	106	122
Saguenay .....	Father Point .....	do .....	53	61
Father Point .....	Métis Point .....	do .....	22	25
Métis .....	Cap Ste. Anne des Monts.....	do .....	71	82
Cap Ste. Anne des Monts..	Cap de la Madeleine.....	do .....	46	53
Cap de la Madeleine.....	Fame Point.....	do .....	29	33
Fame Point.....	Cap des Rosiers .....	do .....	25	29
Cap des Rosiers .....	Cap St. Pierre de Miquelon.....	Gulf of St. Lawrence	343	394
Cap St. Pierre de Miquelon	Cape Race .....	Atlantic Ocean .....	132	152
Cape Race .....	Malin Head .....	do do .....	1,800	2,070
Malin Head .....	Liverpool.....	do and Irish Sea	192	221
Total from Quebec to Liverpool, <i>viâ</i> Cape Race and Malin Head, North of Ireland			2,819	3,242

HEAD OF LAKE SUPERIOR TO LIVERPOOL, *viâ* CAPE RACE AND NORTH OF IRELAND.—E.

Sections of Navigation.	Geographical Miles.	Statute Miles.
Head of Lake Superior, at Fond du Lac, to Quebec .....	1,355	1,558
Quebec to Liverpool, <i>viâ</i> Cape Race and North of Ireland .....	2,819	3,242
Total from head of Lake Superior to Liverpool, <i>viâ</i> Cape Race and Malin Head, North of Ireland.....	4,174	4,800
N.B.—Route <i>viâ</i> Cape Race longer than <i>viâ</i> Straits of Belle-Ile.....	153	182

APPENDIX No. 2—Continued.

LAKE NAVIGATION.—F.

Names of Lakes, and of Rivers connecting the same.	Statute Miles.			Depth in Feet.		Area, Square Miles.	Elevation above Sea at Three Rivers.
	Greatest Length.	Greatest Breadth.	Average Breadth.	Greatest.	Mean.		
Superior.....	390	160	80	.....	900	32,000	600
St. Mary's River.....	55	4	1	60	30	.....	582
Michigan.....	345	84	58	.....	1,000	22,400	580
Green Bay.....	100	25	18	.....	500	2,000	580
Mackinaw Straits.....	50	} Not added below.	20	10	200	40	580
Georgian Bay.....	130						
Huron.....	270	105	70	900	450	23,000	578
St. Clair River.....	33	.....	.....	50	35	.....	.....
St. Clair Lake.....	25	25	20	27	15	360	572
River Detroit.....	25	3	1	37	29	.....	.....
Lake Erie.....	250	60	38	204	90	10,000	564
Niagara River.....	35	3	1	.....	30	.....	.....
Lake Ontario.....	190	52	40	600	412	6,700	234
Lake St. Francis.....	33	7	4	80	36	132	141
Lake St. Louis.....	15	5	5	68	30	75	58
Lake St. Peter.....	30	9	7	40	8	200	0
River St. Lawrence, connecting Lakes between Kingston and Three Rivers	186	.....	.....	.....	20	.....	.....
Total length of Lake Navigation	2,172	Inclusive of River Portions.....				96,867	.....
do do	1,778	Exclusive of River Portions.....				.....	.....

FROM PRINCE ARTHUR'S LANDING (LAKE SUPERIOR) TO FORT GARRY (WINNIPEG), BY THE DAWSON ROUTE.—G.

	Statute Miles.	
	Inter- mediate.	Total.
Prince Arthur's Landing to Shebandowan.....	45	45
Lake Shebandowan to North-West Angle.....	312	357
North-West Angle to Fort Garry (Winnipeg).....	95	452

The steamboat voyage from Collingwood to Prince Arthur's Landing is 532 miles.

## APPENDIX No. 2.—Continued.

DISTANCE to Liverpool, from Halifax, (Nova Scotia), St. John (New Brunswick), Portland (State of Maine), and Quebec, as measured on Colton's Map of 1861.—H.

Halifax to Liverpool, *via* Cape Clear.

FROM	TO	Sections of Navigation.	DISTANCE IN MILES.	
			Geographical.	Statute.
Halifax, Nova Scotia. ....	Cape Clear. ....	Across Atlantic to S.W. end of Ireland..	2,200	2,530
Cape Clear .....	Liverpool.....	Up St. George's Channel.....	330	380
		Total.....	2,530	2,910

St. John to Liverpool, *via* Cape Clear.

St. John, New Brunswick.	Cape Sable.....	Across Bay of Fundy to S.W. end of Nova Scotia.....	180	207
Cape Sable.....	Cape Clear.....	Across Atlantic to S.W. end of Ireland..	2,310	2,656
Cape Clear.....	Liverpool.....	Up St. George's Channel.....	330	380
		Total.....	2,820	3,243

Portland to Liverpool, *via* Cape Sable and Cape Clear.

Portland, State of Maine...	Cape Sable. ....	Across Bay of Fundy to S.W. end of Nova Scotia.....	210	242
Cape Sable .....	Cape Clear. ....	Across Atlantic to S.W. end of Ireland.	2,310	2,656
Cape Clear.....	Liverpool.....	Up St. George's Channel.....	330	380
		Total.....	2,850	3,278

Quebec to Liverpool, *via* Cape Race and North of Ireland.

Quebec.....	Cape Race.....	River and Gulf of St. Lawrence to S.W. Point of Newfoundland.....	827	951
Cape Race.....	Malin Head. ....	Across Atlantic to North end of Ireland	1,800	2,070
Malin Head.....	Liverpool.....	Down North Channel.....	182	221
		Total.....	2,819	3,242

Quebec to Liverpool, <i>via</i> Straits of Belle-Ile and Malin Head, North of Ireland .....	2,661	3,060
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For further details, see pages 10 and 11 of this Appendix.



## APPENDIX No. 2.—Continued.

TABLE OF DISTANCES from the Principal Seaports in North America, to Liverpool, Havre, Havana and Rio Janeiro.—I.

		Geographical Miles
Quebec	to Liverpool.	{ <i>Via</i> Belle Ile..... 2,649
		{ " Cape Race..... 2,808
	Havre....	{ " Belle-Ile..... 2,810
		{ " Cape Race..... 2,939
	Havana.....	2,891
	Rio Janeiro.....	5,546
Boston	to Liverpool.....	2,895
	Havre.....	2,993
	Havana.....	1,530
	Rio Janeiro.....	4,935
New York	to Liverpool.....	3,095
	Havre.....	3,228
	Havana.....	1,240
	Rio Janeiro.....	4,885
Philadelphia	to Liverpool.....	3,275
	Havre.....	3,358
	Havana.....	1,190
	Rio Janeiro.....	4,990
Baltimore	to Liverpool.....	3,450
	Havre.....	3,543
	Havana.....	1,160
	Rio Janeiro.....	5,000
Richmond	to Liverpool.....	3,380
	Havre.....	3,473
	Havana.....	1,090
	Rio Janeiro.....	4,930
New Orleans	to Liverpool.....	4,780
	Havre.....	4,838
	Havana.....	595
	Rio Janeiro.....	5,315

## APPENDIX No. 2.—Continued.

TABLE OF DISTANCES from Quebec to Labrador along North Shore of the St. Lawrence.—J.

FROM	TO	Intermediate Mileage.	Total Mileage from Québec.	REMARKS.
Quebec.....	Beauport.....	3	3	Provincial Highway.
Beauport.....	Montmorency Falls.....	4	7	do
Montmorency Falls.....	Ange Gardien.....	3	10	do
Ange Gardien.....	Château Richer.....	6	16	do
Château Richer.....	Ste. Anne de Beaupré.....	6	22	do
Ste. Anne de Beaupré.....	St. Joachim.....	5	27	do
St. Joachim.....	St. Tite des Caps.....	9	36	do
St. Tite des Caps.....	St. Paul's Bay.....	24	60	do
St. Paul's Bay.....	Les Eboulements.....	9	69	do
Les Eboulements.....	St. Irénée.....	9	78	do
St. Irénée.....	Pointe à Pic.....	9	87	do
Pointe à Pic.....	Murray Bay.....	3	90	do
Murray Bay.....	Cap à l'Aigle.....	3	93	do
Cap à l'Aigle.....	St. Fidèle.....	6	99	do
St. Fidèle.....	St. Siméon or Black River.....	10	109	do
St. Siméon.....	Port au Persil.....	8	117	do
Port au Persil.....	Pointe au Bouleau.....	9	126	do
Pointe au Bouleau.....	Anse du Portage.....	5	131	do
Ferry Anse du Portage (across mouth of River Saguenay).....	Anse à l'Eau.....	1	132	do
Anse à l'Eau.....	Tadoussac.....	1	133	do
Tadoussac.....	Les Petites Bergeronnes.....	9	142	do
Les Petites Bergeronnes.....	Escoumains.....	9	151	do
Escoumains.....	Mille Vaches.....	18	169	do
Mille Vaches.....	Portneuf.....	9	178	Beach used.—2 portages.
Portneuf.....	Sault au Cochon.....	7	185	do
Sault au Cochon.....	Ilet de Jérémie.....	18	203	Track req. through forest.
Ilet de Jérémie.....	Betsiamits (or Bersimis).....	7 <sup>1</sup> / <sub>2</sub>	210 <sup>1</sup> / <sub>2</sub>	Beach used.
Betsiamits (or Bersimis).....	Pointe aux Outardes.....	12	222 <sup>1</sup> / <sub>2</sub>	do
Pointe aux Outardes.....	Manikouagan.....	15	237 <sup>1</sup> / <sub>2</sub>	Track req. through forest.
Manikouagan.....	River Godbout.....	27	264 <sup>1</sup> / <sub>2</sub>	do do
River Godbout.....	Pointe des Monts.....	12	276 <sup>1</sup> / <sub>2</sub>	do do
Pointe des Monts.....	Trinité.....	7	283 <sup>1</sup> / <sub>2</sub>	Beach used.
Trinité.....	Ilet Caribou.....	7 <sup>1</sup> / <sub>2</sub>	291	do
Ilet Caribou.....	Baie des Kani.....	22	313	do
Baie des Kani.....	Jambon.....	8	321	Track req. through forest.
Jambon.....	River Ste. Marguerite.....	12	333	do do
River Ste. Marguerite.....	Sept Isles.....	12	345	do do
Sept Isles.....	River Moisy.....	19	364	Beach used.
River Moisy.....	River à la Truite.....	8	372	do
River à la Truite.....	Cormoran.....	8	380	do
Cormoran.....	Pigou.....	7	387	do
Pigou.....	River au Bouleau.....	7	394	Fine Beach, short portage.
River au Bouleau.....	River Matemek.....	7	401	do do
River Matemek.....	River Chaloupe.....	8	409	do do
River Chaloupe.....	River Shaldrac.....	7	416	do do
River Shaldrac.....	River Tonnerre.....	7	423	do do
River Tonnerre.....	Portage du Loup-Marin.....	8	431	do do
Portage du Loup-Marin.....	River Magpie.....	7	438	do do
River Magpie.....	River St. Jean.....	7	445	do do
River St. Jean.....	Longue Pointe.....	9	454	do do
Longue Pointe.....	Poste de Mingan.....	5	459	do do
Poste de Mingan.....	Pointe aux Esquimaux.....	18	477	do do
Pointe aux Esquimaux.....	Nataskuan.....	64	541	do do
Nataskuan.....	Tshikaska.....	18	559	
Tshikaska.....	Mecatina.....	75	634	
Mecatina.....	Bonne Espérance.....	99	733	
Bonne Espérance.....	Blanc Sablon.....	24	757	Boundary of Labrador, Canada.

## APPENDIX No. 2.—Continued.

POPULATION of various Settlements between Tadousac and Labrador, on the North Shore of the St. Lawrence.—K.

NAME OF PLACE.	POPULATION.		
	1864.	Census of 1871.	Census of 1881.
	Number of Families.	Number of Persons.	Number of Persons.
Tadousac.....	Not obtained.	765	1,542
Escoumains.....	do	1,023	520
Mille Vaches.....	do	.....	1,115
Portneuf.....	40	1,790	.....
Sault au Cochon.....	2	.....	.....
Ilet de Jérémie.....	1	.....	.....
Betshiamits (or Bersimis).....	100 to 120	552	.....
Pointe aux Outardes.....	5	.....	.....
Manikuanan.....	3	86	.....
River Godbout.....	15 to 20	.....	.....
Pointe des Monts.....	3	106	243
Trinité.....	3	.....	.....
Rivière Ste Marguerite.....	2	.....	.....
Sept Isles.....	30 to 40	191	.....
Rivière Moisy.....	15 to 20	336	241
Rivière à la Truite.....	2	.....	.....
Cormoran.....	2	.....	.....
Pigou.....	6	.....	.....
Rivière au Bouleau.....	2	.....	.....
River Matemek.....	2	.....	.....
River Chaloupe.....	2	.....	.....
River Shaldrake.....	6	.....	.....
River Tonnerre.....	5	.....	.....
Rivière du Loup-Marin.....	3	.....	.....
River Magpie.....	6	.....	.....
River St. Jean.....	12 to 15	.....	.....
Longue Pointe.....	12 to 15	.....	.....
Poste de Mingan.....	100 to 120	560	.....
Pointe aux Esquimaux.....	75	862	1,775
Nataskuan.....	44	358	480
Mecatina.....	Not obtained.	280	410
Bonne Espérance.....	do	266	341

NOTE.—Population of settlements given in Census of 1871 and Census of 1881 include intermediate places.

## APPENDIX No. 2—Continued.

## DISTANCES—New Road—Quebec to Lake St. John.—L.

FROM	TO	Intermediate Mileage.	Total Mileage.
Quebec .....	Boundary Post.....	18	
Boundary Post .....	1st Camp, Lachance (Stoneham)....	8	23
1st Camp, Lachance (Stoneham) ..	2nd do Noël .....	11½	34½
2nd do Noël .....	3rd do Lac des Roches.....	9	43½
3rd do Lac des Roches .....	4th do Lake Jacques Cartier.....	14	57½
4th do Lake Jacques Cartier.....	5th do Pikauba .....	13	70½
5th do Pikauba.....	6th do Bédard.....	12	82½
6th do Bédard .....	7th do Rivière Upika.....	12	94½
7th do Rivière Upika.....	8th do do Pika.....	10½	104½
8th do do Pika.....	9th do do aux Ecorces.....	11	115½
9th do do aux Ecorces.....	10th do Lake Belle Rivière.....	10½	126
10th do Lake Belle Rivière.....	St. Jérôme, at lower end of Lake St. John, on south side .....	14	140
St. Jérôme.....	Chicoutimi.....	50	

Mail passes three times a week. Winter and Summer.

Time : 20 hours, Quebec to Lake Jacques Cartier (per mail).

do 28 hours. Lake Jacques Cartier to St. Jérôme (per mail).

Total 48 hours, Quebec to Lake St. John (per mail).

Total distance 140 miles, Quebec to Lake St. John.

GREAT CIRCLE or Air Line Distances in Geographical Miles, as per Map of the Dominion of Canada. Published by order of the Hon. the Minister of the Interior, the 1st November, 1878.—M.

FROM	TO	MILES.
Yokohama (Japan).....	Port Simpson .....	3,865
do .....	Port Moody (Burrard Inlet).....	4,374
do .....	San Francisco.....	4,470
San Francisco.....	New York .....	2,228
do .....	Montreal.....	2,202
Burrard Inlet.....	do .....	1,992
Port Simpson.....	do .....	2,194
St. John (N'fid).....	Cape Clear .....	1,670
do .....	Tory Island .....	1,693
Montreal.....	Quebec (River St. Lawrence).....	145
do .....	Cape Race (via St. Paul).....	1,013
do .....	Belle Isle .....	892
Belle Isle .....	Tory Island.....	1,657
Cape Race.....	do .....	1,736
do .....	Cape Clear .....	1,708
Tory Island.....	Liverpool .....	240
Cape Clear.....	do .....	310
Halifax.....	Cape Race.....	470
Portland.....	do .....	767
Boston.....	do .....	808
New York.....	do .....	1,010

APPENDIX No. 2.—*Concluded.*

A TABULAR View of the River St. John, from Fredericton to the Great Falls, from a Report, dated St. John, N.B., August 21, 1826, on a Survey of the River St. John, from Fredericton to the Grand Falls, by Robert Foulis, C.E. and D.P.S.—N.

DISTANCES OF PLACES.		Miles.	Chains.	Links.	Ascent from Level in inches.	No. of Rapids.	Velocity of Current in Rapids, per 66 feet.	Medium Velocity of current, per 66 feet.	Depth of Channel.	GEOLOGICAL.		
From Fredericton to confluence of Tide below Chapel Bar.....	4	77	59	.....	.....	.....	.....	72	ft. in. ft. From 6 0 to 11.....	Sand, gravel, appearance of freestone, accidental blocks of granite.		
do Confluence of Tide to French Chapel.....	5	15	.....	43	2	.....	22'	58	do 1 9 to 8.....	Gneiss, clay-slate, roofing slate.		
do French Chapel to Cliff's Bar.....	7	52	.....	129	3	.....	28	1.26	do 2 9 to 10.....	do gravel, clay.		
do Cliff's Bar to head of Bear Island Bar.....	5	70	40	227	2	.....	30	46	At Bear Island from 1.9 to 7 1/2 From 2 6 to 9.....	do red granite. Variety granite.		
do Bear Island to Mackawickak.....	8	54	.....	56	2	.....	12	60	do 5 0 to 10.....	Large grained granite veined with quartz.		
do Mackawickak to Meductic.....	4	68	30	.....	.....	.....	.....	48	do 2 9 to 8.....	Graphite and porphyritic granite.		
do Meductic to Eel River.....	9	25	.....	220	3	.....	30	60	do 2 0 to 7.....	Volcanic stones, detached.		
do Eel River to Griffith's Island.....	9	43	.....	168	4	.....	28	55	do 1 9 to 6 1/2.....	do cellular.		
do Griffith's Island to McMullan's.....	12	26	.....	144	3	.....	.....	50	do 3 0 to 8.....	Gneiss-trap.		
do McMullan's to Presqu'île.....	8	8	.....	375	7	.....	24	45	do 3 0 to 7.....	Limestone, slate.		
do Presqu'île to Rivière de la Chute.....	14	77	.....	765	3	.....	15	42	do 2 6 to 9.....	Trap.		
do Rivière de la Chute to Tobique.....	12	71	.....	.....	.....	.....	.....	.....	do 2 0 to 33.....	Transition limestone.		
do Tobique to Great Falls.....	21	12	.....	.....	.....	.....	.....	.....	.....	.....		
Total Distance.....	125	39	47	2127	45	.....	Total Length, 10 1/2 miles	.....	.....	.....		
Perpendicular height of Great Falls.....						74 feet.	Depth of water in Upper Basin.....					20 feet.
Descent through Rocky Chasm.....						45 feet 6 inches.	do Lower do.....					33 feet.
Total descent of Falls.....						119 feet 6 inches.	Length of cut necessary for Tunnel from Upper to Lower Basin.....					836 yards.
Height of Hill at Portage, from level of Upper Basin.....						120 feet 7 inches.						
do Lower do.....						240 feet 1 inch.						

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 APPENDIX No. 3.
 

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 REPORT OF THE CHIEF ARCHITECT.
 

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DEPARTMENT OF PUBLIC WORKS,

OTTAWA, 30th November, 1882.

(Ref. No. 29,725.)

SIR,—I have the honor to report on the various works executed in connection with Public Buildings under the control of this Department, during the fiscal year ended 30th June, 1882.

THOMAS FULLER,  
*Chief Architect.*

F. H. ENNIS, Esq.,  
Secretary Department of Public Works.  
Ottawa.

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## PROVINCE OF NOVA SCOTIA.

## HALIFAX.

## DOMINION BUILDING.

Works mentioned in last year's report have been completed.

## PICTOU.

## MARINE HOSPITAL.

Plans have been prepared for this building and tenders will be called for at an early date.

The site chosen fronts on Pictou Harbour and the rear abuts on the road to the beaches.

It will be a brick building on a stone foundation, two stories in height, roofed with wood. On the ground floor there are to be a dining room, surgery, nurses rooms and two wards of 4 beds each; and on the second floor four bedrooms and a store room.

There will be necessary outbuildings attached.

Plans, &c, prepared by this Department.

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## PROVINCE OF PRINCE EDWARD ISLAND.

## CHARLOTTETOWN.

## DOMINION BUILDING.

Repairs reported on last year are completed.

## PROVINCE OF NEW BRUNSWICK.

## DORCHESTER.

## GENERAL PENITENTIARY FOR MARITIME PROVINCES.

Works contracted for by Mr. A. E. Killam, which were alluded to at length in report of last year, have been completed.

The contract works of Messrs T. McManus & Sons have not progressed as favorably as was expected.

An extension of the water service to the officers' residences, and also of the prison drainage is now in progress.

## ST. JOHN.

## CUSTOM HOUSE.

Works treated of in last report are now completed, viz., footpaths, hoist, boundary wall and furniture.

## NEW MARINE HOSPITAL.

This building is being erected in the grounds connected with the present Marine Hospital, which it is to replace. The works now under contract embrace the administrative portion and one of the wards only. The administrative portion will have a basement, two full stories and an attic; while the ward will have a basement and two full stories. The walls are of brick resting on stone foundations, and the floors and roofs wood; the roof being covered with slates on slopes and galvanized iron on flats.

In the basement is a boiler-room, a fuel cellar, a kitchen, a scullery, a larder, a pantry, storage, baths, &c. On the ground floor is the waiting room, surgery, convalescents' dining and sitting rooms, nurses rooms and a ward 28 feet by 48 feet; in the second floor are the surgeon's, matron's, steward's and nurses' rooms, and a ward similar to that on ground floor; the attic will be devoted to bed rooms, &c.

The arrangement of plan admits of two additional wards being added when required.

Architect, Mr. D. E. Dunham.

Contractor, Mr. Wm. Lawlor.

## SUSSEX.

## POST OFFICE, CUSTOM HOUSE &amp;c.

A contract has been entered into for this building which is to be situated in the Parish of Sussex on the north west side of the main road to Halifax. The basement walls are to be stone, and the outside walls above plinth brick, with floors and roof of wood. The ground floor will be occupied by the local Post Office, Examining Warehouse, Custom House and Weights and Measures. The first floor by the Inland Revenue. The attic will not be finished at present. Brick safes are provided for the various offices.

The general entrance is on the principal front.

Plans, &c., prepared by this Department.

Superintending Architect, Mr. G. E. Fairweather.

Contractor, Mr. Wm. Toms.

## WOODSTOCK.

## POST OFFICE, CUSTOM HOUSE &amp;c.

I have been instructed to prepare plans for this building for which an appropriation was made last session.

## PROVINCE OF QUEBEC.

## QUEBEC.

## CITADEL.

General repairs have been executed during the fiscal year as follows, :—

*King's Bastion.*—Pointing and repairing walls.

*Diamond Bastion and Sally port.*—Rebuilding wall.

*Officers Quarters.*—Repairing floors, painting, colouring and roofing.

*Curtain between Mann's and Diamond Bastions.*—Renewing facing of wall.

A reception room for the Governor General has been constructed at the eastern end of His Excellency's quarters on the site of the officer's stables, a portion of the walls of which serves as a foundation. The reception room is on the first floor, communicating with the drawing room of His Excellency quarters; the lower story being utilized for cloak rooms, water closets and men's bedrooms.

Works executed under the immediate superintendence of this Department.

Contractors for repairs, Citadel, Mr. P. Chateauvert, Mr. B. Leonard, Mr. E. Roussel, Mr. Ch. Jobin, Mr. H. Hatch, Mr. Z. Vandry, and Mr. G. Langlais.

Contractor for reception room, Mr. W. J. Piton.

## QUEBEC FORTIFICATIONS.

Sections of the fortification walls (1) between the Citadel and St. Louis Gate; (2) between St. Louis and Kent Gates, and (3) the St. Vallier St. wall having the facing stone loose and partly fallen have been taken down and rebuilt, using the old materials.

Works carried out under the immediate superintendence of this Department.

Contractor for (1) Mr. A. Lortie, (2) Mr. C. Jobin, and (3) Mr. Owen Kelley.

## WALL UNDER DUFFERIN TERRACE.

Further addition to works reported on last year have been effected under contracts with Mr. Thos. Pampalon and Mr. J. O'Leary.

Works executed under the immediate superintendence of this Department.

## KENT AND ST. LOUIS GATES.

Pointing of walls referred to in last report has been executed.

Contractor, Mr. H. J. Beemer.

Plans, &c., prepared by this Department and works carried out under its immediate superintendence.

## CARTRIDGE FACTORY.

Works involved in the conversion of the Artillery Barracks into a Cartridge factory have been completed and the buildings are occupied.

Contractors, Mr. H. Hatch and Mr. Jos. Mathieu for buildings; and Mr. Antoine Rousseau for boiler, engine and heating.

Works carried out by this Department.

## LABORATORY AND FULMINATE MIXING BUILDINGS.

The works treated of in report for 1880-81 have been completed and a heating apparatus is being constructed in accordance with a specification and drawings furnished by the Department of Militia and Defence.

Contractors for buildings, Mr. H. Hatch and Mr. N. Piton.

Contractor for heating apparatus, Mr. Ant. Rousseau.

Works carried out under the immediate superintendence of this Department.



## CHAMPLAIN STREET CLIFF.

The retaining wall reported on last year has been completed and an extension of same in the direction of Mountain Hill is contemplated.

Contractor, Mr. H. Hatch.

Works carried out under the immediate superintendence of this Department.

## CUSTOM HOUSE.

Works in conversion of attic into caretaker's apartments and storage rooms, &c., have been completed under the immediate superintendence of this Department.

Contractor, Mr. J. O'Leary.

## POST OFFICE.

Grading and retaining walls treated of in last year's report have been executed under the superintendence of this Department.

## MARINE HOSPITAL.

Repairs to and renewals of floors and drainage alluded to in report for 1880-81 have been completed under the superintendence of this Department.

## LEVIS FORTS.

Owing to the difficulty experienced in preventing the water from the ramparts percolating through the coverings of the casemates, a contract for the construction of a wooden roof over those at Forts No. 2 and No. 3 has been entered into.

Plans, &c., prepared by this Department.

Contractor, Mr. Nicholas Piton.

## MONTREAL.

## INLAND REVENUE OFFICES.

An extension of this building, on the river front, 26 ft. in depth by the width of the original building is now in progress.

The stones composing the facade on the square have been carefully taken down and re-used for the new front, and the remaining portions have been carried out in accordance with the work already existing.

Additional accommodation is thus provided on basement ground and first floors, with a readjustment of offices.

Drawings are being prepared for a warming apparatus.

Superintending Architect, Mr. Alph. Raza.

Contractor, Mr. H. J. Beemer.

## ST. HELEN'S ISLAND, MONTREAL.

## MILITARY BUILDINGS.

Repairs connected with the wooden and the stone buildings, the barracks for married soldiers, the range of buildings, quarters of the armourer and powder magazine, are about to be placed under contract.

Superintending Architect, Mr. Alph. Raza.

## THREE RIVERS.

## OLD BARRACKS.

The works involved in the conversion of the Old Barracks into a Custom House and Inland Revenue Office, are now under contract and nearly complete.

Superintending Architect, Mr. O. Z. Hamel.  
Contractors, Messrs Potier and Dussault.

### ST. VINCENT DE PAUL.

#### PENITENTIARY.

The western dormitory wing of the prison containing 132 cells is completed, the basement walls of the prison dining hall have been built, and the prison yard extended 100 feet westward, and is enclosed by a wooden fence 19½ feet in height.

The Warden's residence was repaired, repainted, the outside of stone work tinted, and on the east side coated with cement. A new cooking range and wash basins were provided, and a conservatory 14 ft. x 10 ft. added.

The Deputy Warden's quarters were repainted, repaired and supplied with a new kitchen range.

The guards cottages were repaired, the outside of brick walls coated with cement, and the attics counter floored, lathed and plastered.

Plans, &c., prepared by this Department.

Superintending Architect, Mr. John Bowes.

### HULL.

#### POST OFFICE AND INLAND REVENUE OFFICE.

A site was donated for a new Post Office by the heirs Wright on part of the Court House reserve, with a frontage of 125 feet on Main Street by a depth of 120 feet.

The external walls of the building are to be of stone, the internal walls brick, and the floors and roofs of wood.

The ground floor is to be occupied as a Post Office, a Money Order and Weights and Measures offices. The Post Office portion to be one story. On the first floor there will be three offices with an unfinished attic over.

Brick safes will be provided on each floor.

Plans, &c., prepared by this Department.

### GROSSE ILE.

#### QUARANTINE STATION.

The hospital reported last year as in course of construction has been completed.

Plans, &c., prepared by this Department.

Contractor, Mr. J. E. Askwith.

### ST. JOHN'S.

#### POST OFFICE, CUSTOM HOUSE, &c.

The hot water heating apparatus and the furniture and fixtures mentioned in report for 1880-81 have been furnished.

Drawings prepared by this Department.

Superintending Architect, Mr. A. C. Hutcheson, Montreal.

Contractor for heating, Mr. John Howie.

### SHERBROOKE.

#### POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICES.

This building is being constructed on a lot at the corner of Commercial and Bank Street and covers an area of 3,550 sq. ft. The external walls are to be of stone, and roof and floors of wood; flat of roof to be covered with galvanized iron. In the

basement will be the boiler room and fuel room. The ground floor will be devoted of the Post Office, the first floor to the Custom House and Inland Revenue Offices and the attics to the local militia purposes. The ground and first floor entrances are on Commercial Street and the attic entrance on Bank Street.

In the rear is a one story L shaped brick building for an Examining Warehouse and a Weights and Measures Office.

Plans, &c., prepared by this Department.

Superintending Architect, Mr. F. X. Berlinguet.

Contractors, Messrs Robillard & Murphy.

### CHICOUTIMI.

#### MARINE HOSPITAL.

This hospital is being constructed on a plot of land outside and bordering on the town line at the rear of the College. It will be of brick with a stone basement, and a roof of wood. The administrative portion, which is central, will have two stories above the basement, and the two wards flanking it one story. There will be accommodation for nurses and 12 patients in the wards.

Plans, &c., prepared by this Department.

Contractor, Mr. Wm. Warren.

## PROVINCE OF ONTARIO.

### OTTAWA.

#### PARLIAMENT BUILDING.

Owing to the Supreme Court having vacated its temporary quarters in this building the portion which was occupied by it became available, and was rearranged and furnished for the House of Commons Reading room; the original Reading room was rearranged and the ceiling lowered, thus admitting of the erection of attic rooms above, the lower flat being for the use of the sessional reporters, and the upper for the sessional clerks. The late Judges' rooms were devoted to the special use of the Members of the House of Commons during session.

Drawings prepared by, and work executed under the superintendence of this Department.

#### EASTERN BLOCK DEPARTMENTAL BUILDING.

Portions of the corridors have been painted and trifling repairs have been effected to various portions of the building.

Work done under the superintendence of this Department.

#### WESTERN BLOCK DEPARTMENTAL BUILDING.

Painting of corridors and trifling alterations and cleaning of various rooms have been effected.

Work done under the superintendence of this Department.

#### PARLIAMENT GROUNDS, &c.

The additional propagating house reported upon last year has been erected.

Work carried on under the superintendence of this Department.

Contractors, Messrs. Veale and Adams.

#### MONUMENT TO THE LATE SIR GEORGE E. CARTIER, BART.

It is intended at an early date to publicly invite artists to submit models and proposals in connection with this work for the approval of the Dominion Government.

## NEW SUPREME COURT.

This building has been completed in conformity with report of last year, and the court has been furnished partly with new and partly with the furniture used when in the Parliament House. The Royal Canadian Academy collection of pictures have been hung in the rooms appropriated for the purpose.

Plans, &c., prepared by this Department.

Contractors, Messrs. Veale & Adams.

## GEOLOGICAL MUSEUM.

The fittings, counters and show cases have been completed and a hot water apparatus constructed.

Drawings &c., prepared by and work executed under the supervision of this Department.

Contractor for heating apparatus, Mr. N. S. Blaisdell.

## DRILL SHED.

A contract was entered into for the erection of latrines and provision of winter sashes throughout.

The latrines are placed between the Drill Shed and the canal and are of brick on a stone foundation and roofed with wood.

Plans and specifications prepared by this Department.

Contractor, Mr. Wm. Toms.

## RIDEAU HALL.

Ordinary and essential repairs and renewals have been executed during the past year, under the immediate superintendence of this Department.

## CORNWALL.

## POSTAL, CUSTOMS AND INLAND REVENUE OFFICES.

A site has been acquired on the corner of Pitt and Second Streets and I have been instructed to prepare plans &c., for a building to furnish accommodation for the local Postal, Customs and Inland Revenue services.

## BROCKVILLE.

## POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICES.

I have received instructions to prepare plans, &c., for this building, an appropriation for the construction of which was made in the estimates 1881-82.

## KINGSTON.

## POST OFFICE.

Works reported on last year,—viz: new screen to public lobby, new delivery circle and alterations to registered letter office have been completed.

Local Architects, Messrs. Power & Son.

## PENITENTIARY.

The north wing of the fourth workshop has been completed. It contains two stories and basement, having walls of stone, floors of stone, supported by iron joists, and roof of wood covered with metal. There is a brick smoke stack, 80 feet in height.

The works in connection with heating the three workshops and the dining hall are now in progress.

The roof of the south workshop has been repaired, and a new cupola erected to replace that destroyed by fire.

A wooden storehouse for lumber 190 × 16 feet and 13 feet in height, has been constructed outside the boundary wall.

Plans, &c., prepared by this Department.

Superintending Architect, Mr. J. Bowes.

#### MILITARY COLLEGE.

The pump house mentioned in last year's report has been completed and is now in use.

Repairs and minor alterations have been executed at Tête du Pont Barracks, Fort Henry and other military works.

Superintending Architects, Messrs. Power & Son.

#### BELLEVILLE.

##### POST OFFICE, CUSTOMS AND INLAND REVENUE OFFICES.

This building which is now in progress will have external walls of brick with stone dressings resting on stone foundation, the floors and roof of wood.

It will consist of a basement, ground, first and attic floors; the basement for the warming apparatus, fuel, &c.; the ground floor for the local Post Office and Weights and Measures Office, and the first floor for the Custom House and Inland Revenue Offices. The attic will be unfinished at present.

The Post Office entrance is to be on Bridge Street, and that of the Customs and Inland Revenue Offices on Pinnacle Street.

The frontages on Bridge and Pinnacle Streets are 65 feet and 74 feet respectively.

Brick safes are provided for the several Departments.

Architect, Mr. R. E. Windeyer.

Contractors, Messrs. Northcott & Alford.

#### ST. CATHARINES.

##### POST OFFICE, CUSTOMS AND INLAND REVENUE OFFICES.

This building is now in course of construction at the corner of King and Queen streets. It will have brick walls (with stone dressings and portico) resting on stone foundation, and wooden floors and roof, roof covering to be slate on slopes and galvanized iron on flats. The frontages are 62 feet on Queen street and 64 feet on King street.

There is to be a basement containing heating apparatus, fuel rooms and store rooms, a ground floor occupied by the Post Office, a first floor devoted to the Custom House and Inland Revenue and an unfinished attic.

The Post Office entrance is to be on King street and that of the Custom House on Queen street.

Brick safes will be provided for the various departments.

A detached one story brick building in the rear will be used as an examining warehouse and an office for the Inland Revenue.

Architect, Mr. R. C. Windeyer.

Contractor, Mr. Nelson Carter.

#### HAMILTON.

##### POST OFFICE, ETC.

In accordance with your instructions plans, &c., are now in course of preparation for a building to accommodate the local Postal, Customs and Inland Revenue services of the city of Hamilton.

## STRATFORD.

## POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICES.

The site is an irregularly shaped piece of ground at the intersection of Ontario and Erie Streets. The plan of the building is an irregular polygon covering an area of 3,672 sq. feet.

A contract for the construction was entered into in January, 1880, and the works are now in progress.

The external walls are to be brick with stone dressings, the foundations stone, and the floors, partitions and roof wood; the roof covering is to be slate on slopes and galvanized iron on flats.

The basement will contain examining warehouse, boiler house, fuel room and two offices. The ground floor is to be devoted entirely to the Post Office, the first floor to the Inland Revenue and Customs, and the attic rooms for the caretaker, and the rest unfinished.

The chief front which contains the two principal entrances is on Ontario street. The centre and both ends of this facade are to be slightly projected, the centre, which contains the Post Office entrance, being carried up to the roof where it will terminate in a ornamental pediment; the right hand projection, which is to contain the Customs and Inland Revenue entrances and stairway, will be carried up an additional story and a clock arranged for; the projection on the left being carried up a few feet above eaves, both turrets terminating in pyramidal roofs. The remaining elevations are to be more plainly treated. In the rear a one story brick building will contain two rooms, one each for the Weights and Measures, and Gas Inspector's office.

Plans, &c., prepared by this Department.

Superintending Architect, Mr. J. R. Kilburn.

Contractor, Mr. J. E. Askwith.

## CHATHAM.

## POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICES.

A site has been procured for this building on the corner of King and Fourth Streets, plans are now in course of preparation and it is expected that a contract will be entered into in time to admit of the foundations being laid this autumn.

## WINDSOR.

## POST OFFICE, CUSTOMS AND INLAND REVENUE OFFICES.

The attic story has been divided, finished and occupied by the caretaker of the building.

Stone flag footpaths, stone fence walls, grading, &c., have been executed about the building.

Superintending Architect, Mr. Wm. Scott.

## PROVINCE OF MANITOBA.

## WINNIPEG.

## PARLIAMENT BUILDING.

Works in connection with this building have not progressed as favorably as was anticipated, but it is expected that the foundations will be completed to ground floor level this season.

Drawings, &c., prepared by this Department.

Superintending Architect, Mr. J. P. M. Lecourt.

Contractors, Messrs. J. and P. Lyons & Co.

## LIEUTENANT GOVERNOR'S RESIDENCE.

This building of which a complete description was furnished in last year's report, is now under contract and the work in progress.

Plans, &c., prepared by this Department.

Superintending Architect, Mr. J. P. M. Lecourt.

Contractors, Messrs. Bowles & Williams.

## POST OFFICE.

Owing to the rapid increase of postal business it was found necessary in order to allow sufficient space for the public in the lobby to make a one story wooden addition in rear of the present building. The screen in lobby has been fitted up with lock letter boxes and such additional fittings provided as were required for the easier working of the office.

## IMMIGRANT SHED.

This depot is situated 450 yards west of Main Street, on the main line of the Canada Pacific Railway. The buildings are of wood resting on blocks and comprise a two story main building, 29 feet by 100, divided transversely by a partition on each floor and having a kitchen 18 ft. by 18 ft., also a luggage room and hospital in two stories 50 ft. by 26 ft., two temporary sheds 18 ft. by 100 ft. each, and a cook house 24 ft. 6 in. by 16 ft. 4 inches.

Plans and specifications prepared by this Department.

Contractors, Messrs Grant & Gelley.

## STONY MOUNTAIN PENITENTIARY.

Arrangements are being made for the extension of the heating apparatus.

Of the outbuildings, &c., mentioned in last report, three double and two single guards-cottages, a school-house, an ice house and a stable have been completed, and there is in course of construction one single, and two double cottages, stables, a root house, a blacksmith's shop and an implement house.

All the works constructed, or in course of construction, are executed by convict labour assisted by skilled workmen.

Plans, etc., prepared by this Department.

Superintending Architect, Mr. J. P. M. Lecourt.

## BRANDON.

## IMMIGRANT STATION.

These buildings are situated between third and fourth streets on the bank of the Assiniboine River. There are constructed of wood and rest on blocks. The main building is 100 ft. by 29 feet and is two stories in height, each flat divided by a transverse partition. There is a kitchen 18 feet x 18 feet attached, also a detached two story hospital and luggage room 50 feet by 26 feet, with necessary outbuildings.

Plans and specifications prepared by this Department.

Superintending Architect, Mr. J. M. P. Lecourt.

Contractors, Messrs. Grant & Gelley.

## EMERSON.

## IMMIGRANT AGENTS OFFICE.

This wooden building has been completed and occupied.

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**PROVINCE OF BRITISH COLUMBIA.**
**VICTORIA.****POST OFFICE, ETC.**

The work of restoring the front of the building, which was alluded to in last year's report, has been completed and it is intended to re arrange the Post Office fittings during the coming year.

Plans, &c., prepared by this Department.

Superintending Architect, Mr. H. O. Tiedman.

**NEW WESTMINSTER.****PENITENTIARY.**

A wooden workshop with stone foundations and brick chimneys has been erected near the prison building.

It is two stories in height and provides work rooms for carpenters, blacksmiths, shoemakers and tailors.

**POST OFFICE AND CUSTOM HOUSE.**

A contract for the construction of this building was entered into 8th December, 1881, and the works are now in progress.

The external walls will be of brick with dressings and foundations of stone. The ground floor will be devoted to Post Office, Savings Bank and Telegraph Office, and the second floor to the Custom House.

Plans prepared by this Department.

Contractor, Mr. Chas. Hayward.

**NANAIMO.****POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICES.**

I have been instructed to prepare plans, &c., with a view to having this building placed under contract during the present season.

**GENERAL.**

Repairs and renewals have been executed to buildings, &c., throughout the Dominion not specially referred to above.

I have the honor to be, Sir,

Your obedient servant,

**THOS. FULLER,**  
*Chief Architect, P. W.*



## APPENDIX No. 4

## REPORT OF THE MECHANICAL ENGINEER.

(Ref. No. 29,435.)

MECHANICAL ENGINEER'S OFFICE,  
OTTAWA, 21st November 1882.

SIR,—I have the honor to report as follows in reference to the Public Buildings, Ottawa, during the fiscal year ended the 30th June, 1882, viz:—

## PARLIAMENT BUILDING.

Considerable changes have been made in the heating arrangements with a view to moderating the temperature of the rooms and corridors which were always too warm, and, while adding comfort to the occupants, the apparatus, as altered, is now under complete control, and an economy in fuel has also been attained.

The main members lavatory, etc., in the Commons corridor being found too limited in accommodation, the premises were altered, the accommodation doubled, and the apartment renewed throughout.

This lavatory, the new reporters room, the translators room, and the corridors generally were improved in ventilation, but, owing in many cases to long runs of horizontal pipes between remote points and the various ventiduct shafts, the upward currents are not always as strong as could be desired, and purely mechanical means must be here applied as has been done in the Commons Chamber, to attain constant interchange of air

The Railway Committee room had special ventilating arrangements, separate from the rest of the building, constructed before last session, which were found efficient in operation.

A powerful fan with steam engine attached was placed in a specially arranged central apartment in the basement, prior to last session, to collect the odours emanating from the dining rooms, kitchens, and adjoining corridors and apartments of the Senate and Commons.

This fan accomplished the object and also made a very marked improvement in the ventilation of other parts of the building, on the floor above, adjoining the stairways, from the restaurants.

Alterations to the four main ventiducts of the Commons and Senate Chambers were also made with considerable advantage—there being now a stronger upward draught, and no tendency to down currents on gusty days, such as formerly existed.

Several large iron ventilating caps were placed on other portions of the building, giving improved draught.

The iron pipes and valves of the warming apparatus were placed in the building in 1864 and, as a natural consequence, are beginning to give out. The renewal of this work is carried out as occasion presents itself in the most economical manner, and the system modernized as the work progresses. This course permits of a large reduction in the quantity of piping used, and consequently an ultimate saving of fuel must follow—and in every instance the old material is used where it can safely be done.

The three Cornish steam boilers (the only ones in the building that are bricked in) were stripped during the summer of 1881 and, after careful examination and hydraulic test, were found to be almost as good as new after a service of 17 years.

The general apparatus of heating, gas, water and electric bells is in good working order.

EAST AND WEST BLOCKS, DEPARTMENTAL BUILDINGS.

Beyond extending the heating, water and gas pipes, and electric bell services to a few new offices that were fitted up in these buildings, no work was undertaken beyond the ordinary running repairs and maintenance of the different apparatus, all of which are in good working order.

SUPREME COURT BUILDING.

This building after its alteration from being workshops, was fitted up throughout with new heating apparatus, water, gas and bell services, the boiler previously used for workshop engine being retained for the heating apparatus.

RIDEAU HALL.

The hot air furnaces of this building were carefully examined and repaired during the fall of 1881, and with the exception of a couple of cracked castings, which were renewed, the apparatus is in efficient condition.

Beyond ordinary running repairs, no work was executed to the gas, water and bell services—which are in good condition.

OTTAWA POST OFFICE AND CUSTOMS BUILDING.

The heating, gas and water services of this building remain in good condition. A large ventilating pipe carried from the long room over the deck of the roof has been found of much benefit.

GEOLOGICAL MUSEUM.

The new heating apparatus placed in this building was tested last winter and gave ample warmth. Electric bells were put up. A special gas pipe from the gas works was laid to this building, as it was found that the day pressure usually turned on to the City, was inadequate to the wants of the Laboratory room.

PARLIAMENT GROUNDS-FLOWER PROPAGATING HOUSE.

Additional heating apparatus was constructed to warm the new extension of this house, which operates in a satisfactory manner.

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

Jno. R. ARNOLDI,  
*Mechanical Engineer.*

F. H. ENNIS, Esq.,  
Secretary, Department of Public Works.

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## APPENDIX No. 5.

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### REPORT OF THE CHIEF ENGINEER.

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(N<sup>o</sup> 29643.)

CHIEF ENGINEER'S, OFFICE,  
PUBLIC WORKS DEPARTMENT,  
OTTAWA, 28th November, 1882.

SIR,—I have the honor to report on the Harbor Works and Surveys of the last fiscal year.

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

HENRY F. PERLEY,  
*Chief Engineer.*

F. H. ENNIS, Esq.,  
Secretary, Department of Public Works.

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### PRINCE EDWARD ISLAND.

#### CAMPBELL'S COVE

Is on the north-west coast, about nine miles from East Point.

In 1872 the Provincial Government built a breakwater 300 ft. long on a reef which extends from the western point of the Cove.

Under a contract dated January, 1882, an additional length of 300 ft. has been constructed, the original work raised two feet and connected with the shore.

#### COLVILLE BAY

On the east coast about 16 miles from East Point.

The breakwater is situated at Knight's Point, on the eastern side of the Bay. It was originally built by the Local Government and extended during 1875-1880 by the Dominion. The structure stands in deep water and exposed to a very heavy sea in southerly storms. During the past year some necessary repairs were made to the old, or first built portion.

#### SOUTH RIVER, MURRAY HARBOR.

South River empties into the southern part of Murray Harbor, (so called) a large bay in the south eastern part of King's County, opening into the Gulf of St. Lawrence.

Early in June 1882, the work of straightening the channel of this river and deepening it to 8 ft. at extreme low water was commenced, and at the close of the fiscal year 5,415 cubic yards of sand and mud had been removed by the dredge "Prince Edward."

## PINNETTE.

The Pinnette River empties into the Strait of Northumberland to the eastward of Point Prim on the eastern side of Hillsborough Bay.

At this place the dredge "Prince Edward" was engaged during October and November 1881 in straightening the channel of the river, and in deepening the loading berths at the public wharf, and the approach thereto.

## HILLSBOROUGH RIVER.

The East or Hillsborough River flows from the eastward of Charlottetown, and in May 1882, the "dredge "Prince Edward" was engaged in deepening at the public wharf at Fort Augustus.

## NINE MILE CREEK.

Nine Mile Creek, Queen's County, is situated just within the entrance and on the western side of Hillsborough Bay.

The dredge "Prince Edward" was engaged from 10th August to 25th October, 1881, in completing the channel through the flats to the public wharf to which reference was made in the report of last year.

## CRAPAUD.

Crapaud, Queen's County, is a small harbor at the mouth of the Brockelsby River, which empties into the Strait of Northumberland to the westward of Hillsborough Bay.

The channel carrying deep water up to the wharves of the Village, was completed on the 8th of August, 1881, by the dredge "Prince Edward." The total quantity of material removed amounted to 75,970 cubic yards at a cost of \$19,151.46.

## RUSTICO.

Grand Rustico is on the north coast, nearly midway between North and East Points.

In December, 1881, a contract was entered into for the construction of a breakwater 1,200 ft. in length on the western side, and one of 450 ft. in length on the eastern side of the entrance to the harbor, to reduce its width for the purpose of concentrating the current and so deepening the water on the bar.

## NEW LONDON

On the north coast about nine miles east of Cascumpec.

The portion of the breakwater constructed before Confederation by the Local Government at the entrance to this harbor having been damaged during a storm, was repaired in the past year, and a length of 93 ft. was rebuilt.

## TIGNISH

Is on the north coast, about 8 miles from North Point.

A contract for the construction of a breastwork of piles, brush and stone for the protection of the beach and for the rebuilding of the outer part of the northern breakwater was made in December, 1881. At the close of the fiscal year the works were nearly finished.

## MIMINIGASH

Is on the west coast 17 miles from North Point and 20 from West Point.

The works consist in two piers at the mouth of the "Run."

The work done during 1881-82 consisted in rebuilding the portion of the beach protection on the north side, in driving a second row of sheet piling on the south side, and in putting in brush and stone for the protection of such parts of the river bank as seemed to require it.

## NOVA SCOTIA.

### MAIN-À-DIEU.

A small harbor in Cape Breton County, lying inside of Scattarie Island.

The work of constructing the breakwater mentioned in the report of 1881 was actively prosecuted during the year, at the end of which it was seven eighths completed.

### COW BAY.

Thirty miles from Sydney, C. B., to the South East.

During the winter of 1880 this breakwater was damaged by easterly gales, and the amount appropriated was expended in rebuilding the third buttress from the shore end, in replacing ballast, re-sheathing a portion of the face on the seaward side and re-covering the top.

This work owing to its exposed position will necessitate an annual expenditure for repairs.

### PORT CALEDONIA.

Is in Cape Breton Co. and 19 miles to the southward of Sydney Harbor.

The dredge "St. Lawrence" was engaged during the month of June, 1882, in deepening the harbor at this place to admit of the entrance of a larger class of vessels engaged in the coal trade.

### LITTLE GLACE BAY.

Little Glace Bay, Cape Breton Co., is 14 miles to the southward of Sydney Harbor.

During the Spring of 1881, the dredge "St. Lawrence" operated in deepening the entrance to the harbor.

### NORTH SYDNEY.

North Sydney is the principal harbor on the east coast of Cape Breton.

The amount appropriated has been expended in connection with a sum furnished by the Harbor Commissioners of Sydney in the construction of a portion of a breakwater on the north bar for the purpose of preventing the sand forming the bar from being washed into the harbor during easterly gales, and to provide a place for the deposit of ballast from vessels.

### SOUTH INGONISH.

In Victoria County, is situated on the eastern side of Cape Breton, about midway between Sydney Harbor and Cape North.

A large breach made by the ice of the previous winter in the pier on the northern side of the entrance was repaired.

### INDIAN ISLANDS BEACH.

The Indian Islands lie on the north side of East Bay, a branch of the Bras d'Or, Cape Breton.

The works of opening a passage through the beach connecting the islands with the shore referred to in last year's report have been completed.

## BENACADIE.

Is in Cape Breton County.

Part of the amount appropriated was expended in procuring materials during the past winter, and the works of opening and protecting an entrance to the pond are in progress.

## MABOU.

The Harbor of Mabou, Inverness County, is situated on the western coast of Cape Breton, 6 miles northward of Port Hood, the shiretown.

The amount appropriated was expended in partly opening a channel through the shoal of hard clay and stone lying off the entrance to the harbor.

## PORT HOOD.

Port Hood is on the west coast of Cape Breton Island, 20 miles north-east of the Gut of Canso.

The pier at this place is much exposed to north-easterly gales and the timber weakened by the attacks of sea-worms. The northern and western faces of the pier have been strengthened by sheet piling and the top repaired where necessary. In November last it received serious injury during a storm, a breach 73 feet in length having been made through it near the shore and the outer end much damaged. Temporary repairs have been made and plans submitted for a thorough reconstruction of the pier and its protection by heavy stone slopes.

## RAGGED POND.

Is situated on the northern side of Chedabucto Bay, Guysboro' County,  $5\frac{1}{4}$  miles to the eastward of the entrance to Guysboro' Harbor.

An attempt was made to dredge the channel into this pond, the protection works for which were constructed in 1879 and 1880, but without success, for owing to the very exposed position of the entrance, it was found difficult and unsafe for a dredge to remain, as there was no shelter in the event of a storm arising.

## PETIT DE GRAT.

In Ile Madame, Richmond County, is a passage from the Atlantic into St. Peter's Bay.

The channel through the stony beach closing the northern end of the passage and referred to in last year's report, was completed.

## BURYING ISLAND, CANSO.

Canso Harbor is at the extreme eastern end of Guysboro' County and southward of the entrance to the Gut of Canso.

As reported last year, an island formerly existed off this harbor which afforded protection and shelter to vessels. The works undertaken by the Department consisted in the construction of a breakwater for the purpose of giving the same protection as the island did originally, and its erection has proved of much benefit to the harbor.

## NEW GLASGOW.

New Glasgow is situated on the East River of Pictou, about 8 miles from the harbor proper.

At the close of the fiscal year 1881, the dredge "Cape Breton" was employed in deepening the channel of the East River from the highway bridge to above the shipyards of Messrs. Carmichael and McCaul and continued until 13th July of that year when the work was completed.

## RIVER JOHN.

The River John, Pictou County, empties into John Bay at the south-eastern corner of Amet Sound, Northumberland Strait, about 12 miles northwardly of the entrance to Pictou Harbor.

Work on the channel through the bar at the entrance to the river was resumed on 22nd July 1881 and continued until 31st October, up to which date the dredge "Cape Breton" had removed 18,175 cubic yards of sand and mud. At the latter part of May, 1882, a point in the channel of the river off the ship-yard of Mr. James Kitchen was removed.

## TATAMAGOUCHE.

The Tatamagouche River, Colchester County, empties into the south-west corner of Tatamagouche Bay, Strait of Northumberland.

During the month of June 1882, the dredge "Cape Breton" operated at the mouth of the river in opening a channel through the bar which prevents the entrance of vessels.

## PARRSBORO',

In Cumberland County.

A small amount was expended in driving some piles at the outer end of the pier.

The work of improving the channel of Partridge Island River was continued through the year, and a further quantity of 9,100 cubic yards of mud, sand and saw-dust removed.

## HAMPTON,

Annapolis County, is situated on the southern shore of the Bay of Fundy, 5 miles from Bridgetown.

The old pier built by the Local Government having been found to be useless and much out of repair, it was deemed advisable to construct a new one about half a mile to the eastward of the original pier.

## DIGBY.

Digby is situated at the western end of Annapolis Basin.

The work done during the past season consisted in replacing a number of the pile bents forming part of the landing pier which had been destroyed by sea-worms, with the necessary caps, braces, &c., and in renewing parts of the flooring. This pier was built by the Government of Nova Scotia prior to Confederation, and it is the point of call for the mail steamer between Annapolis and St. John, N.B.

## TROUT COVE.

Trout Cove is situated on the southern coast of the Bay of Fundy, nearly midway between Digby Gut and Petit Passage.

During the past year extensive repairs were made to the breakwater, 100 feet of the older portion of which was carried away by a gale in 1879.

The original structure was built in 1858 by the inhabitants assisted by a grant from the Local Government, and expenditures for its extension and repair were made by the Department in 1876 and 1880.

## METEGHAN RIVER.

Meteghan River, Digby Co., is on the south shore of St. Mary's Bay, about 40 miles from Digby and about 25 miles from Yarmouth.

The harbor is formed between two breakwaters which were built many years ago by the Provincial Government, the older portions of which are much decayed.

During the past year the following repairs were effected.

The outer end of the north breakwater was rebuilt for a height of 10 feet, and a "break" constructed on the seaward side—The top of the south breakwater was rebuilt for a length of 280 ft, and for a distance of 420 ft floored with flatted timber six inches thick; a number of sheeting piles were driven and several small but necessary repairs were effected.

#### CAPE ST. MARY.

In Digby County, on the southern side of the entrance to St. Mary's Bay.

The pier at this place was built many years ago at the joint expense of the Local Government and the inhabitants.

Owing to age and decay, and the action of sea and ice this structure had become much dilapidated, and only a part of the repairs necessary to place it in good order were executed during the year.

#### YARMOUTH.

Yarmouth is situated at the western extremity of the Peninsula of Nova Scotia.

During the year repairs have been made in the sea wall constructed in 1874 by the Department which had been undermined in several places by the action of the sea on the gravel beach on which it is built.

#### BROOKLYN.

Is situated at the head of Liverpool Bay, Queen's county.

Owing to its exposed position and the action of the sea-worm, the breakwater at this place was found to be in a precarious state, and a contract was entered into in October 1881 for the formation of a stone slope on the outer or seaward side and around the end of the breakwater, and for close piling a certain length of the inner side, and also repairing the roadway with new planking and ballast. At the close of the year the work was completed.

#### VOGLER'S COVE.

Vogler's cove is situated in the extreme south-western part of Lunenburg County, about 2 miles to the eastward of the boundary between Lunenburg and Queens.

The dredge "Canada" operated here from the 17th September until the 6th December 1881, in straightening and deepening the channel leading to the harbor to 10 ft at low water.

#### LITTLE HARBOR.

Little Harbor is on the Atlantic Coast of Nova Scotia in Lunenburg Co.

The entrance has been improved by deepening the water on the bar so that fishing boats can now enter at all times of tide.

#### PORTER'S LAKE.

Porter's Lake is a large body of water about 13 miles long with an average width of about half a mile, lying 18 miles east of Halifax. The southern end is separated from the Atlantic by several small islands which are connected by beaches of sand and shingle.

A small amount, has been expended in cutting a passage through one of these beaches with a view of giving boats access to the lake.



## NEW BRUNSWICK.

## CLIFTON.

Gloucester Co. is on the south shore of the Baie des Chaleurs, 15 miles east of Bathurst.

A small amount has been expended in repairing the damage done to the breakwater at this place by the ice during the winter of 1880-81.

## SHIPPEGAN.

Gloucester Co., is at the extreme north east point of New Brunswick.

During the past year the dam closing the East Gully was repaired and raised two feet higher than before, as it was found that the sea drove the ice over it and damaged the top. It has also been strengthened by driving piles 10 feet apart on both sides.

## HORSE SHOE SHOAL.

This shoal is situated at the mouth of the River Miramichi, Northumberland County, and lies in the direct course of vessels entering or leaving the river.

Since 1875 dredging has been carried on with the view of opening a channel 150 feet in width and 20 feet in depth at low water, and during 1881 the dredge "St. Lawrence" operated from the 1st July until the 1st September. It will require two if not three seasons further work of this dredge before the channel will be completed.

## RICHIBUCTO.

Richibucto, Kent Co., is on the west shore of the Gulf of St. Lawrence.

An extension of the breastwork for the protection of the North Beach 220 feet in length has been built during the past season, this work being needed to prevent a breach being made through the beach to the westward of the breakwater at the entrance to the harbor.

## BUCTOUCHE.

In Kent County, on the eastern side of New Brunswick, about 21 miles northward from the harbor of Shediac.

The dredge "Canada" was engaged up to 16th August, 1881, in opening a passage through a mussel bed obstructing the entrance to the harbor, and in widening the channel by the removal of an old wreck.

## COCAGNE.

Cocagne Harbor is on the east coast of New Brunswick and opens on the Strait of Northumberland about 10 miles north of Shediac.

A landing pier is being constructed under contract on the north side of the harbor near the highway bridge, and at the close of the year was about half finished.

During August, 1881, the dredge "Canada" operated at the mouth of the harbor with the view of giving an increased depth of water.

## POINT DU CHÊNE.

Point du Chêne, Westmorland County, is the Eastern terminus of the New Brunswick Division of the Intercolonial Railway.

The contract for the additional length of 600 ft. to the breakwater which protects the Railway wharf was nearly completed at the close of the fiscal year.

## QUACO.

Saint John County, is on the north side of the Bay of Fundy, about 30 miles east of the City of St. John.

The construction, by contract, of a breakwater 300 feet in length on the western side of the harbor is in progress, and at the close of the year was partly completed.

## SAINT JOHN.

A contract has been entered into for the rebuilding of the portion of the breakwater at the western entrance to the harbor, which was destroyed during a gale in January, 1879. At the close of the fiscal year the works were well under way.

The dredge "Canada" operated in the harbor between the 28th December, 1881, and the end of March, 1882, in the removal of the "tail of the bar" extending southwardly from Navy Island, which interfered during times of low water with the ferry boat plying across the harbor.

At Marble Cove the dredge "New Dominion" worked from 8th July until the 20th September, 1881, in opening a channel to the Public Wharf.

## FORT DUFFERIN.

This fort stands on Negro Point, a promontory composed of clay and gravel, at the western entrance of the Harbor of St. John, N. B. Owing to the base of the cliff being washed by the sea during high tides, it was undermined, and in March 1879, a large portion of the bank gave way and fell, partially destroying the battery.

During 1881-82 a crib-work retaining wall was constructed around the foot of the cliff, and the glacis of the fort restored.

## ST. ANDREWS HARBOR.

The town of St. Andrews is situated on the point between Passamaquoddy Bay and the River St. Croix. A contract has been made for the construction of a "Block and Beacon" on a reef at the western entrance of the harbor and the works are now in progress.

## ST. JOHN RIVER.

The work of improving navigation between River de Chute and Bear Island has been advanced by the removal of boulders at the following points:

Hartland, Woodstock, Dibblee's Bar, Eel River, Belvisor Bar, Meductic Falls, Lower Southampton, Nackawic, Kirk's, Morehouse's, Bear Island and Knapp's Bar.

Further dredging was done by the "New Dominion" on the Oromocto Shoals, between the 15th October and 5th November, 1881.

The extension of the sheer-dam at Oromocto to the head of Thatch Island was brought to completion in December, 1881. During the Spring of 1882 an apron of brush and stone was placed on the lower side of the dam, to prevent scour in time of freshets.

## RIVER TOBIQUE

Is a tributary of the St. John, into which it flows about 24 miles below Grand Falls.

The work done consisted in blasting and removing rock in reefs and boulders at "the Narrows," "Upper Red Rapids," "the Oxbow" and "the Gulquac," for the improvement of the river for the passage of timber, &c.

## RIVER MADAWASKA.

The Madawaska rises in lake Temiscouata, and running southwardly falls into the river St. John at Edmundston, N.B., 239 miles above the city of St. John.

The sum of \$600 was expended on the portion of this river in New Brunswick during the summer of 1881, in repairing the tow path, and the removal of boulders which obstructed navigation; and the sum of \$100 was expended for the same purpose on the Quebec portion of the river.

## QUEBEC.

## ETANG DU NORD.

Etang du Nord is at the western end of Grindstone Island, one of the Magdalen group, in the Gulf of St. Lawrence.

The work of constructing a breakwater at Etang du Nord was commenced in June, 1881, and during the fiscal year a length of 225 feet was completed; and this portion has been found to be of benefit, in affording shelter to boats and fishing craft.

## PERCÉ.

Percé the capital of Gaspé County, is situated on the Gulf of St. Lawrence about 36 miles from Gaspé Basin.

During the season of 1881, an examination was made for the purpose of determining the position and cost of works for the protection of the large fleet of fishing craft frequenting the Gulf during stormy weather. The report submitted will be found as an appendix to this report.

## NEW CARLISLE,

Is the shire town of the County of Bonaventure, and lies on the northern side of the Baie des Chaleurs.

Owing to the exposed site of the breakwater at this place, only 180 feet of work to the level of high tide was put *in situ* during the working season of 1881. There remains a length of about 300 feet still to construct to connect with the shore, together with the superstructure over the whole length.

## CARLETON.

Carleton, situated in the County of Bonaventure, is on the north shore of the Baie des Chaleurs, and distant from Campbellton, N. B., 36 miles.

During the year the work of constructing the pier at this place was actively prosecuted, and with the sum appropriated for expenditure during 1882-83, it is expected that the work will be brought to completion.

## MATANE.

Matane, County of Rimouski, is on the southern shore of the St. Lawrence, 240 miles below Quebec.

During 1879 a pier was commenced at this place, but was only partly completed with the amount available.

An examination made in the fall of 1881 showed that much damage had been done by the ice to the unprotected corners of the crib work piers, and immediate repairs were made.

## TROIS-PISTOLES,

In the county of Temiscouata, is on the southern shore of the St. Lawrence, 149 miles below Quebec.

During the year a small isolated block was constructed off the western side of the harbor for a landing pier, and many boulders were removed from the harbor proper. Further work will be prosecuted to connect this block with the shore, and thus made it available as a landing, provision having been made for its cost.

## TADOUSAC.

Situated at the mouth of the Saguenay, and on the northern side.

The dams which form the ponds in connection with the Fish Breeding establishment at Tadousac, were rebuilt during 1881-82, as follows:—

Dam No. 1,	40 feet in length and 4 feet in height.
“ 2,	200 “ “ 8 “ “
“ 3,	110 “ “ 19 “ “
“ 4,	64 “ “ 18 “ “

Over dam No. 4 has been constructed a bridge 150 feet in length by 12 feet in width.

A part of the ponds made by dams No. 3 and 4 have been cleansed.

Repairs have been made to the roads and wharfing in connection with the establishment.

## ANSE DU PORTAGE.

Opposite Tadousac, at the mouth of the River Saguenay.

During the year a commencement was made in the construction of a landing at Anse du Portage for the purpose of facilitating the transportation of the mails during the winter across the Saguenay to and from Tadousac.

This landing when complete will consist of an inclined plane 90 feet in length at the head of which, on a platform, will be placed a windlass by the means of which the mail boat can be drawn up and placed in safety. To prevent the accumulation of ice on the slip when the wind is from the N. E. and E. a jetty 180 feet in length will be constructed on the eastern side.

At the close of the year the works were well under way, and would be completed to be of service during the winter of 1882-83.

## ANSE ST. JEAN.

Anse St. Jean is 24 miles up the Saguenay on its southern shore.

The pier at this place is 351 feet in length and 26 ft in breadth up to the head which is 50 by 40 ft., and 33 feet in height. At low water spring tides there is a depth of 7½ feet at the end of the pier.

During the fiscal year the upper part of the pier was completed, the head sheathed and fenders put in place, and a large quantity of ballast placed in the central portion which was nearly empty.

Further works required to complete this pier will be proceeded with during 1882-83.

## ST. ALPHONSE DE BAGOTVILLE

Is at the head of Ha! Ha! Bay, on the southern shore of the River Saguenay, 66 miles from its mouth.

The wharf at St Alphonse is 444 feet in length and 24 ft. in breadth, the head being 76 ft. long and 52 ft. broad.

As stated in a previous report the inshore portion of this wharf was burnt some years ago.

During the year just ended, a length of 378 feet was reconstructed to a mean height of 10 ft., a large portion of the flooring renewed, the outside sheathed to a mean height of 14 feet, and fenders placed where required.

A sum of \$3,500 has been granted for the construction of a block at the outer end of the wharf.

## RIVER SAGUENAY.

The work of increasing the depth of the channel through the shoals in the river below Chicoutimi was prosecuted from July to November 1881, and 2350 rocks and boulders were removed over a distance of  $\frac{3}{4}$  of a mile and a breadth of 300 feet, and placed either on the bank or in deep places in the river where there is not less than 20 feet of water at low tide.

Dredging was commenced in September 1881, the special apparatus devised for the purpose having been found to answer very well.

## CHICOUTIMI.

Chicoutimi is situated on the southern shore of the Saguenay, at the head of navigation, and 75 miles from the St. Lawrence.

The wharf is 282 feet in length and 30 feet in width, with a head 127 feet in length parallel with the stream, and 34 feet in breadth. When first constructed there was a depth of 10 feet at the end of the wharf at low tide, but, owing to the accumulation of deposit, this depth has been reduced to 7 feet.

During the past year heavy repairs were made to the flooring of this pier, a new reight shed was built, and the old shed placed in order.

## LA GRANDE DÉCHARGE, RIVER SAGUENAY.

La Grande Décharge is the larger of the two channels through which the waters of Lake St. John flow into the River Saguenay.

Lake St. John receives the waters of a number of rivers, and during spring freshets it rises generally from 15 to 20 ft. above its summer level, and has been known to have attained heights of 30 and 35 feet; and, as the lands surrounding the lake are low, a general flooding takes place annually.

The outlets, the Grande and Petite Décharge, are comparatively small, the discharge through them being far less than the discharge into the lake, and consequently the level of the lake is slowly reduced, and as a rule the submerged lands dry out too late to be used for agricultural purposes.

The work of widening the Grande Décharge at one or two points has been undertaken, with the view of increasing its area, and thus permitting a greater flow of water during the continuance of freshets, and a quicker subsidence of the lake.

## RIVER DU LOUP (EN BAS).

On the southern side of the St. Lawrence, in the County of Temiscouata, 108 miles below Quebec.

With the amount available, the work of raising the level of the pier at this place was carried on during the summer of 1881.

The sheathing and fenders referred to in the report of last year were put in place.

A shed for freight and passengers was also built during the year.

## CAP À L'AIGLE,

In the County of Charlevoix, 3 miles from Murray Bay, on the northern side of the St. Lawrence.

The pier at this place constructed under a contract with a number of the inhabitants of the locality, was finished at the close of 1881.

## MURRAY BAY.

Murray Bay or Malbaie, is on the northern shore of the St. Lawrence, 90 miles below Quebec.

During the past year, a shed was built on the public wharf at this place, and some necessary repairs made to the wharf itself.

## RIVIÈRE OUELLE.

On the southern shore of the St. Lawrence, 75 miles below Quebec.

With the amount appropriated, a commencement was made of raising the pier at this place, as it was found to be too low, for, during storms at high water spring tides, the waves washed over it, rendering access to the outer end dangerous, and at times impossible.

## LES EBOULEMENTS,

On the northern shore of the St. Lawrence, 69 miles below Quebec.

During September and October, 1881, a portion of the flooring of the wharf at this place was renewed, fenders placed where required, the sheathing completed and the corners protected with boiler plate which had been provided some time ago but never placed in position.

## ILE AUX COUDRES,

In the County of Charlevoix, 12 miles from Bay St. Paul, on the north side of the St. Lawrence.

The landing pier referred to in the report of last year as being constructed by a number of the residents of Ile aux Coudres on behalf of the municipality, under a contract with the Department, was brought to completion at the close of 1881.

## BAY ST. PAUL.

Bay St. Paul, in the County of Charlevoix, is situated 60 miles below Quebec, and on the northern shore of the St. Lawrence.

During the winter of 1881-1882 a large quantity of timber was procured for a landing pier at Pointe-Rouge, Cap-aux-Corbeaux, and its construction was commenced in May last.

At the close of the year the work was well in hand.

## ILE AUX GRUES.

Ile aux Grues, or Crane Island, is an island in the St. Lawrence, opposite Cap St. Ignace, 36 miles below Quebec.

A block to carry a light house was constructed in 1862 near the upper end of the island, and has been used as a landing for passengers and freight at times of high water, access being had from the main land during the period of low water. To enable vessels to call and land goods etc., at low tide, a contract was entered into in November 1881, for the construction of a pier projecting from the block a distance of 171 feet into 6 feet at low water. At the close of the year the work was one third completed.

## GROSSE ILE,

Is an Island in the St. Lawrence, 29 miles below Quebec.

During the year the works in progress of extending, raising, and repairing the eastern landing pier, in connection with the Quarantine Establishment, were brought to a conclusion.

## STE. FAMILLE,

Is on the north shore of the Island of Orleans, 17 miles below Quebec.

The isolated blocks built in 1879 and 1880 were connected with the shore during 1881, and the pier thus rendered available for the smaller class of steamers and vessels which ply below Quebec.

## LES ECUREUILS.

Les Ecureuils, in the County of Portneuf, is on the northern shore of the St. Lawrence, 25 miles above Quebec.

At this place a small landing pier has been constructed, having 12 feet at high water, spring tides, at its outer end.

## NICOLET.

The Nicolet empties into the St. Lawrence on its southern side, at the foot of Lake St. Peter.

A contract was entered into in October, 1881, for the construction of works for the improvement of the harbor and the entrance thereto, but, owing to the extreme height of the water in the St. Lawrence during the past summer, the work of pile driving, etc., was not proceeded with, and therefore at the close of the year nothing had been done except the delivery of materials.

## RIVER YAMASKA.

The Yamaska takes its rise in the County of Brome, and, after a course of over 90 miles, falls into the St. Lawrence at the head of Lake St. Peter.

During August, 1881, a contract was entered into with Messrs Brecken, Gaherty & Davis, for the construction of a lift lock and dam at Ile à Cardin,  $1\frac{1}{2}$  miles below the Village of St. Michel, and about  $4\frac{1}{2}$  miles from the mouth of the river.

By the construction of these works, and dredging through the shoals below the lock, the river will be rendered navigable for vessels of moderate draught, to Bell Point or Rapid de la Grosse Roche, a distance of 21 miles.

At the close of the year about one-sixth of the work had been completed.

## RIVER RICHELIEU.

This river empties into the St. Lawrence on its southern side at Sorel, 45 miles below Montreal.

The dredge "Nipissing" was engaged between 7th July and 27th August 1881, in opening a channel to 10 feet in depth at low water, through two shoals, respectively one and three miles below the Village of St. Ours.

## BERTHIER EN HAUT.

Situated on the northern side of the River St. Lawrence, 45 miles below Montreal, and almost opposite Sorel at the mouth of the Richelieu.

The work of deepening the channel to 9 feet below the usual low water mark was brought to a close on the 5th July, 1881.

## RIVIÈRE L'ASSOMPTION.

This river discharges into the St. Lawrence, a short distance above the Village of Repentigny.

At Charlemagne, at the mouth of the river, dredging was carried on between 27th August and 5th November, 1881, on the boulder shoal off the steamboat wharf, and in making a cut to the mill channel, giving 10 feet depth at low water.

## LONGUE POINTE TO BOUCHERVILLE.—RIVER ST. LAWRENCE.

It having been found that obstructions existed in the channel on the route used by the ferry steamer between Longue Pointe and Boucherville, 6 miles below Montreal, a dredge was placed at work in May last for the purpose of making 7 feet at low water in the St. Lawrence, and, at the close of the fiscal year, it had removed 10,228 cubic yards of materials.

## ILE AUX NOIX,

Is an island in the River Richelieu near the Southern boundary of the Province of Quebec.

On this island is situated Fort Lennox, built by the British Government many years ago as a military post, and transferred to the Province of Canada in 1855. It was opened as a Reformatory prison in 1858 and closed in 1862. Access to this fort is had by a road from the public highway at the Village of St. Valentin to the river, and thence by ferry to the island. This road being, it is maintained, the property of the Dominion, extensive repairs had to be made to the bridge crossing a dry gully, which had become dangerous.

## LAPRAIRIE,

The *chef-lieu* of the County of Laprairie, is situated on the southern shore of the St. Lawrence, 7 miles above Montreal.

In May, 1882, a dredge was placed at work in deepening to 7 feet at low water around the front and sides of the public wharf, and was so engaged at the close of the fiscal year.

## BEAUHARNOIS.

The chief town of the County of Beauharnois, on the southern side of Lake St. Louis, River St. Lawrence, and 20 miles above Montreal.

The dredge "Queen of Canada" remained at Beauharnois until the 20th July, 1881, and completed the deepening in front of the wharves at that place, and the channel therefrom to the main channel of the river.

## BACOT HAYES SHOAL.—RIVER ST. LAWRENCE.

This shoal is an obstruction in the steamboat channel about  $2\frac{1}{2}$  miles below the Village of Cedars, in the county of Soulanges.

During the season of 1881 operations were commenced and carried on, in opening a new route 150 ft. in width, with 8 ft. depth at lowest water, about 200 ft. to the northward of that heretofore used.

Owing to the swiftness of the current, special vessels and machinery had to be devised and built for the purpose of lifting and removing the large boulders and stones of which the shoal is composed. At the close of the year about two-thirds of this new channel had been completed.

## THE CEDARS.

The Village of Cedars in the County of Soulanges, is situated on the northern bank of the St. Lawrence, 30 miles above Montreal.

During the year the landing pier at this place was largely repaired, as it was found to be more desirable to do this, than to engage in the construction of a new pier, referred to in last year's report.



## ST. PLACIDE.

St. Placide, in the County of Two Mountains, is situated on the River Ottawa about 9 miles from St. Andrews.

In 1879 the work of opening a channel from the main channel of the Ottawa to the public wharf at St. Placide was commenced, and work was resumed in June, 1882, for the purpose of completing the same, and at the close of the fiscal year fair progress had been made.

## RIVIÈRE À LA GRAISSE (RIGAUD)

This river empties into the Ottawa on its southern side about 15 miles above Vaudreuil.

Work was resumed on 21st July in deepening the channel towards the village of Rigaud, and continued until 23rd September, when 15,400 cubic yards of clay were removed.

## RIVIÈRE DU NORD.

This river enters the Ottawa on its northern side, at the head of the Lake of Two Mountains.

From 1st August to 6th September, 1881, the work of removing boulders from the channel about  $\frac{1}{2}$  mile below the Village of St. Andrews was continued, leaving a depth of  $5\frac{1}{2}$  feet at low water over a width of 70 feet.

## RIVIÈRE DU LIÈVRE.

This river empties into the Ottawa on its northern side, 19 miles below the City of Ottawa.

A small expenditure was made during the Summer of 1881 in deepening the channel of the river at Little Rapids, about 10 miles above the village of Buckingham, by blasting a reef which extends across the river at that point; and also in removing boulders from the Long Rapids, for the purpose of facilitating the navigation of the river by craft engaged in the transportation of phosphates.

## THE GATINEAU.

This river, one of the principal tributaries of the Ottawa, flows into the latter below the City of Ottawa.

Owing to the extreme lowness of the water in this river during the fall of 1881, it was necessary to open a passage for barges through the shoals in the channel near the railway bridge, which were found to be composed of sand, mingled with sawdust and refuse from the mills up the river, and as long as this refuse finds its way into the river so long will a shoaling of the water take place, and the usefulness of the river be destroyed.

## ONTARIO.

## UNION SUSPENSION BRIDGE.

This bridge, connecting the Cities of Ottawa and Hull, crosses the Ottawa immediately below the Chaudiere Falls. It was constructed in 1844, and in 1861 iron was substituted for wood in the floor beams.

An examination made in 1880 shewed that the roadway of the bridge required extensive repairs, and during 1881-82 the whole of the superstructure, with the exception of the iron floor beams, was renewed, and advantage was taken of the opportunity afforded to reduce the suspended weight of the bridge and to increase the strength and stiffness of the roadway by marked changes in the quantities of materials used and the form of trussing adopted.

## REMOVAL OF REEF BELOW SUSPENSION BRIDGE.—OTTAWA RIVER.

Immediately below the Union Suspension Bridge there existed a small rocky island the top of which was removed some years ago to nearly the summer level of the water in the Ottawa, and this, during the seasons of freshet, became a submerged reef which was a cause of much hindrance to navigation.

During the extremely low water of 1881, the top of this reef was removed to an average depth of about 3 feet, which has caused a marked improvement in the navigation of the channel.

## PORTSMOUTH.

Portsmouth is situated on a bay of that name 2 miles west from Kingston.

The appropriation for this harbor was expended in dredging to 13 feet of water over a portion of the basin, the material removed being mud and stone.

## SALMON RIVER.

The Salmon River empties into the Bay of Quinté at Shannonville, 40½ miles westward of Kingston.

A dredge was employed in opening a passage through the bar obstructing the mouth of the river, 1700 feet in length and 40 feet in width, to a depth of 8 feet which was all that could be made, as operations were stopped by the closing of navigation.

## BELLEVILLE.

Belleville which is the capital of the County of Hastings, is situated on the Bay of Quinté 43 miles west of Kingston.

The work done in this place was dredging along the pier at the eastern side of the harbour, across to the southward of the island, and up to the wharves on the western side, the material removed being loose rock, boulders, some earth, stones saw-dust, &c.

## TRENTON.

Trenton, County of Hastings, is at the mouth of the river Trent which empties into the Bay of Quinté, and is distant 60 miles from Kingston and 12 from Belleville.

The work at this place consisted in the removal of an old crib-work pier from the channel of the river, leaving from 15 to 16 feet of water.

## PICTON.

The capital of the County of Prince Edward is situated on the Bay of Quinté 40 miles west of Kingston and 34 miles from Belleville.

A few days dredging was done during May, 1882, to remove some points left unfinished in 1879.

## CONSECON.

At the head of Weller's Bay, Lake Ontario, in the County of Prince Edward.

During October and November, 1881, dredging was done on the shoal obstructing the entrance to Consecon Harbor, affording only a partial relief.

## COBOURG.

Cobourg is on Lake Ontario, 92 miles west of Kingston.

Owing to the failure on the part of the contractor to complete the work of extending the western pier it was taken out of his hands by the Department, but

not before it had received much damage during a gale. Last spring work was carried on under a foreman, and as the crib-work had settled into the sandy bottom, about 9 feet in height had to be built by divers—a tedious operation.

The extension of the Eastern pier was placed under contract in September last, but at the close of the fiscal year no work had been done.

#### PORT HOPE.

On the North shore of Lake Ontario, in the County of Durham, 63 miles east of Toronto.

During the fiscal year 12,442 cubic yards of material were dredged out of this harbor at a cost of 22½ cents per cubic yard.

The construction of an extension of the eastern pier 100 feet in length was commenced and was ready to sink at the close of the fiscal year.

#### TORONTO.

Dredging the western entrance to the harbor was continued until 8th October, 1881, and 25,570 cubic yards of material were removed, leaving the entrance the full width of 300 feet.

During the summer of 1881, this harbor was examined by James B. Eads Esq. C.E. with a view to its improvement and preservation, and his report thereon is attached as an appendix hereto.

#### PORT STANLEY.

Port Stanley is the terminus on Lake Erie of the London and Port Stanley Railroad, and is distant from Port Colborne, at the entrance to the Welland Canal, about 85 miles.

The block at the end of the western pier built in 1876-77 having settled at its outer end was rebuilt to its original height for the purpose of placing a lighthouse thereon.

#### RONDEAU.

The harbor of Rondeau on Lake Erie is 140 miles west of Port Colborne, the Southern entrance of the Welland Canal.

Under their contract Messrs F. B. McNamee & Co., only completed the piling in the protection work on the western side of the entrance to the harbor.

The work so far done has proved to be eminently successful, for not only have the breaches through the sand beach become closed, but the beach itself has formed on the lake side for a distance varying from 50 to 100 feet beyond the former line of high water.

A channel was opened from the harbor into and through Mill Creek, 15,485 yards of mud and clay having been removed at a cost of 18 cts. per cubic yard.

#### GODERICH.

Goderich is situated at the mouth of the River Maitland on the eastern coast of Lake Huron, 68 miles north of Sarnia.

It having been found that the beach between the northern pier and the breakwater was being gradually washed away, a contract was entered into in February last for the construction of works for its preservation, and also for repairing and raising the outer end of the southern pier and rebuilding the portion of the inner end of the northern pier which had been destroyed by the ice.

From 7th September until the close of navigation in 1881, and from 31st May until the close of the fiscal year 1882, the Dredge "Challenge" was engaged in deepening along the breakwater and the wharfing inside the harbor, and to 16 feet through the shoal off the entrance.

## PORT ALBERT.

Port Albert is at the mouth of Nine Mile Creek which runs into Lake Huron 9 miles north of Goderich.

The work done in this harbor during the year consisted, first, in dredging materials which had washed into the harbor amounting to 4002 cubic yards and, second, the placing of 85 feet of pile protection work on its northern side.

## KINCARDINE.

Kincardine is situate at the mouth of the River Penetangore which empties into Lake Huron, 31 miles north of Goderich.

A contract was entered into in November 1881, with Messrs Rooklidge and McLaren for the construction of 790 feet of pile protection work on the south side of the southern pier at the entrance to the harbor. At the close of the year the work was one half completed.

## PORT ELGIN.

In the County of Bruce, on Lake Huron, 4 miles from Southampton and 24 from Kincardine.

For the purpose of affording shelter and the formation of a harbor at this place, the construction of a breakwater 600 feet in length and necessary dredging was let to Messrs. Sutton and McKnight in November last. At the close of the year about one eighth of the work had been accomplished.

Towards the construction of this work the Village of Port Elgin has contributed \$5,000.

## SOUTHAMPTON.

On Lake Huron, at the mouth of the River Saugeen.

The sum of \$2,500 has been expended in restoring a length of 700 feet of the superstructure and flooring of the west breakwater, in placing 500 cubic yards of stone on the lake side of this breakwater at its junction with Chantry Island, and in the construction of a small breakwater 155 feet in length opposite the lighthouse, in order to protect the island at that point.

## TOBERMORY.

The harbor of Tobermory is situate at the extreme northern end of the County of Bruce on the channel leading from Lake Huron to Georgian Bay.

It is a large and safe natural harbor of refuge, and the sum of \$250.00 was expended in placing 15 large iron ring bolts and 7 fenders in the rocky sides of the harbor for the purpose of mooring and protecting vessels.

## BRUCE MINES.

Bruce Mines in the District of Algoma is situated on the northern shore of Lake Huron, 45 miles below Sault Ste. Marie.

The dredge "Challenge" operated between 21st July and 5th September, 1881, in opening a channel with 14 feet of water to the public wharf at this place to enable the larger class of steamers now plying on the lakes to call.

## LITTLE CURRENT.

Little Current is the passage between Cloche Island and the Great Manitoulin, and is on the direct route to Sault Ste. Marie from ports on the Georgian Bay, and distant about 140 miles from Collingwood.

Work was commenced in May and finished in October, 1881, on the rocky ledge obstructing the navigable channel, and 3,752 cubic yards were blasted and removed. This rock was deposited between Manitoulin and Spider Islands and has had the effect of reducing the current in the steamboat channel; the water which formerly flowed between these islands now runs to the north east of Spider Island where the channel is wide and deep.

About 10,000 yards of rock remain to be removed towards which an appropriation was made at the last session of Parliament.

#### OWEN SOUND.

Owen Sound, the shiretown of the County of Grey, is situated at the mouth of the River Sydenham, which discharges its waters into Georgian Bay.

The harbour works referred to in the report of last year were brought to a conclusion in November last.

With the amount placed in the Supplementary Estimates for expenditure in 1881-82, the dredging was completed in this harbor to the depth of 14 feet.

#### THORNBURY.

Thornbury is situated at the mouth of the Beaver River, in the County of Grey on Georgian Bay, 13 miles from Collingwood.

At this place a pier was constructed some years ago by the residents of the locality, but was allowed to fall out of repair and to become useless.

The vote of the session of 1881 having been supplemented by the sum of \$7,000.00 furnished by the Town of Thornbury, a contract was entered into for the reconstruction of the pier and the dredging a basin 100 feet in width to 10 feet in depth on its eastern side, and at the close of the year one fifth of the work was done.

#### COLLINGWOOD,

Is in the County of Simcoe, and situated on Nottawassaga Bay, south shore of Georgian Bay, 95 miles N.W. from Toronto.

The work of deepening the entrance to the harbor to 14 feet was prosecuted during the year, and 26,800 cubic yards of hardpan and clay were removed at a cost of 32 cents per cubic yard.

#### MANITOBA.

##### LAKE MANITOBA.

During the season of 1881 an examination was made to determine the cause of the overflow of Lake Manitoba, and the means to be taken to prevent it for the future.

A report by Mr. Thos. Guerin, C.E., on this subject is appended hereto.

#### BRITISH COLUMBIA.

From the report of the Hon. J. W. Trutch it is learned that the removal of the obstruction in the Harbor of Victoria known as the "Beaver Rock" was completed on the 22nd August, 1881, and that there is now a depth of 12½ feet at low water spring tides over the whole site of the rock.

Dredging was carried on from 19th January until the end of April 1882, to obtain a depth of 14 feet in front of the wharves in Victoria Harbor.

From 1st May to the end of the fiscal year, the dredge worked on the spit off Shoal Point at the entrance to the harbor.

## SURVEYS AND EXAMINATIONS.

During the year surveys and examinations were made at the undermentioned localities, and with a few exceptions, plans, reports and estimates have been forwarded.

South River, Murray Harbor,	Kings Co.,	P. E. I.
Nail Pond,	Prince Co.,	do
Cape Traverse,	do	do
Tracadie,	Queens Co.,	do
Belle Creek,	do	do
South West River, New London,	do	do
Annapolis,	Annapolis Co.,	N. S.
Parker's Cove,	do	do
Anderson's Cove,	do	do
Port Lorne,	do	do
Arisaig,	Antigonish Co.,	do
Cow Bay,	Cape Breton Co.,	do
Open Pond,	do	do
East Bay,	do	do
Grand Narrows,	do	do
Ramshead River,	Cumberland Co.,	do
Port Greville,	do	do
Bear River,	Digby Co.,	do
Meteghan River,	do	do
St. Mary's River,	Guysboro Co.,	do
Cheverie,	Hants Co.,	do
Hantsport,	do	do
Three Fathom Harbor,	Halifax Co.,	do
Port Hood,	Inverness Co.,	do
Petite Rivière,	Lunenburg Co.,	do
White Point,	Queens Co.,	do
Brooklyn,	do	do
Liverpool Bay,	do	do
Campbell's Harbor,	Richmond Co.,	do
River Inhabitants,	do	do
Yarmouth,	Yarmouth Co.,	do
Shippegan,	Gloucester Co.,	N. B.
River Miramichi,	Northumberland Co.,	do
The Traverse, River Restigouche,	Restigouche Co.,	do
Cross Point to Campbellton,	do	do
St. Michel,	Bellechasse Co.,	Quebec.
Port Daniel,	Bonaventure Co.,	do
Caplan,	do	do
Port-au-Saumon,	Charlevoix Co.,	do
Grande Décharge, Lake St. John,	Chicoutimi Co.,	do
Barachois de Malbaie	Gaspé,	do
Percé,	do	do
St. François,	Island of Orleans,	do
St. Jean, Port Joli,	L'Islet, Co.,	do
Pointe aux Trembles,	Portneuf Co.,	do
Bacot Hayes Shoal,	River St. Lawrence,	do
The Traverse,	do	do
River St. Francis,	do	do
Escoumains,	Saguenay Co.,	do
Three Rivers,	St. Maurice Co.,	do
Upper River Ottawa,	do	do

River au Sable	Bruce Co.,	Ontario.
Warton,	do	do
Tobermory	do	do
Southampton,	do	do
Kincardine,	do	do
Newcastle,	Durham Co.,	do
Kingsville,	Essex Co.,	do
Kingston,	Frontenac Co.,	do
Bayfield,	Huron Co.,	do
Goderich,	do	do
Port Albert,	do	do
Sarnia,	Lambton Co.,	do
The "Narrows" between lakes Simcoe and Couchiching,	do	do
Wellington,	Prince Edward Co.,	do
Collingwood,	Simcoe Co.,	do
Lake Manitoba,		Manitoba.
River Assiniboine,		do
Water Hen River,		do
River Saskatchewan,		N. W. T.
Victoria Harbor,		B. C.

## DREDGING.

*"The St. Lawrence."*

At the beginning of the fiscal year this dredge was operating on the Horse Shoe Shoal, at the mouth of the River Miramichi, N.B., remaining until 1st September when she left for Port Caledonia, Cape Breton, having removed 16,800 cubic yards of sand. Arriving at Port Caledonia on the 10th, only a few days work was done, for, owing to the lateness of the season and the exposed position of that harbor, it was found that satisfactory work could not be accomplished, and in consequence, the dredge proceeded to Sydney, C.B., and resumed work on the shoal in the harbor off the loading pier of the Cape Breton Coal Company, on the 16th September, remaining until the 28th November, when 24,500 cubic yards of gravel, stone, clay and mud had been removed.

During the winter of 1881-82 this dredge was quartered at Little Glace Bay, where necessary repairs were made, and, on the 17th April last, work was commenced in that harbor and continued until the 9th May, when the Gulf ice set in and jammed on the coast,—4,375 cubic yards of mud, clay, etc., having been removed. On the 29th May work was resumed at Port Caledonia, and at the close of the fiscal year the dredge had removed a total of 4,638 cubic yards of mud and clay.

Owing to unfavorable weather much time was lost whilst on the Horse Shoe Shoal, and also at Little Glace Bay and Port Caledonia, where additional difficulty was caused by the jamming of the Gulf ice.

The total quantity dredged during the year amounts to 50,313 cubic yards, at a cost of 28  $\frac{9}{100}$  cents per cubic yard.

The sum of \$29.50 was received from the Glace Bay Mining Company for old rubber valves and iron rivets and the amount placed to the credit of the Honorable the Receiver General.

*"The Canada."*

On the 1st July, 1881, the Canada was engaged at Buctouche, N.B., opening a passage through a mussel bed obstructing the entrance to the harbor, and in widening the channel by the removal of an old wreck. Up to the 16th August, 1881, 7,560 cubic yards of mud, sand, clay, stones and shells were removed; and, on that date this dredge went to Cocagne harbor for the purpose of improving the entrance,

remaining until the 31st and removing during her stay 1,800 cubic yards of sand and clay.

At this date it was found that repairs were required, and the vessel left for Pictou, N.S., where they were executed, and after their completion she sailed for Vogler's Cove, Lunenburg County, N.S., where work was commenced on the 17th September and continued until 6th December, when it was brought to a close by the formation of ice, 11,610 cubic yards of mud having been removed.

On the 28th December operations were commenced on the tail of the Navy Island Bar, in the harbor of St. John, N.B., and continued until the end of March, when 6,300 cubic yards of clay had been removed. The dredge was then laid up.

On the 26th May the "Canada" sailed for Halifax, N. S., where after arrival she went on the Marine slip for painting and repairs. On the 17th June, the work of removing an obstruction in the St. Mary's River, between Sherbrooke and Goldenville, Gussysboro' County, N. S., was commenced, and at the close of the fiscal year, 810 cubic yards of gravel, stones and sand, and a number of old trees had been removed. At this place dredging could only be done between half-flood and half-ebb tide, and the dredged material had to be taken ten miles to a place of deposit.

The total quantity of materials removed during the year amounts to 28,080 cubic yards, at a cost of 33  $\frac{7}{16}$  cents per cubic yard.

The sum of \$15.80 was received for coal sold from this dredge, and placed to the credit of the Honorable the Receiver General.

*"The New-Dominion."*

On the 8th July, 1881, this dredge commenced work at Marble Cove, Saint John, N. B., in opening a channel to the public wharf, completing the same on the 20th September, having removed 29,925 cubic yards of mud and clay, and many old roots and pieces of birch timber.

Between the 20th September and the 10th October work was done off the wharves of Messrs. Murray & Barnhill, near St. John, and 9,310 cubic yards of red clay removed. On the 15th October work was resumed on the Oromocto Shoals in the River St. John, and continued until the 5th November, resulting in the removal of 7,945 cubic yards of sand.

After arrival at St. John work on the tail of the Navy Island Bar was attempted, but, owing to the decayed state of the hull it was not deemed safe to continue the work, and the dredge was placed in winter quarters.

During the winter a contract was entered into with Mr. Isaac J. Olive, for the construction of a new hull, and the transference and fitting up of the machinery of the dredge, and at the close of the year the work was nearing completion.

The total quantity dredged during the year amounted to 47,180 cubic yards, at a cost of 14  $\frac{2}{16}$  cents per yard.

For work done by this dredge for Messrs. Murray & Barnhill, the sum of \$700.00 was received from that firm and placed to the credit of the Honorable the Receiver General. The birch timber raised at Marble Cove was sold for the sum of \$47.10, which was also placed to the credit of the Receiver General.

*The "Cape Breton."*

At the beginning of the fiscal year, this dredge was engaged at New Glasgow, Pictou County, N.S., in deepening the channel of the East River from the highway bridge to above the shipyards of Messrs. Carmichael and McCaul. This work was finished on the 13th July, and 5,410 cubic yards of gravel removed. On the 22nd July work was commenced in the River John, and continued until the 31st October, when the dredge was laid up for the winter, after having removed 18,175 cubic yards of sand and mud.

During the spring of 1882 repairs were made to the dredge and scows, and between the 28th and 31st of May last, 455 cubic yards of mud were removed out of the channel of the river opposite the ship-yard of Mr. James Kitchen.



On the 3rd June operations for the improvement of the mouth of the Tatamagouche River, Colchester County, N.S., were commenced and continued until the 30th June, up to which date 6,870 cubic yards of mud had been removed.

During the year this dredge removed 30,910 cubic yards of materials, at a cost of 30½ cents per yard.

*The "Prince Edward."*

This dredge was engaged at Crapaud, Queen's County, P.E.I., at the commencement of the fiscal year, and remained there until the 8th August, when the work in the channel was finally completed, and 12,990 cubic yards of sand, mud and stone removed.

From the 10th August to the 25th October, work was proceeded with in completing the channel at Nine Mile Creek through the flats to the public wharf, and 21,900 cubic yards of mud, clay and sand were removed.

At Pinnette, dredging was prosecuted between the 26th October and the 16th November, and the channel straightened, and the loading berths deepened at the public wharf, 3,825 cubic yards of sand and mud having been removed.

The "Prince Edward" wintered at Charlottetown, where some necessary repairs were executed.

On the 22nd May, 1882, dredging was commenced at Fort Augustus, East River, Queen's County, in deepening at the public wharf, and up to 30th May, 3,195 cubic yards of mud and sand were removed.

On the 1st June, the dredging plant left for South Murray Harbor, King's County, where the work of straightening the channel was commenced, and at the close of the fiscal year 5,415 cubic yards of sand and mud had been removed.

The total quantity removed by this dredge during the year amounted to 47,325 cubic yards, at a cost of 19  $\frac{77}{100}$  cents per yard.

*The "Geo McKenzie."*

As stated in the last report this dredge was at work at the close of the year at Mabou, Inverness County, N.S., engaged in opening a channel to 14 feet at low water through a shoal lying off the entrance to the harbor. Owing to the very high winds which prevailed during the summer of 1881, and the strong currents and undertow, which exist off the coast, it was only possible to work during mild and moderate weather, and when the wind was off shore. Work was prosecuted until the 30th October, when 12,448 cubic yards of clay, stone, and sand had been removed.

During the winter repairs were made to the dredge, and the plant was ready for work early in the spring, but, owing to the late period to which the ice remained and the difficulty of procuring tug service as soon as required, work was not resumed until the 19th June, 1882, and up to the 30th, a further amount of 276 cubic yards of materials were removed.

The total quantity of work done by this dredge during the year was only 12,724 cubic yards, at a cost of 68  $\frac{88}{100}$  cents per yard, and the smallness of the amount dredged is entirely due to the hard nature of the material operated upon, the exposed position of the locality where the work had to be performed, and the delays caused by high winds, etc., for a dredge of the "Geo McKenzie" class, is—from its build and construction, only capable of working in comparatively smooth water.

The sum of \$4 was received from the sale of an old forge, and placed to the credit of the Receiver General.

*The "Challenge."*

At the commencement of the fiscal year this dredge was at Port Albert, Lake Huron, and remained there until the 19th of July in deepening a portion of the harbor to 10 feet, removing 3,422 cubic yards of sand, clay and stones.

On the 21st July work was commenced at Bruce Mines, in opening a channel with 14 feet water to the public wharf at that place, and continued until the 5th September, having removed 22,388 cubic yards of clay and mud.

Dredging was begun at Goderich on the 7th September, in deepening to 13 feet along the breakwater and the wharfing inside the harbor, and to 16 feet through the shoal off the entrance, remaining at work until the close of navigation.

Owing to the delay in repairing the scows attached to this dredge, work was not resumed until the 31st May last, and up to the close of the year, 27,532 cubic yards of gravel, clay, sand and boulders had been removed.

During the winter the machinery of the dredge and the tug "Trudeau" were thoroughly overhauled and repaired, and the scows in a great measure rebuilt.

The work done by this dredge during the year amounted to 53,342 cubic yards, and cost 17 $\frac{1}{2}$  cents per yard.

#### *The "Nipissing."*

On the 1st July, 1881, this dredge was engaged in deepening the channel 9 feet through Lovesque's Shoal, below the town of Berthier, (*en haut*), Quebec, completing the work on the 5th. On the 6th the plant was removed to the River Richelieu, to work on two shoals, respectively one and three miles below the Village of St. Ours, to obtain 10 feet at low water. These channels were completed on the 27th August by the removal of 9,300 cubic yards of clay, stone and sand.

At Charlemagne, at the mouth of the River L'Assomption, dredging commenced on the 27th August, and ended on the 5th November, and a depth of 10 feet left through the boulder shoal off the steamboat wharf, and in a cut made to the mill channel, 15,675 cubic yards of boulders, clay and sand having been removed.

During the winter, this dredge, the tug "Dennis," and the scows were thoroughly overhauled and repaired at Ottawa.

On the 9th June, 1882, the work of extending a channel commenced some years ago, from the main channel of the Ottawa to the public wharf at St. Placide, Quebec, was begun, and at the close of the year, 3,037 cubic yards of clay were removed, and a depth of 6 feet at low water obtained.

This dredge removed during the year 28,237 cubic yards of stone, clay and sand, at a cost of 29 $\frac{3}{8}$  cents per cubic yard.

#### *The "Queen of Canada."*

At the commencement of the year this dredge was at Beauharnois, Quebec, deepening to 9 feet in front of the wharves, and in making a cut to the same depth to the main channel of the St. Lawrence.

On the 21st of July work was resumed in dredging the channel of the Rivière à la Graisse, towards the village of Rigaud, to a depth of 7 feet, and continued until the 23rd September, when 15,400 cubic yards of clay were removed.

On the 27th September, work on the shoals in the channel of the Gatineau, in the vicinity of the railway bridge was commenced, to obtain a depth of six feet at low water, and continued until the close of navigation, when 3,700 cubic yards of sand, mingled with slabs, saw-dust and mill refuse were removed.

Extensive repairs were made during the winter to the hull of the dredge and the scows; and the machinery was placed in thorough working order.

On the 17th May, 1882, this dredge and scows were sent to Laprairie, arriving and commencing work at that place on the 29th, in deepening to 7 feet at low water around the front and sides of the public wharf, and at the close of the year 1,725 cubic yards of hard packed gravel had been removed.

The total quantity of materials removed by this dredge during the year amounted to 24,475 cubic yards of hard gravel, clay and sand, costing 33 $\frac{1}{11}$  cents per yard.

*The "Dredger"—British Columbia.*

The dredging plant, consisting of dredge, tug and scows, remained at Coquitlem River, near New Westminster, until early in January, when they were removed to Victoria Harbor, and commenced work on the 19th January last, in the removal of deposit along the front of the wharves to 14 feet, at low water spring tides, which depth, owing to the presence of rock was not fully obtained.

On the 1st May, operations were commenced at the entrance to the harbor to obtain a depth of 14 feet at low-water spring tides, through the Spit shoal, which extends about 450 feet off Shoal Point, and were in progress at the close of the year.

The total quantity of materials removed during the year amounted to 22,356 cubic yards, at a cost of 48  $\frac{45}{100}$  cents per yard.

## DREDGING PLANT.

The dredging plant belonging to the Department is as follows :

## IN THE MARITIME PROVINCES.

The steam hopper dredge—	" St. Lawrence "		
" "	" "Canada." "		
The dipper dredge	—	" New Dominion "	and 10 scows.
" "	—	" Cape Breton "	5 "
" "	—	" Prince Edward "	3 "
" "	—	" Geo. McKenzie "	3 "

## IN QUEBEC.

The dipper dredge—	" Queen of Canada,"	2 scows and stone lifter.
" "	" Nipissing "	2 scows, and the steam tug " Dennis."

## IN ONTARIO.

The dipper dredge—" Challenge," 2 scows, and the steam tug " Trudeau."

## IN BRITISH COLUMBIA.

An elevator dredge and 4 scows.  
The steam tug " Georgia."

During the winter of 1881, a new hull was constructed for the " New Dominion" and the dredging machinery, &c., transferred thereto. Under a contract with Messrs. D. and A. Campbell, four scows are being built at Tatamagouche, three of which are to be attached to the dredge " Prince Edward," the other to the " Cape Breton." A scow attached to the " Challenge" was condemned during the year, and will be replaced by another to be constructed during the ensuing winter.

As will be seen by reference to the details of expenditure in connexion with the dipper dredges in the Maritime Provinces, a large amount, about one-third of the whole, was paid for towage, performed by tugs hired for the purpose. This service would be more satisfactorily rendered and performed, and at a large saving in yearly expense, if proper tugs were provided by the Department.

CLASSIFICATION of Disbursements of the following Dredges, during the year ended 30th June, 1882.

“SR. LAWRENCE.”

Items.	July.	August.	Sept.	October.	November.	Dec.	Jan'y.	Feb'y.	March.	April.	May.	June	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages .....	508 33	513 25	512 87	507 70	560 33	463 25	458 33	463 50	483 33	512 16	510 17	468 33	5,951 55
Coal .....	77 00	984 07	984 07	161 88	.....	120 98	.....	.....	.....	.....	.....	.....	1,343 87
Provisions .....	314 51	427 31	427 31	128 38	132 22	.....	181 68	147 51	188 04	184 94	26 87	.....	1,681 47
Stores .....	94 93	45 25	190 89	7 72	8 50	3 76	6 80	.....	3 76	.....	174 96	58 21	691 01
Equipment .....	.....	.....	.....	.....	29 79	.....	.....	.....	.....	.....	.....	.....	29 79
Water .....	.....	18 00	.....	.....	12 00	.....	.....	.....	.....	.....	.....	.....	30 00
Repairs .....	.....	2,316 60	.....	4 40	.....	11 60	93 87	.....	.....	397 57	308 79	.....	3,632 73
Pilotage .....	130 00	160 00	63 75	52 00	.....	.....	30 00	.....	.....	24 00	54 00	52 00	535 75
Towage .....	.....	.....	.....	10 00	.....	.....	12 20	.....	.....	3 59	.....	.....	30 00
Contingencies .....	.....	37 59	.....	.....	6 65	2 25	.....	.....	.....	.....	.....	.....	72 28
Totals .....	1,124 77	3,590 69	2,178 89	872 05	749 49	477 00	903 83	611 01	625 13	1,122 26	1,074 79	568 54	13,898 45
Working expenses .....	1,124 77	774 09	2,178 89	867 65	749 49	.....	.....	.....	.....	724 69	591 04	510 33	7,520 95
Repairs, ordinary .....	.....	2,816 60	.....	4 40	.....	477 00	903 83	611 01	625 13	397 57	483 75	58 21	6,377 50
Totals .....	1,124 77	3,590 69	2,178 89	872 05	749 49	477 00	903 83	611 01	625 13	1,122 26	1,074 79	568 54	13,898 45

CLASSIFICATION of Disbursements of the following Dredges, during the Year ended 30th June, 1882.

"CANADA."

Item.	July.	August.	Sept.	October.	November.	Dec.	Jan.	Feb'y.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	463 00	398 00	403 50	450 33	373 00	373 00	380 39	446 63	371 02	394 37	398 00	.....	4,450 24
Coal.....	518 12	.....	357 57	280 00	10 71	98 50	.....	248 75	112 50	.....	.....	.....	1,626 15
Provisions.....	236 00	.....	168 69	38 12	221 10	148 57	.....	116 26	112 18	89 50	.....	169 43	1,399 85
Stores.....	107 04	.....	22 27	.....	6 66	16 31	22 25	.....	.....	93 00	60 62	.....	682 56
Equipment.....	.....	.....	.....	.....	60 61	.....	.....	127 03	.....	.....	.....	241 67	354 41
Water.....	10 00	.....	1 00	.....	.....	.....	.....	.....	.....	.....	.....	20 00	429 31
Repairs.....	.....	420 25	.....	167 73	.....	.....	.....	.....	.....	.....	165 44	.....	31 00
Photage.....	.....	72 50	84 00	.....	92 50	103 00	67 50	.....	67 50	.....	105 00	1,528 91	2,282 33
Wharfage.....	50 00	.....	20 00	.....	36 00	.....	.....	4 20	.....	.....	.....	25 00	617 00
Contingencies.....	.....	23 01	.....	.....	9 56	20 71	.....	.....	55 00	.....	.....	27 50	137 70
Totals.....	1,384 16	913 76	1,056 03	936 18	810 14	760 09	470 14	942 87	718 20	576 87	729 06	2,366 92	11,664 42
Working expenses.....	1,384 16	493 51	1,056 03	768 45	810 14	760 09	470 14	942 87	718 20	576 87	.....	225 93	8,206 39
Repairs, ordinary.....	.....	420 25	.....	167 73	.....	.....	.....	.....	.....	.....	729 06	2,140 99	3,458 03
Totals.....	1,384 16	913 76	1,056 03	936 18	810 14	760 09	470 14	912 87	718 20	576 87	729 06	2,366 92	11,664 42

"NEW DOMINION."

Wages.....	444 50	447 75	444 50	444 50	444 50	309 47	276 89	80 00	80 00	80 00	80 00	80 00	80 00	80 00	97 50	2,865 11
Coal.....	37 12	445 93	6 00	17 15	6 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	489 05	43 00
Stores.....	20 04	5 81	17 15	.....	.....	.....	195 57	.....	.....	.....	.....	.....	.....	.....	195 57	391 80
Equipment.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	466 67
Water.....	101 00	140 80	110 00	40 00	40 00	.....	145 56	.....	.....	.....	.....	.....	.....	.....	.....	2,032 44
Repairs.....	.....	292 51	28 60	28 60	28 60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	69 64
Towage.....	460 00	725 00	340 00	247 44	270 00	270 00	9 28	.....	.....	.....	.....	.....	.....	.....	.....	.....
Contingencies.....	10 36	.....	50 00	50 00	50 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	1,063 02	2,057 80	894 50	833 69	833 69	588 75	618 02	80 00	80 00	80 00	80 00	80 00	80 00	80 00	97 50	6,553 28
Working Expenses..	1,063 02	1,766 29	894 50	805 09	805 09	588 75	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,116 65
Repairs, Ordinary...	.....	292 51	.....	28 60	28 60	.....	618 02	80 00	80 00	80 00	80 00	80 00	80 00	80 00	97 50	1,436 63
Totals.....	1,063 02	2,057 80	894 50	833 69	833 69	588 75	618 02	80 00	80 00	80 00	80 00	80 00	80 00	80 00	97 50	6,553 28

"CAPE BRETON."

Wages.....	527 59	492 75	489 50	589 00	589 00	145 00	147 50	145 00	140 00	147 50	288 42	339 63	.....	.....	.....	3,451 89
Coal.....	78 75	27 50	.....	.....	.....	91 85	.....	.....	.....	.....	.....	.....	.....	.....	.....	198 10
Stores.....	81 78	.....	.....	.....	.....	.....	11 85	.....	.....	.....	.....	117 36	.....	.....	.....	210 99
Equipment.....	.....	.....	.....	.....	.....	.....	245 21	.....	.....	.....	.....	.....	.....	.....	.....	215 21
Water.....	22 00	78 75	58 38	57 00	57 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	216 13
Repairs.....	.....	657 05	.....	.....	.....	.....	.....	.....	.....	.....	39 46	289 72	.....	.....	.....	1,254 93
Towage.....	1,362 50	280 00	1,052 01	.....	.....	650 00	10 00	.....	.....	.....	.....	.....	.....	.....	.....	3,344 50
Wharfage.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10 00
Contingencies.....	.....	.....	.....	12 50	12 50	12 54	.....	.....	.....	.....	.....	.....	.....	.....	.....	25 04
Totals.....	2,072 62	1,536 05	1,599 88	658 50	658 50	899 39	414 56	145 00	140 00	147 50	327 88	746 71	268 70	268 70	268 70	8,956 79
Working Expenses..	2,072 62	879 00	1,599 88	658 50	658 50	899 39	117 50	.....	.....	.....	.....	.....	.....	.....	.....	6,56 89
Repairs, Ordinary...	.....	657 05	.....	.....	.....	.....	267 06	145 00	140 00	147 50	327 88	746 71	268 70	268 70	268 70	2,639 90
Totals.....	2,072 62	1,536 05	1,599 88	658 50	658 50	899 39	414 56	145 00	140 00	147 50	327 88	746 71	268 70	268 70	268 70	8,956 79

CLASSIFICATION of Disbursements of the following Dredges, during the Year ended 30th June, 1882.

"PRINCE EDWARD."

Items.	July.	August.	Sept.	October.	November.	Dec.	Jan.	Feb.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	484 50	487 75	472 11	484 50	484 50	147 50	145 00	140 00	147 50	142 50	370 69	360 00	3,866 55
Coal.....	288 30	.....	109 46	.....	.....	93 00	.....	.....	.....	.....	.....	.....	490 76
Stores.....	99 30	.....	151 88	.....	.....	.....	.....	.....	.....	.....	42 41	.....	283 59
Equipment.....	.....	.....	61 44	.....	.....	180 80	.....	.....	.....	.....	.....	.....	242 24
Water.....	.....	22 08	20 01	1 9 51	10 00	.....	.....	.....	.....	13 29	.....	.....	244 82
Repairs.....	51 84	.....	.....	.....	66 00	49 37	.....	.....	.....	.....	410 29	.....	577 50
Pilotage.....	.....	.....	75 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	75 00
Towage.....	.....	1,260 00	1,070 00	.....	360 00	.....	.....	.....	.....	.....	150 00	250 00	3,030 00
Wharfage.....	.....	.....	50 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	50 00
Contingencies.....	.....	.....	2 24	15 50	.....	.....	.....	.....	.....	.....	2 45	.....	20 19
Totals.....	923 94	1,709 83	2,012 13	679 54	920 50	470 67	145 00	140 00	147 50	155 70	975 84	610 00	8,890 65
Working Expenses.....	872 10	1,709 83	2,012 13	679 54	854 50	240 50	.....	.....	.....	13 20	565 55	250 00	7,197 35
Repairs, Ordinary.....	51 84	.....	.....	.....	66 00	230 17	145 00	140 00	148 50	142 50	410 29	360 90	1,693 30
Totals.....	923 94	1,709 83	2,012 13	679 51	920 50	470 69	145 00	140 00	147 50	156 70	975 84	610 00	8,890 65

"GEO. MCKENZIE."

Wages.....	484 50	487 75	484 50	484 50	145 00	147 50	145 00	140 00	147 50	241 00	347 38	3,257 63
Coal.....	69 45	.....	170 50	.....	.....	.....	.....	.....	.....	.....	50 00	289 95
Stores.....	51 15	.....	119 12	33 04	.....	.....	.....	.....	.....	48 58	7 33	289 22
Equipment.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	198 80
Water.....	37 63	17 50	22 75	19 25	.....	.....	.....	.....	.....	.....	.....	97 13
Repairs.....	.....	991 23	900 00	182 90	546 25	.....	.....	.....	.....	85 42	39 04	1,115 69
Towage.....	1,450 00	.....	.....	.....	.....	.....	.....	.....	.....	4 00	.....	3,079 15
Wharfrage.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4 00
Contingencies.....	22 25	.....	.....	.....	.....	4 91	.....	.....	.....	.....	.....	27 16
<b>Totals.....</b>	<b>2,114 98</b>	<b>1,496 48</b>	<b>1,696 87</b>	<b>719 69</b>	<b>691 25</b>	<b>351 21</b>	<b>145 00</b>	<b>140 00</b>	<b>147 50</b>	<b>382 00</b>	<b>443 75</b>	<b>8,328 73</b>
Working Expenses..	2,114 98	505 25	1,696 87	719 69	691 25	162 41	.....	.....	.....	.....	404 71	6,285 16
Repairs, Ordinary...	.....	991 23	.....	.....	.....	198 80	145 00	140 00	147 50	382 00	39 04	2,043 67
<b>Totals.....</b>	<b>2,114 98</b>	<b>1,496 48</b>	<b>1,696 87</b>	<b>719 69</b>	<b>691 25</b>	<b>351 21</b>	<b>145 00</b>	<b>140 00</b>	<b>147 50</b>	<b>382 00</b>	<b>443 75</b>	<b>8,328 73</b>

"NIPISSING."

Wages.....	418 50	411 00	425 94	407 45	289 80	56 00	56 00	53 00	.....	.....	.....	2,568 27
Coal.....	.....	.....	.....	.....	27 19	.....	.....	.....	.....	.....	.....	174 69
Wood.....	1 50	.....	.....	103 56	8 43	.....	.....	.....	.....	.....	.....	205 39
Stores.....	38 38	13 05	.....	64 35	2 89	.....	.....	.....	.....	.....	96 30	7 50
Equipment.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	144 37	9 83
Repairs.....	13 95	44 02	.....	128 01	26 60	225 00	.....	.....	.....	571 35	3,768 40	154 20
Pilotage.....	.....	.....	.....	5 00	.....	.....	.....	.....	.....	.....	.....	56 47
Towage.....	60 00	.....	.....	.....	58 00	.....	.....	.....	.....	.....	.....	15 00
Contingencies.....	3 02	5 40	11 28	0 85	17 55	.....	.....	.....	.....	.....	.....	118 00
<b>Totals.....</b>	<b>535 35</b>	<b>473 47</b>	<b>437 22</b>	<b>709 22</b>	<b>430 46</b>	<b>281 00</b>	<b>56 00</b>	<b>53 00</b>	<b>571 35</b>	<b>4,009 07</b>	<b>8 92</b>	<b>47 02</b>
Working Expenses..	521 40	429 45	437 22	581 21	403 86	56 00	56 00	53 00	.....	.....	240 67	3,505 04
Repairs, Ordinary...	13 95	44 02	.....	77 73	26 60	.....	.....	.....	.....	.....	93 87	312 64
do Extraordinary...	.....	.....	.....	60 28	.....	225 00	.....	.....	.....	571 35	3,674 53	4,521 16
<b>Totals.....</b>	<b>535 35</b>	<b>473 47</b>	<b>437 22</b>	<b>709 22</b>	<b>430 46</b>	<b>281 00</b>	<b>56 00</b>	<b>53 00</b>	<b>571 35</b>	<b>4,009 07</b>	<b>782 70</b>	<b>8,338 84</b>



CLASSIFICATION OF Disbursements of the following Dredges, during the Year ended 30th June, 1882.

"QUEEN OF CANADA."

Items.	July.	August.	Sept.	October.	November.	ec.	Jan.	Feb.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	615 19	6 73	638 88	546 55	359 25	56 00	56 00	53 00	.....	.....	194 13	442 25	3,567 98
Coal.....	32 50	.....	.....	147 66	21 88	.....	.....	.....	.....	.....	.....	227 13	429 17
Wood.....	23 00	80 54	64 63	.....	39 77	.....	.....	.....	.....	93 35	19 40	7 65	167 17
Stores.....	39 91	10 30	14 05	.....	.....	.....	.....	.....	.....	5 95	57 80	4 72	224 43
Equipment.....	.....	20 74	79 84	2 18	57 71	.....	.....	.....	309 26	789 82	978 17	103 99	63 47
Repairs.....	40 00	.....	121 50	424 10	225 00	.....	.....	.....	.....	.....	260 00	.....	2,354 46
Towage.....	.....	10 85	.....	.....	5 00	.....	.....	.....	.....	.....	.....	.....	1,070 60
Contingencies.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15 85
Totals.....	762 35	729 16	918 90	1,120 49	708 61	56 00	56 00	53 00	309 26	889 12	1,509 59	785 74	7,898 13
Working Expenses.....	749 60	708 42	839 06	1,118 31	650 90	56 06	56 00	53 00	.....	99 30	531 33	681 75	5,543 67
Repairs, Ordinary.....	12 75	20 74	79 84	2 18	57 71	.....	.....	.....	309 26	46 63	10 70	103 99	334 54
do Extraordinary.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	743 19	967 47	.....	2,019 92
Totals.....	762 35	729 16	918 90	1,120 49	708 61	56 00	56 00	53 00	309 26	889 12	1,509 50	785 74	7,898 13

"CHALLENGE."

Wages.....	293 55	398 70	322 00	319 04	260 35	40 00	48 00	106 25	107 50	156 83	248 08	340 00	2,640 30
Coal.....	101 00	.....	.....	.....	33 00	.....	.....	.....	.....	.....	24 01	2 63	160 64
Wood.....	.....	155 50	158 25	143 81	60 00	.....	60 00	60 00	60 00	.....	45 50	195 00	758 06
Provisions.....	111 06	125 55	128 33	115 08	85 68	.....	.....	.....	.....	.....	32 76	121 50	719 96
Stores.....	25 86	9 05	.....	27 53	17 40	.....	.....	.....	.....	17 50	90 37	37 48	235 19
Repairs.....	2 50	46 15	39 15	20 92	200 33	70 00	.....	.....	.....	865 31	.....	2,479 75	3,714 11
Towage.....	445 00	.....	418 00	.....	.....	.....	38 00	.....	.....	.....	.....	.....	863 00
Contingencies.....	.....	.....	.....	13 32	.....	.....	.....	.....	.....	14 15	21 22	2 28	88 97
Totals.....	978 97	734 95	1,065 73	639 70	666 76	110 00	86 00	106 25	107 50	1,043 79	461 94	3,178 61	9,170 23
Working Expenses.....	976 47	688 80	1,026 58	618 78	456 43	40 00	86 00	106 25	107 50	188 48	461 91	698 89	5,456 12
Repairs, Ordinary.....	2 50	46 15	39 15	20 92	200 33	70 00	.....	.....	.....	205 70	.....	35 75	560 50
do Extraordinary.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	649 61	.....	2,444 00	3,163 61
Totals.....	978 97	734 95	1,065 73	639 70	666 76	110 00	86 00	106 25	107 50	1,043 79	461 94	3,178 61	9,170 23

CLASSIFICATION AND QUANTITIES OF MATERIALS REMOVED BY THE FOLLOWING DREDGES, DURING THE YEAR ENDED 30th JUNE, 1882.

"ST. LAWRENCE."

DESCRIPTION OF MATERIAL DREDGED.	July.	August.	September.	October.	November.	December.	Jan'y.	Feb'y.	March.	April.	May.	June.	Grand Totals.
Gravel .....			1,838	2,800	1,487								C. yds. 6,125
Clay .....													1,750
Clay and Stone .....			1,839	2,800	1,487						1,400	550	6,126
Sand—ordinary .....	9,625	7,175	2,185	2,870	1,488					963	525	3,062	27,823
Mud .....			1,838	2,800	1,488					962	1,400		8,488
Totals .....	9,625	7,175	7,700	11,200	5,950					1,925	3,325	3,412	50,312

"CANADA."

Hard-pan .....													360
Gravel .....													360
Clay .....	3,780	990			180		1,440	1,980	2,700				11,070
Clay and Stone .....	315												315
Sand—ordinary .....		810										90	900
Mud .....	315	3,160	2,880	4,500	3,960	270							15,075
Totals .....	4,410	4,950	2,880	4,500	3,960	450	1,440	1,980	2,700			810	28,080

CLASSIFICATION AND QUANTITIES OF MATERIALS REMOVED BY THE FOLLOWING DREDGES, DURING THE YEAR ENDED 30th JUNE, 1882—Continued.

“NEW DOMINION.”

DESCRIPTION OF MATERIAL DREDGED.	July.	August.	Septemb'r	October.	November.	Dec'ber.	Jan'y.	Feb'y.	March.	April.	May.	June.	Grand Totals.
Clay.....			13,255	4,410									C. yds. 17,665
Sand—ordinary.....				5,740	2,205								7,945
Mud.....	7,735	13,790	45										21,570
Totals.....	7,735	13,790	13,300	10,150	2,205								47,180

“CAPE BRETON.”

Gravel.....	5,410												5,410
Sand—ordinary.....	2,400												2,400
do very fine.....		4,815	3,625	2,308									10,748
Mud.....		1,030	1,690	2,308							455	6,870	12,352
Totals.....	7,810	5,845	5,315	4,615							455	6,870	30,910

“PRINCE EDWARD.”

Hard-pan.....	1,800			90									1,890
Clay.....	450		1,410	1,470									3,330
Sand—ordinary.....	6,540	1,620		45	360								13,613
Mud.....	1,980	7,920	9,390	2,220	3,420								28,492
Totals.....	10,770	9,540	10,800	3,825	3,780							3,195	47,325



CLASSIFICATION AND QUANTITIES of Materials removed by the following dredges, during the year ended 30th June, 1882—Continued.

"CHALLENGE."

DESCRIPTION OF MATERIAL DREDGED.	July.	August.	Septemb'r	October.	November.	Dec'ber.	Jan'y.	Feb'y.	March.	April.	May.	June.	Grand Totals.
Boulders.....			551	3,364	580						150	2,050	C. yds. 6,995
Gravel.....			4,263	3,451	609						150	2,200	10,673
Clay.....			1,740	609	261							1,450	24,302
Clay and Stone.....			348									1,450	4,988
Sand—ordinary.....				406									1,450
do very fine.....			348									2,450	3,204
Mud.....			938										2,030
Totals.....	7,830	16,240	6,902	9,222	3,248						300	9,600	53,342

"THE DREDGER"—(British Columbia.)

Hard Clay.....							1,404	2,160	2,844				6,408
Sand.....									720	360			1,080
Clay and Sand.....									756	972			1,728
Gravel and Boulders.....										864			864
Coal and Sand.....										1,224			1,224
Coal and Shingle.....										504			504
Sand and Shingle.....											5,292		10,548
Totals.....							1,404	2,160	4,320	3,924	5,292	5,256	22,356

Working Expenses..... \$7,459 73      Quantity dredged..... 22,356 cubic yards.  
 Repairs..... 3,372 98      Cost per yard..... 48.45 cents.

Total..... \$10,832 70

EXPENDITURE for dredging in Prince Edward Island, from 1st July 1873, to 30th June, 1882.

COUNTY.	LOCALITY.	Total for the nine years ended 30th June, 1881.		For the Year 1881-82.		Total Quantity.	Total Cost.	Cost for each County.
		Quantity.	Cost.	Quantity.	Cost.			
King's	Grand River.....	46,110	8,963 97	.....	.....	46,110	8,963 97	.....
	Montagne River.....	106,140	17,119 43	.....	.....	106,140	17,119 43	.....
	Murray Harbour.....	.....	26,083 40	5,415	1,070 59	5,415	1,070 59	27,153 99
	Charlottetown Railway Wharf, do Ferry.....	41,303	10,264 56	.....	.....	41,303	10,264 56	.....
Queen's.	Crapaud.....	300	43 48	.....	.....	300	43 48	.....
	Pownal.....	62,980	16,583 23	12,960	2,568 23	75,970	19,151 46	.....
	Rocky Point Ferry.....	41,970	9,197 62	.....	.....	41,970	9,197 62	.....
	Vernon River.....	21,360	3,086 29	.....	.....	21,360	3,086 29	.....
	Wood Islands.....	17,860	6,326 72	.....	.....	17,860	6,326 72	.....
	Nine Mile Creek.....	2,780	548 00	.....	.....	2,780	548 00	.....
	Hickey's Wharf.....	9,750	1,956 63	21,900	4,329 83	31,650	6,286 46	.....
	Carr's Point.....	750	150 51	.....	.....	750	150 51	.....
	Pinette.....	12,165	2,441 28	.....	.....	12,165	2,441 28	.....
	Fort Augustus.....	.....	50,908 32	3,825	756 24	3,825	756 24	.....
	.....	.....	.....	631 68	8,285 98	3,195	631 68	58,894 30
		363,468	76,691 72	47,325	9,356 57	410,793	86,048 29	86,048 29

EXPENDITURE for dredging in Quebec for the ten years ended 30th June, 1882, from Appropriations for Maritime Provinces.

Magdalen Islands, Co. Gaspé.....	6,800	2,392 92	.....	.....	6,800	2,392 92	.....
.....	495	242 05	.....	.....	495	242 05	2,634 97
Amherst Harbour.....	.....	.....	.....	.....	.....	.....	.....
River du Loup.....	2,587½	825 47	.....	.....	2,587½	825 47	825 47
.....	9,882½	3,460 44	.....	.....	9,882½	3,460 44	3,460 44

EXPENDITURE for dredging in Nova Scotia for the Ten Years ended 30th June 1882.

County.	Locality.	Total for nine years ended 30th June, 1881.		For the Year 1881-82.		Total Quantity.	Total Cost.	Cost for each Country.			
		Quantity.	Cost.	Quantity.	Cost.						
		C. yds.	\$ cts.	C. yds.	\$ cts.						
Antigonish.	Antigonish.....	22,025	3,649 15	22,025	3,649 15	22,025	3,649 15	.....			
	Havre au Bouche.....	10,668	2,498 48	10,668	2,498 48				10,668	2,498 48	.....
	Tracadie.....	2,580	675 26	2,580	675 26						
Cape Breton	Lingan.....	22,267	9,275 56	.....	.....	22,267	9,275 56	.....			
	Sydney.....	30,100	10,658 91	24,500	7,122 63	54,600	17,781 54	.....			
	Little Glace Bay.....	13,387½	3,483 67	4,375	1,271 89	17,762½	4,755 56	.....			
	Port Caledonia.....	.....	.....	4,637½	1,348 20	4,637½	1,348 20	33,160 86			
Colchester.....	Tatamagouche.....	17,130	3,323 77	6,870	2,095 05	24,000	5,418 82	5,418 82			
Cumberland.	Parrisho'.....	18,305	5,304 68	.....	.....	28,945	7,804 68	.....			
	Wallace.....	50,885	9,908 28	10,640	2,500 00	50,885	9,908 28	17,712 96			
Guysboro	Guysboro'.....	5,400	1,413 53	.....	.....	5,400	1,413 53	.....			
	Larry's River.....	26, 30	6,5-6 70	.....	.....	26,230	6,546 70	.....			
	Port Mulgrave.....	2,160	782 00	.....	.....	2,160	782 00	.....			
	Sherb-ooke.....	.....	.....	810	354 10	810	354 10	9,096 33			
Halifax.	Chezetcook.....	3,920	2,693 71	.....	.....	3,920	2,693 71	.....			
	Halifax.....	6,177	2,063 38	.....	.....	6,177	2,063 38	.....			
	Herring Cove.....	12,111	8,015 05	.....	.....	12,111	8,015 05	.....			
	Ketch Harbor.....	2,989	985 59	.....	.....	2,989	985 59	.....			
	Roche's Wharf.....	1,750	620 38	.....	.....	1,750	620 28	14,278 01			
Inverness.....	Cheticamp.....	54,135	11,731 08	.....	.....	54,135	11,731 08	.....			
	Mabou.....	1,168	468 50	12,724	8,765 19	13,892	9,233 69	20,964 77			
Lunenburg.	Lunenburg.....	29,070	10,849 66	.....	.....	29,070	10,849 66	.....			
	Mahone Bay.....	21,844	5,958 65	.....	.....	21,844	5,958 65	.....			
	Vogiers Cove.....	.....	.....	11,610	5,075 53	11,610	5,075 53	21,883 84			
Picton.....	Acadia Coal Co. Wharf.....	7,000	2,535 00	.....	.....	7,000	2,535 00	.....			
	Albion Mines.....	9,475	2,181 25	.....	.....	9,475	2,181 25	.....			

East River.....	19,559 53	88,870	19,559 53	88,870	19,559 53	88,870
Halifax Coal Co. Wharf.....	359 90	1,650	359 90	1,650	359 90	1,650
Pictou Public Wharf.....	1,726 72	7,020	1,726 72	7,020	1,726 72	7,020
do Railway Wharf.....	9,264 29	29,889	9,264 29	29,889	9,264 29	29,889
do Landing.....	1,366 92	2,970	1,366 92	2,970	1,366 92	2,970
Vale Colliery Wharf.....	682 15	1,395	682 15	1,395	682 15	1,395
River John, Ship yard.....	12,932 70	59,707	12,932 70	59,707	12,932 70	59,707
do Bar.....	996 39	3,330	996 39	3,330	996 39	3,330
Middle River Coal Wharf.....	4,055 29	20,900	4,055 29	20,900	4,055 29	20,900
New Glasgow.....	4,762 38	12,940	4,762 38	12,940	4,762 38	12,940
Queens.....	4,762 38	12,940	4,762 38	12,940	4,762 38	12,940
Liverpool.....	4,762 38	12,940	4,762 38	12,940	4,762 38	12,940
Richmond.....	2,535 20	7,000	2,535 20	7,000	2,535 20	7,000
D'Escousse.....	22,164 76	72,616	22,164 76	72,616	22,164 76	72,616
Cape La Ronde.....	6,334 85	20,825	6,334 85	20,825	6,334 85	20,825
St. Peter's Canal.....	13,687 25	42,517	13,687 25	42,517	13,687 25	42,517
Lockport.....	1,477 60	5,450	1,477 60	5,450	1,477 60	5,450
Yarmouth.....	1,477 60	5,450	1,477 60	5,450	1,477 60	5,450
Windsor.....	207,428 07	747,755 1/2	207,428 07	747,755 1/2	207,428 07	747,755 1/2
	207,428 07	747,755 1/2	207,428 07	747,755 1/2	207,428 07	747,755 1/2
	36,013 71	100,206 1/2	36,013 71	100,206 1/2	36,013 71	100,206 1/2
	150 00	150 00	150 00	150 00	150 00	150 00
	13,687 25	42,517	13,687 25	42,517	13,687 25	42,517
	6,334 85	20,825	6,334 85	20,825	6,334 85	20,825
	22,164 76	72,616	22,164 76	72,616	22,164 76	72,616
	2,535 20	7,000	2,535 20	7,000	2,535 20	7,000
	4,762 38	12,940	4,762 38	12,940	4,762 38	12,940
	4,055 29	20,900	4,055 29	20,900	4,055 29	20,900
	996 39	3,330	996 39	3,330	996 39	3,330
	12,932 70	59,707	12,932 70	59,707	12,932 70	59,707
	682 15	1,395	682 15	1,395	682 15	1,395
	1,366 92	2,970	1,366 92	2,970	1,366 92	2,970
	9,264 29	29,889	9,264 29	29,889	9,264 29	29,889
	1,726 72	7,020	1,726 72	7,020	1,726 72	7,020
	359 90	1,650	359 90	1,650	359 90	1,650
	19,559 53	88,870	19,559 53	88,870	19,559 53	88,870
	243,441 78	847,962	243,441 78	847,962	243,441 78	847,962



EXPENDITURE for dredging in New Brunswick for the Ten Years ended 30th June, 1882.

County.	Locality.	Total for the Nine Years ended 30th June, 1881.		For the Year 1881-82.		Total Quantity.	Total Cost.	Cost for each County.
		Quantity.	Cost.	Quantity.	Cost.			
		C. yds.	\$ cts.	C. yds.	\$ cts.	C. yds.	\$ cts.	\$ cts.
Gloucester.	Bathurst, Seal Bar..... } do Ballast Bar..... }	72,607½	20,629 52	.....	.....	72,607½	20,629 52	20,629 52
Kent.....	Richibucto.....	47,735	14,299 54	.....	.....	47,735	14,299 54	.....
	Bucouche.....	5,445	1,629 24	.....	.....	5,445	1,629 24	.....
	Bucouche Bar.....	.....	.....	7,560	3,305 00	7,560	3,305 00	.....
	Cocagne.....	.....	.....	1,800	786 90	1,800	786 90	20,020 68
Northumberland...	Horse Shoe Shoal, Miramichi...	136,967½	37,410 14	16,800	4,884 09	153,767½	42,294 23	42,294 23
Queens.....	Grand Lake.....	34,160	6,375 44	.....	.....	34,160	6,375 44	.....
	Jemseg.....	45,720	10,256 88	.....	.....	47,520	10,256 88	.....
	Washademoak.....	48,975	6,340 83	.....	.....	48,975	6,340 83	22,973 15
St. John.....	St. John, I. C. R terminus.....	139,810	37,130 01	.....	.....	139,810	37,130 01	.....
	do Navy Island.....	.....	.....	6,300	2,754 17	6,300	2,754 17	.....
	Marble Cove.....	.....	.....	29,925	4,374 40	29,925	4,374 40	.....
	Barnhill and Murray.....	.....	.....	9,310	1,360 93	9,310	1,360 93	45,619 51
Sunbury.....	Oromocto.....	99,058	21,509 74	7,945	1,161 38	107,003	22,671 12	22,671 12
Westmoreland.....	Pointe du Chêne.....	3,240	796 94	.....	.....	3,240	796 94	796 94
York.....	Fredericton.....	39,395	7,699 15	.....	.....	39,395	7,699 15	7,699 15
*Dredge "New Dominion"	.....	.....	.....	.....	.....	.....	777 84	777 84
		673,113	164,855 27	79,640	18,626 87	752,753	183,482 14	183,482 14

\* Dredge not in commission 1880-81; the above expenses for caretaking and repairs.

DETAILS of Dredging in Quebec and Ontario, during the Year ended 30th June, 1882.

Dredge.	Locality.	County.	Province.	Quantity.	Total Quantity.	Total Cost.	Cost per Cubic yard.
					C. yds.	\$ cts.	Cents.
"Nipissing"	Berthier en haut.....	Berthier.....	Quebec.....	225	} 28,237	} 8,338 84	} 29½
	St. Ours.....	Richelleu.....	do .....	9,300			
	Charlemagne.....	L'Assomption.....	do .....	15,675			
	St. Placide.....	Two Mountains.....	do .....	3,037			
"Queen of Canada"	Beauharnois.....	Beauharnois.....	Quebec.....	3,650	} 24,475	} 7,896 13	} 33¼
	Rigaud.....	Vaudreuil.....	do .....	15,400			
	Gatineau.....	Ottawa.....	do .....	3,700			
	Leprairie.....	Leprairie.....	do .....	1,725			
"Challenge"	Port Albert.....	Huron.....	Ontario.....	3,422	} 53,342	} 9,170 23	} 17½
	Bruce Mines.....	Algoma.....	do .....	22,388			
	Goderich.....	Bruce.....	do .....	27,532			

## DETAILS of Dredging in the Maritime Provinces

Dredge.	Locality.	County.	NEW BRUNSWICK.		
			Quantity.	Cost.	Total Cost.
			C. yds.	\$ cts.	\$ cts.
" New Dominion "	Marble Cove.....	St. John.....	27,925	4,374 49	.....
	Barnhill and Murrays.....	do.....	9,310	1,360 93	.....
	Oromocto Shoals.....	Sunbury.....	7,945	1,161 38	6,896 71
" Canada ".....	Buctouche Bar.....	Kent.....	7,560	3,385 00	.....
	Cocagne.....	do.....	1,800	786 90	.....
	Voglers Cove.....	Lunenburg.....	.....	.....	.....
	Navy Island, St. John.....	St. John.....	6,300	2,754 17	6,846 07
" Cape Breton "	Sherbrooke.....	Guysboro'.....	.....	.....	.....
	New Glasgow.....	Pictou.....	.....	.....	.....
	River John.....	do.....	.....	.....	.....
" Prince Edward "	Tatamagouche.....	Colchester.....	.....	.....	.....
	Crapaud.....	Queens.....	.....	.....	.....
	Nine Mile Creek.....	do.....	.....	.....	.....
	Pinette.....	do.....	.....	.....	.....
	Port Augustus, East River.....	do.....	.....	.....	.....
" St. Lawrence "	Murray Harbor, South Kings.....	Kings.....	.....	.....	.....
	Horse Shoe Shoal.....	Northumberland.....	16,800	4,884 09	4,884 09
	Port Caledonia.....	Cape Breton.....	.....	.....	.....
	Sydney, C.B.....	do.....	.....	.....	.....
" Geo. McKenzie "	Little Glace Bay.....	do.....	.....	.....	.....
	Mabou.....	Inverness, C.B.....	.....	.....	.....
By hand.....	Partridge Island River.....	Cumberland.....	.....	.....	.....
	do.....	Windsor.....	.....	.....	.....
			79,640	.....	18,626 87

Dredge.	NEW BRUNSWICK.		NOVA SCOTIA.		
	Quantity.	Cost.	Quantity.	Cost.	
	C. yds.	\$ cts.	C. yds.	\$ cts.	
" New Dominion "	47,180	6,896 71	.....	.....	
" Canada "	15,660	6,846 07	12,420	5,429 63	
" Cape Breton "	.....	.....	30,910	9,426 17	
" Prince Edward "	.....	.....	.....	.....	
" St. Lawrence "	16,800	4,884 09	33,512½	9,742 72	
" Geo. McKenzie "	.....	.....	12,724	8,765 19	
		79,640	18,626 87	89,566½	33,363 71

for the Year ended 30th June, 1882.

NOVA SCOTIA.			PRINCE EDWARD ISLAND.			Quantity by each Dredge.	Total Cost.
Quantity.	Cost.	Total Cost.	Quantity.	Cost.	Total Cost.		
C. yds.	\$ cts.	\$ cts.	C. yds.	\$ cts.	\$ cts.	C. yds.	\$ cts.
						47,180	6,896 71
11,610	5,075 53						
810	354 10	5,429 63				28,080	12,275 70
5,410	1,649 80						
18,630	5,681 32						
6,870	2,095 05	9,426 17				30,910	9,426 17
			12,990	2,568 23			
			21,900	4,329 83			
			3,825	756 24			
			3,195	631 68			
			5,415	1,070 59	9,356 57	47,325	9,356 57
4,637½	1,348 20						
24,500	7,122 63						
4,375	1,271 89	9,742 72				50,312½	14,626 81
12,724	8,765 19	8,765 19				12,724	8,765 19
10,640	2,500 00					10,640	2,500 00
	150 00	2,650 00					150 00
100,206½		36,013 71	47,325		9,356 57	227,171½	63,997 15

PRINCE EDWARD ISLAND.		Total Quantity.	Expenditure Dredging.	Superintendence.	Total Expenditure.	Cost per Cubic yard.
Quantity.	Cost.					
C. yds.	\$ cts.	C. yds.	\$ cts.	\$ cts.	\$ cts.	Cents.
		47,180	6,553 28	343 43	6,896 71	14·6178
		28,080	11,664 42	611 28	12,275 70	43·7169
		30,910	8,956 79	469 38	9,426 17	30·4955
		47,325	8,890 65	465 92	9,356 57	19·7706
		50,312½	13,898 45	728 36	14,626 81	29·0719
		12,724	8,328 73	436 46	8,765 19	68·8870
47,325	9,356 57	216,531½	58,292 32	5,054 83	61,347 15	28·3317

STATEMENT of Dredging in the Maritime Provinces, showing quantities removed by and expenditure of each Dredge for the Ten Years ended 30th June, 1882.

Dredge.	Total quantities and cost for the Nine Years from 1872-3 to 1880-81.			1881-82.			Total for Ten Years ended 30th June, 1882.		
	Total Quantity.	Total Cost.	Per cubic yard.	Quantity.	Cost.	Per cubic yard.	Quantity.	Cost.	Cost per cubic yard.
	C. yds.	\$ cts	Cents.	C. yds.	\$ cts.	Cents.	C. yds.	\$ cts.	Cents.
"New Dominion"	347,318	71,200 19	0-20 500	47,180	6,896 71	0-14 6178	394,498	78,098 90	0-19 7965
"Canada"	279,674	91,455 12	0-32 700	28,680	12,275 70	0-43 7169	307,754	103,730 82	0-33 7057
"Cape Breton"	335,278	77,619 86	0-23 121	30,910	9,428 17	0-30 4955	366,188	37,046 03	0-23 7708
"Prince Edward"	363,473	76,691 72	0-21 099	47,325	9,356 57	0-19 7706	410,798	86,048 29	0-20 9466
"St. Lawrence"	319,879	92,559 18	0-28 935	50,312½	14,626 81	0-29 0719	370,191½	107,185 99	0-28 9545
"Geo. McKenzie"	124,847	36,124 20	0-28 934	12,724	8,765 19	0-68 8870	137,571	44,889 39	0-32 6299
	1,770,469	445,650 27	0-25 171	216,531½	61,347 15	0-28 3317	1,987,000½	506,997 42	0-25 5157

## PERCÉ.

## REPORT ON PROPOSED BREAKWATER.

CHIEF ENGINEER'S OFFICE

Ref. No. 3558.

OTTAWA, 7th February, 1882.

SIR,—At the last session of Parliament the sum of \$500 was appropriated for an examination and survey at Percé, Gaspé. I have now to report that this duty was performed by Mr. Charles F. Roy, C.E., and herewith, for the information of the Hon. the Minister, I transmit his report thereon, together with a copy of the plan prepared by him.

Mr. Roy proposes the construction of three isolated breakwaters having a collective length of 1600 ft. so placed as to permit a free entrance to boats and vessels, and at the same time to shelter them from all easterly winds, and he places the cost of the works so proposed at \$60,900. He, however, states that sections Nos. 1 and 2 might prove to be sufficient without the construction of No. 3, and if so that the sum of \$39,000 would be required to defray their cost.

On examining the details of the estimate furnished by Mr. Roy, I find that he has omitted the iron required for these works, which of itself is no inconsiderable item.

The designs for the works proposed show breakwaters composed of cribwork filled with stone with a deposit or *talus* of stone around the seaward sides and ends of each, placed at a slope of 2 to 1.

From the experience gained at the breakwater at Negro Point, St. John Harbor, it was found that the stone placed at this slope on its seaward side did not stand the effects of the sea, but was washed down to from 4 to 6 to 1, and to maintain a slope at Percé where the seas are as heavy, if not heavier than at St. John, it will be necessary to place at least three times the quantity of stone calculated as sufficient by Mr. Roy.

With these additions I make the cost of the proposed works at Percé as follows :

Section No. 1.....	\$38,300
“ “ 2.....	15,650
“ “ 3.....	34,850
Add for superintendence.....	8,200
Total.....	\$97,000

I have the honor to be, Sir,  
Your obedient servant.

HENRY F. PERLEY,  
*Chief Engineer.*

F. H. ENNIS, Esq.,  
Secretary, Department Public Works.

(Translation.)

ST. ANNE, 20th December, 1881.

SIR,—For your information and for that of the Hon. the Minister, I have the honor to enclose my report upon the construction of a breakwater in Percé Bay applied for, for the protection of fishing boats.

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

CHAS. F. ROY.

HENRY F. PERLEY, Esq., Ottawa.

## REPORT.

## BREAKWATER IN PERCÉ BAY, QUE.

The construction of a breakwater in Percé Bay is a matter which has been under consideration for some years. The extent of the damage of every description caused by storms which are frequent in this region, have been repeatedly pointed out to the authorities.

Percé Bay presents an opening of 125° to winds blowing from the N. N. E. and veering east and south. Easterly winds are the most common and are those of which the effects are most dreaded.

The object sought to be attained is the creation in the Bay of Percé of an adequate and secure shelter by means of sea works for the protection of fishing boats, their power of resistance to be sufficient and the cost to be moderate. The unfavorable aspect of the coast, the inequalities of the bottom and the great depth of water in certain parts of the bay greatly increase the difficulty of the problem to be solved.

In October last I received instructions to proceed to the spot and continue the work begun in 1879, make further examinations and prepare a final report on the subject. During my journey I paid special attention to availing myself to the utmost of the information which I drew from the most reliable sources and to taking advantage of the knowledge and experience of practical residents of the locality.

From all the examinations made and all the information acquired it appears the construction of a breakwater in Percé Bay, to be practically useful and sufficiently solid will entail a relatively large expenditure. The plan now submitted for that your consideration is with that view.

This plan comprises the construction of three distinct piers or blocks, having an aggregate length of 1600 feet, placed as shewn thereon. The area sheltered by the breakwater so constructed would be easy of access at all times, and would provide complete shelter for more than 300 boats, for which there would be room at the same time.

The piers might be constructed in succession, from year to year and in the order shewn by the distinguishing numbers. The necessary timber can be obtained in great part from the adjacent forests, and stone for ballast and for the protection of the wood-work is obtainable close by.

There is reason to hope that the shelter afforded by the construction of the first two piers or blocks would so far suffice as to make the construction of the third (No. 3) not indispensable. Confined to these bounds the cost of the work would probably amount to \$38,824.50.

Otherwise the entire outlay to be incurred for the completion of the three piers or blocks, which form part of the plan submitted, as shewn, and for the protection of the woodwork and cribwork from the action of the waves by adequate stone work on the outside, cannot be estimated at less than \$50,900.00.

CHAS F. ROY,  
*Civil Engineer.*

St. Anne, 20th December, 1881.

## REPORT ON TORONTO HARBOUR, ONTARIO,

BY JAMES B. EADS, C.E.

SIR,—I have the honor to submit the following Report upon the Harbour of Toronto.

Before making a personal inspection of the harbour, I expressed the wish that I should be furnished with such information relating to it as would be useful in a study of the questions upon which my advice was required. In response to this request I have received a compilation of the available records touching the harbour, entitled: "Memorandum with accompanying plans and documents relating to the past and present state of the Harbour of Toronto," and at the same time I received the following letter:

No. 6532, Subj. 13.

" DEPARTMENT OF PUBLIC WORKS, CANADA,  
OTTAWA, 19th April, 1881.

" SIR,—The preparation of the information you desired to have relative to the Harbour of Toronto prior to the examination you are to make having been completed, I now enclose the same in pamphlet form, and am directed by the Honorable the Minister to request you to proceed with such examination at your earliest convenience.

" There are two points which will demand your serious consideration:—

" 1st. The western entrance—its proper width and depth, and the means to be adopted to maintain both, as well as to restrain or prevent the growth of the island shoal northwardly and westwardly either by works erected at the entrance or from the island, or both.

" 2d. The eastern entrance,—whether it is desirable that it should remain open; if so, the means to be adopted for its maintenance to an ample width and to a depth equal to that of the western entrance. If it should be closed, the manner in which this should be accomplished and its future maintenance provided for.

" You will be kind enough to report fully on these points, as well as on all others having a bearing on the preservation or improvement of the harbour which may be brought to your notice during your examination, such report to be accompanied by plans and estimates of the cost, and such suggestions as you may be pleased to make.

" Although your attention is called to certain points for investigation, it is the wish of the Minister that your report shall be full and comprehensive and embrace every thing which may have a bearing on the object of your enquiry.

" You will please notify the Chief Engineer when you propose visiting Toronto.

" I have the honor to be, Sir, your obedient servant,

(Signed)

" F. H. ENNIS, Secretary."

The Memorandum and its appendices contain a mass of important information upon the subject in hand, which will be found very useful in forming a correct judgment as to the merits of any system of works which has been or which may be suggested for the benefit of the harbour. But as the careful examination of these facts *in extenso* may be inconvenient when this report is under consideration, and as they constitute a part of the evidence by which I have been guided, I think it proper to append to this report a copy of the Memorandum, as it contains in a compact form the gist of the information which is embodied in the entire volume.

During the latter part of last June, I visited the City of Toronto and met the Chief Engineer, Mr. Henry F. Perley, there by appointment. Through his courtesy, I was provided with every facility necessary to enable me to make such an inspection of the harbour and its vicinity, as I desired. During my examination I



was accompanied by the Chief Engineer, and by Mr. Kivas Tully, Engineer of the Harbour, and from these gentlemen I obtained, verbally, much useful information. Mr. Tully's knowledge of the harbour is the result of many years of close and intelligent observation of its phenomena, while residing in Toronto. During my visit I made as thorough an inspection of the harbour as I desired, and fully informed myself as to the causes which in my opinion have produced its deterioration.

As no instrumental survey of the harbour had been made since 1879, and as an accurate knowledge of the most recent changes in it was important, not only in arriving at a correct solution of the problem, but also in making an accurate estimate of the cost of the works needed for its improvement, I requested that another survey should be made with especial reference to the changes which had occurred in its two entrances, where works of improvement would probably be located. This survey the Chief Engineer caused to be made during last July and August, and I have been furnished with the results. I am therefore in possession of all of the information requisite for an intelligent and thorough study of the subject. This study I have made and I trust that I shall succeed in presenting to the Dominion Government, in as convincing a light as they are presented to my own mind, the several reasons that have induced me to make the recommendations herewith submitted. To aid me in this part of my task, I desire to impress on the memory of the reader, each one of the three facts presently named, which appear to me to be the most important phenomena in the consideration of the very novel problem presented by the Harbour of Toronto.

*First.* There has been for nearly a century a constant growth of the northern end of the peninsula in the direction of the Queen's Wharf.

*Second.* Although this extension has diminished the *width* and *depth* through the entrance or throat of the harbor, it has not materially altered the *distance* which existed sixty-three years ago between the water immediately inside of the harbour and that near the entrance on the outside of it.

*Third.* While the crest of the extremity of the peninsula has advanced about 1,700 feet to the west in the last sixty-three years, its submerged face on that side has greatly receded, and the deep water of the lake along its western shore has proportionately moved to the east, thereby resulting in a much steeper slope on this side of the peninsula, to the depth of at least 18 feet, than it had in 1818.

These three facts are so important that the proof of each one in order, is herewith submitted.

In proof of the *first*, we learn that in 1788, Mr. J. Collins, Deputy Surveyor-General, reported the navigable channel for vessels to be 1,500 feet wide and from 18 to 20 feet deep. The waters of the lake at the time were as he says very high. The survey of Bouchette, 5 years later, shows only 15 feet as the maximum depth and a channel 480 yards wide. Much of this difference in the maximum depth and width and that reported by Collins, was doubtless due to the different level to which Bouchette referred his measurements.

In the very interesting and instructive competitive report of Mr. Sandford Fleming, C. E., (page 64 of the appendix to Memorandum) we find the following statement:

"On comparing the charts of Bouchette, Bayfield, and Bonnycastle, with my own from a recent survey (in 1850) showing the state of the peninsula at the present time, we obtain results as follows:

"First—That the channel between ten (10) feet water lines was, in

- " 1796, about 480 yards wide,
- " 1828, about 310 yards wide,
- " 1835, about 260 yards wide,,
- " 1850, about 120 yards wide."

This comparison is entitled to much confidence, for the reason that it was evidently made by a careful and intelligent engineer, who had within reach at

Toronto at that time, the necessary data to determine the difference in the lake levels to which these several surveys were referred, and without which information no very accurate comparison of these surveys could have been made.

From these comparisons, and from his estimates, Mr. Fleming arrived at the conclusion, that the northward growth of the peninsula reduced the width of the channel at the rate of from seven to ten yards annually, and that this required a deposit of about 11,000 cubic yards each year. The annual growth during the years embraced by this comparison is shown to be remarkably constant and regular.

On the 11th of April of this year, as appears by the chart of comparative surveys from 1875 to 1879, inclusive, the width between the Queen's wharf and the ten-foot contour line on the peninsula was only about 225 feet, and much of this width is, no doubt, due to dredging.

The *second fact* is shown by a comparison of Mr. Fleming's survey of 1850, with the most recent one made this year. The 15 feet inside and outside contour-lines on the latest survey, measured across the end of the peninsula where they approached, each other most nearly, are about 2,400 feet apart.

In comparing the latest contours with the 15-foot contours of Mr. Fleming, it should be observed that there are two 15-foot soundings on his chart in the bight of the outer curve which are not embraced by it. If the curve were drawn through the outer one of these, which it might be with equal propriety, the line would be moved out about 420 feet. The distance would then be about 2,200 feet between the two 15-foot contours on Mr. Fleming's chart, if measured over the line of least distance between the same contours on the survey of 1881. This line crosses the end of the peninsula about 1,350 feet from the end of the Queen's wharf. On a line nearer to the Queen's wharf the distance between them on Mr. Fleming's chart is only about 1,800 feet. The lesser distances between these contours on Mr. Fleming's survey are owing to the higher datum plane from which the depths were measured. He says (p. 69, Memorandum and Appendix) that his report was "chiefly founded on a very laborious and expensive survey between August, 1849, and the spring of 1850." With regard to the datum level, he says:

"These soundings amount to between two and three thousand, and are reduced to an approximate mean level of Lake Ontario, ascertained in conjunction with Captain Lefroy from a series of lake levels taken by his direction during several years."

This level is, I believe, about one foot and a half higher than the present datum established by the late Captain Hugh Richardson in 1850. The hydrographic diagram of Mr. Kivas Tully shows the mean level of the lake during twenty-five years ending in 1879 to have been 18.20 inches above the present datum plane.

No material difference is observable between the last survey and that made by Mr. Fleming thirty years ago in the width of the shoal between the 15-foot contours at the locality named, when the discrepancies I have alluded to are duly considered. That this distance has not appreciably altered in the last six years admits of no question, when the survey of 1875 is compared with that of 1881.

In still further proof, it is proper to quote the following from the report of Mr. William Kingsford, engineer in charge, dated July 7th, 1875, who seems to have been a close observer of the changes in the harbor and its entrances. He says (page 110, Memorandum and Appendix): "The eastern spit of land which protects the harbor is formed of sand, much of which is frequently in motion. It has been asserted that, carried away from the original place of deposit, it finds its way into the harbour. The examination of last year proves that such is not the case. There is no less depth of water to-day in the inner harbour than is shown on the map of the first survey made by Bouchette in 1785."

The proof of the *third fact* referred to, will appear by making the following comparison of Bayfield's survey with the survey of 1881. Draw a line upon each from the light-house to the centre of the Queen's wharf, and from points on this line

measure, perpendicularly to it, the distance to the 2, 4, 10, 15, and 18-foot soundings shown on Bayfield's chart near the central part of the western face of the peninsula; and compare those depths with the depths at the same places on the chart of 1881.

*First.* At a point on the line 4,500 feet from the light-house we find it is about 1,900 feet to the most southerly one of the two-foot soundings. At this place on the survey of 1881, the depth is now 13 feet greater.

*Second.* At a point on the line 5,600 feet from the light-house it is 1,500 feet to the next two-foot sounding on the Bayfield chart. At this place the depth is now 6 feet greater. \*

*Third.* At a point on the line on the Bayfield survey 4,000 feet from the light-house it is 1,400 feet to the southern four-foot sounding. The depth here is now 2-7 feet greater.

*Fourth.* At a point on the line 4,300 feet from the light-house it is 1,200 feet to the other four-foot sounding. The depth at this place is now  $1\frac{1}{2}$  feet greater.

*Fifth.* At a point 4,750 feet from the light-house it is 2,000 feet to the ten-foot sounding on Bayfield's chart. At this place the depth is now 9 feet greater. The ten-foot contour here has receded 400 feet.

*Sixth.* At a point on the line 5,000 feet from the light-house it is 2,000 feet to the fifteen-foot sounding of Captain Bayfield. At the same place the present depth is 4 feet greater. The fifteen-foot contour has receded here about 200 feet.

*Seventh.* At a point on the line 5,200 feet from the light-house it is 2,050 feet to the eighteen-foot sounding on Bayfield's chart. The present depth here is about 2 feet greater.

These comparisons are sufficient to show that the five-foot contour line about the middle of the western face of the peninsula is at very nearly the same place now that it was sixty-three years ago, while the contours between five feet and eighteen feet have greatly receded.

A further comparison of Captain Bayfield's survey with that of 1881, will prove by similar measurements that the dry crest of the northern end of the peninsula has not only advanced to the north, but has likewise advanced to the westward about 1,700 feet from the end of the sand spit shown on Capt. Bayfield's chart, by which the western face of the peninsula above the five-foot contour line has been much steepened by a movement precisely the converse of that which has steepened it below that depth. The sand which constituted the bottom beyond the present five-foot contour line in 1818 out to the depth of eighteen feet, has evidently been transported by the action of the waves up to the northward and on to that part of the western face of the peninsula which is now above the present five-foot contour. This process has greatly steepened the western face of the peninsula without really advancing it lakeward.

If comparisons be made further southward on the face of the peninsula, the change wrought by wave action in this direction will be still more marked. For instance at a point on the line from the Queen's wharf to the light-house, 2,600 feet from the latter, the Bayfield chart shows a depth of but 3 feet on the outer face of the shoal at the distance of 2,600 feet. The depth here must now be about nineteen feet, as the spot is about 100 feet outside of the outermost sounding on the chart of 1881, where a depth of 18.5 feet is recorded. The depth of three feet is now 1,600 feet eastward on the survey of 1881. If we assume that the plane to which Captain Bayfield reduced his soundings was eighteen inches higher than the present datum, it would still show that the three-foot contour at this locality is 1,550 feet further landward than it was in 1818.

From this and other comparisons which may be made between these two surveys it will appear that while the top or dry part of the peninsula at its northern end has apparently swung out towards the lake about 1,700 feet westwardly, the submerged

\* Note.—This latter two-foot sounding and others on the same shoal are shown more distinctly on an engraved chart of Bayfield's survey published "with corrections" in 1863. They are scarcely discernible on the photo-lithograph published with the memorandum.

portion of it at the southern end of this face, has, to the depth of eighteen feet, swung in towards the light-house about the same distance eastwardly. The common centre about which these changes seem to have vibrated from east to west, is located near the central portion of the western face of the peninsula. The centre about which the vertical movement has occurred by which the entire face of the peninsula has been steepened, seems to have been at the depth of about five feet, and at a point also near the central part of the western face of the peninsula. In this movement the eighteen-foot contour at the northern end has not materially changed its location, while the zero margin of the lake at the other end, immediately west of the light-house has been almost if not quite as stable.

The prolongation of the isthmus northwardly and the alteration of its western face, are unquestionably due to wave action, and as a proper understanding of the phenomena produced by waves is absolutely necessary to enable the reader to form an intelligent judgment of the merits of the conclusions arrived at, in regard to the causes of the changes which have occurred at the harbour of Toronto, and of the probable results of the remedial works herein proposed, I will be pardoned for explaining the manner in which the waves affect the sand and other materials composing the bottom of seas, lakes, etc.

A simple illustration of the action of waves on the surface of *very deep water* can be made by tightly stretching a long cord between two points and then striking it near one end. The wave produced by the blow travels rapidly back and forth along the cord from end to end, but the material of which the cord is made simply rises and falls without advancing with the wave. So it is with the *water* where the lake is deep. The wave may pass ever so rapidly, but it cannot of itself set up any continuous horizontal motion in the water. A bird or a buoy afloat upon it would simply rise and fall as the waves passed under it. At the same time it would have a slight motion to and fro in the direction the waves are travelling but unless impelled by the wind or a current in the lake, it would remain in the same locality. The case is quite different, however, when the wave reaches water so shoal that the bottom resists the sinking of its crest. When this resistance is felt, the water which at that moment constitutes the wave, has, as a result of this resistance and of its own momentum, a horizontal motion imparted to it. This horizontal impulse becomes still greater as the depth lessens. Hence, although the velocity of the wave itself is diminished as it reaches shoaler depths, the water through which it passes has a constantly increasing velocity imparted to it in the direction of the shore, and in the case of big waves it becomes so swift that it is driven with great force out upon the beach.

This translatory motion gives to the waves the power to take up from the sea bottom, or to set in motion, the sands, shells and other materials of which it is composed, and to transport them shoreward with more or less force. The quantities thus transported depend upon the size of the waves, the formation of the shore upon which they exert their force, and the size, gravity and abundance of the material acted upon.

The direction of these translatory currents is determined by the shape of the sea bottom. If the shore be precipitous, very little or no such current will be created; but where the bottom is sloping to the sea, the waves will be constantly directed shorewards, no matter how obliquely they may approach it. Hence waves on such shores are continually piling up reefs and beaches, and through some of these every river must struggle to reach the sea, unless it enters it between bold headlands, and is incapable of transporting enough detritus to form a delta at its mouth; or unless some sea current exist sufficiently strong to sweep away the sedimentary matter brought down by it. Of course the height of the wave determines the depth at which the resistance of the bottom is felt, and at which the horizontal motion of the water is first induced. This depth will therefore be the extreme limit at which the material of the bottom can be set in motion by the wave. A study of the surveys which have been made on the western shore of the isthmus at Toronto satisfies me that the waves which roll in upon it are not large enough to move the sand when the water is over 18 feet deep. I can discover no evidence that the bottom has been

disturbed at a greater depth there during sixty-three years; and the area within which the waves are formed that break upon it forbids the belief that they are large enough to affect the bottom at a greater depth. The magnitude of a wave does not depend so much upon the force of the wind as upon the "fetch" or distance through which it can travel without interruption, and the depth of the water on which it moves.

Waves travel much more rapidly in deep than in shallow water. This is the cause of the phenomenon called "breakers." As each wave approaches still shallower water, its speed becomes still more retarded, hence the wave behind is always moving more rapidly than the one in advance. As it gains upon its predecessor it gets the benefit of the deeper water of that wave. The result of this is that at regularly recurring intervals or rhythmic periods, one of the waves completely overtakes the one in front of it, by which it secures for itself a still greater depth and maintains the velocity due to that depth. This enables it to travel so rapidly over the one it has surmounted, that it outstrips it in the race and consequently falls over in front of it, or, as it is termed, "breaks."

The wave has more ability to carry the sand up on to the beach than it has to bring it down again notwithstanding the slope of the shore. This is because the ratio of frictional resistance of the shore increases as the depth of the water passing over it is diminished, and also because the material carried up on to the beach, is almost wholly suspended in the water. The interval of time required for the shoreward current to come to rest and for the return current to be started, is sufficient to permit the sand to fall to the shore, from which the less rapid current seaward is unable to move it.

A very important part of the study of our problem is involved in the inquiry as to whether the portion of the isthmus now constituting an island is undergoing any serious alteration in its size. Is it being added to? or is it diminishing? We know that its form has been altered to the serious injury of the channel, by the extension of the peninsula northward. It is a matter of great importance to know whether the material which has been added to the end of the peninsula in the last 63 years has been brought from Humber Bay, Scarborough Heights or elsewhere, or whether it has been transported from the southwestern portion of the peninsula itself.

If it has been brought from the eastern shore of the Lake, from Humber Bay or Niagara, we must look for an annual contribution of the same kind indefinitely, from such foreign source, and this fact would thrust into any plan for the improvement of the Western entrance, a very embarrassing element. This material would accumulate about the entrance to our works, to such an extent as to need annual dredging and probably an extension of the necessary piers from time to time. With such a prospect I should not hesitate to advise that the western entrance be abandoned and that the remedial treatment, although much more expensive, be at once applied to the eastern gap. It is, however, only necessary to make an approximate estimate of the amount of material which has been removed from the western face of the peninsula, near Gibraltar Point, northward and within a distance of about 2,000 feet westward from its present margin, to know that the immense quantity of sand which covered the lake bottom over this area in 1818, and which has now been removed by wave action, was quite sufficient to have transferred the crest of the peninsula, 1700 feet westward in the shallow depths then existing, and to have added to its length all of the material which it has received during the last 63 years, without any contribution from foreign sources.

I have made some approximate estimates of the quantity of sand which has been removed from this area during the last sixty-three years. On the large chart accompanying this report, which is a copy of the survey made by Mr. F. M. Hamel in 1881, will be found a line drawn from the light-house to the Queen's wharf, with four lines at right angles to it. These are designated as "A.B." "C.D." "E.F." and "G.H." In comparing the sections, as nearly as possible with those similarly located on Bayfield's chart, I find that south of line "A.B." in the last 63 years there have been removed about six million cubic feet. Between lines "A.B." and "C.D.,"

sixteen million two hundred and fifty thousand feet. Between "C. D." and "E. F." eighteen million, seven hundred and fifty thousand feet. Between "E. F." and "G. H." five million one hundred thousand feet, and north of line "G. H." one million, four hundred thousand cubic feet, making in all, forty-seven million, five hundred thousand cubic feet; or, one million, seven hundred and sixty thousand cubic yards. This is at the rate of about twenty-eight thousand cubic yards per annum; an amount amply sufficient to account for the northward growth of the peninsula and likewise for the westward advance of the crest of it. The data are not sufficient to enable me to determine what amount of it has been deposited to the eastward of the line between the Queen's wharf and the light-house, but it is evident from the foregoing that no addition from any foreign source has been made to the northern and western face of the peninsula since Bayfield's survey. The changes which have occurred on the western face of it, give substantial assurance of the permanency of the western entrance to the harbour, if it be located in accordance with the recommendations hereinafter made.

No grain of sand rests upon any part of the shores of the peninsula, or in the channel, that was not brought to its present resting place by a current of water which left it there because it was not able to move it farther. The slope of the shore is therefore the result of an equilibrium between the force of the currents which sweep over it, and of the opposing force of gravity in the sand. The slope which the shore assumes under these different forces is termed in technical parlance, its "angle of repose." Owing to the greater mobility of the sand when saturated, this angle is flatter or lower on the submerged part of the shore than on the dry reefs or beaches. When a broad channel is exposed to storms and is swept by violent waves in different directions, the bottom becomes still flatter. Hence the angle of repose assumed, is so low that any natural channel through such deposits on the sea coast, must possess great width if it have any considerable depth in its central part. This will be better seen when it is remembered that it is about 1,200 feet from the shore line on the western face of the peninsula out to 16 feet of water, although this shore is under the influence of wave action which is quite favorable for the maintenance of a steep angle of repose. A natural channel therefore, if formed of the same materials which I assume to be almost wholly of sand, would, if it were possible to have its opposite shores swept by similar waves, require to be 2,400 feet wide to maintain a central depth of 16 feet. In a narrow and sheltered channel the sand would maintain an angle of from four to six horizontal, to one vertical, or about eleven degrees. The perimeter of the cross section of a channel swept only by currents moving in direction parallel to its axis, conforms very nearly to the arc of a circle.

The ability of a river to carry the detritus with which its water is charged, is due to the velocity of the current. When it reaches the sea the current subsides, and the sediment, before held in suspension, is deposited. The sea waves leach out by continual agitation the argillaceous and other lighter portions of these deposits, while the sand, gravel and heavier materials are left to dam back the river and form the foundations upon which it in turn builds up its bank still further out. Their low slopes defy the fury of the waves, and if any littoral (or shore) current prevails in the sea where the river is thus extending its banks, this current carries the river deposits to the leeward, builds up that bank more rapidly than the other and compels the discharge finally to flow in almost direct opposition to the prevailing sea current. In this way a river will extend its banks out many miles into the sea, its direction being determined by the littoral current or by the prevailing winds. The Mississippi has thus extended its length about sixty miles out into the Gulf of Mexico beyond the present shore lines of the gulf, and its course has been almost directly *against* the direction of the prevailing winds. As the river extends itself into the sea, its banks on the mainland are continually being raised by the annual overflows. These deposit the heavier materials carried by the current close to the river, while the lighter portion, which takes longer to settle, is carried back to the swamp lands. In this way many silt-bearing streams, the Mississippi, the Rhine, and the Po, for ins-

tance, have, as they approach the sea, build up their banks many feet higher than the lands on each side of the river.

The direction which rivers take when their channels are built out in the sea, is frequently such as to almost completely enclose extensive bays. After such process has been carried out to a greater or less distance in the sea, the height of the river on the main land becomes so great that a breach finally occurs in the seaward bank during some extraordinary flood, and the river then takes the shorter way through it to the sea. In such case the channel which it had constructed below the breach is abandoned. Being no longer a conduit for the fluvial current, it is filled up by the action of the waves, and at the same time the height of its banks is reduced to the sea level or below it, and what the river constructed finally becomes the foundation of a peninsula, on which every evidence of the fluvial channel above the surface of the sea, is completely obliterated. The Vistula, Adour, and Senegal, are among the numerous examples of rivers forming such new outlets to the sea, many miles above their former mouths. The long, narrow peninsulas which separate the Frisches Haff and the Curisches Haff in Eastern Prussia from the Baltic, no doubt had their origin in the extensions of the Vistula and Pregel into that sea.

A peninsula thus formed, having its axis parallel to the prevailing winds, receives constant additions by wave action upon its extremity, which continues to extend it, generally, though not always, against the wind. If a constant current of the sea sweep along its side in the direction of the end of the peninsula, the accretions thrown up by the waves in storms on the side of it, are gradually transported along in calmer weather, toward its extremity. The side is thus kept steeper and prevented from widening, while the sands thus removed fall to the bottom again in the more sluggish current or eddy, which exists at the end of the peninsula. Here an extensive shoal forms during the calmer weather, to be afterwards thrown up on it by the force of the waves. The sandy breakwaters which enclose the long series of extensive sounds on the coast of Virginia, the Carolinas and Florida, are examples of this kind of peninsula formation. The same process is carried on in tideless seas, though not in such vast extent. The Baltic, Mediterranean, Black Sea and the Great Lakes present many examples of such phenomena.

The sea currents almost invariably carry more or less sand along the shores, and thus furnish the material for the waves to extend the peninsulas. If the source of supply of this material be from any cause exhausted, the growth of the peninsula becomes checked. In such case the long, low slope at the end of the peninsula, under the influence of the waves, may not only be thrown up against it and be greatly steepened, but the end of the peninsula may be made by such influences to change its direction under the oblique force of the waves, in the manner of the Toronto peninsula. An example of a peninsula built out from a headland many miles across a large bay, and stopped in its growth when only half way across, may be seen in the Gulf of Danzig in the Baltic.

The longitudinal growth of a peninsula is checked when it approaches a headland of the main shore, by the pulsations which occur in the basin or harbour enclosed by it. Where tidal action exists the basin is filled and emptied twice a day \* through the channel between the end of the peninsula and the mainland, and the further encroachment of the peninsula upon this channel is arrested by the currents which sweep through it upon every ebb and flow of the tide. The higher the tide rises, and the bigger the basin which is filled and emptied, the greater will be the magnitude of the channel thus maintained. When the peninsula has reduced the width of the channel to the size absolutely required for the entrance and exit of the tidal water, the channel becomes permanent.

As the magnitude of a channel thus formed is wholly dependent upon the quantity of water which flows through it, it is evident that the quantity must be diminished if a breach occurs in the peninsula, as a portion of the water which would otherwise serve to maintain the channel and stop the growth of the peninsula is lost through the breach.

NOTE.—The Gulf of Mexico is an exception to this rule: the tide there rises but once a day.

I think it altogether likely that the Toronto peninsula had its origin in an extension of the River Don westwardly from the southwestern point of Ashbridge's marsh. It is not necessary to sustain such hypothesis, that its ancient channel should have extended through any considerable length of the peninsula. The root of the peninsula being thus formed throughout a distance of a few hundred feet, would be a sufficient nucleus upon which the waves and the current of the lake would concentrate a great part of the sand lying within a few miles of it in water less than eighteen feet deep. To do this the easterly gales doubtless contributed a large portion of the detritus from the ancient Scarborough Heights. The prevalence of the southwesterly gales will explain the cause of the change of direction which the peninsula has taken at Gibraltar Point without the Don having ever extended its channel through that part of the peninsula. To the wave action resulting from easterly storms must be attributed the constant growth of the eastern end of the island. This growth will be seen by a comparison of the last survey with those of older date.

It is not, however, necessary to penetrate the mystery which enfolded the creation of the peninsula. Its continual advancement to the northward conclusively demonstrates the fact that the filling and emptying of Toronto harbour under the influence of the winds, the rise and fall of the lake and the discharge of the Don, have not been sufficient to arrest the growth of the peninsula in this direction, and the breach at Privat's Hotel which occurred about thirty years ago has made the currents through the main channel since then, still more impotent to check its northward advance.

It is exceedingly difficult to declare with any certainty what is the greatest magnitude of channel that can be maintained permanently through the main entrance to the harbour without dredging, even if the eastern gap were closed. The annual rise and fall of the lake is a very slow process as well as a very irregular one and produces but little current through this channel. The rise and fall of the water in the harbour under the action of the winds and storms is the chief source to which we must look for the necessary force of current to maintain the channel.

With a tidal basin regularly filled and emptied every day, and a permanent cross-section of channel as a resultant to guide him, the engineer can calculate with great accuracy the increased depth which he can secure by the construction of parallel works to reduce its natural width; but at Toronto the facts prove that the dimensions of the main channel are not permanent, nor are they wholly the results of the currents passing through it but of the incomplete inclosure of the harbour by the peninsula. In other words, the western channel was originally an open roadstead. The peninsula has been, and is now, gradually converting it into a channel of permanent dimensions. If this natural process proceeds, it will reduce its dimensions to those which the tidal action or pulsations of the basin enclosed by it, absolutely require for the exit and entrance of the lake water. It will then preserve that size with comparative permanence. Such channel, uninfluenced by artificial causes, would be shallow and wide, owing to the low angle of repose which the sands that form its bed naturally assume. If this process were completed, the engineer would know by the natural cross-section of channel permanently established, what additional depth could be secured and maintained through the works he would build to contract it; because the tidal action *will* insure the maintenance of a cross-sectional area sufficient for its accommodation, and, if he contracts that area in width, the tidal force will recover a portion of it by increasing the depth through the works, until such area of cross-section is made large enough to establish a new condition of equilibrium or permanence, between the force of the current and the resisting forces of friction of the bed and the gravity of the materials of which it is formed. Nothing short of some unusual convulsion of nature could close up the channel between the lake and a basin so large as the Toronto Harbour, if but one channel existed. If instead of one there were many into the harbour, they would each be shoaler, and in such case, a long continuance of a low lake level, would make them all unusually



shallow, and render them liable to be shut up by wave action which would thus convert the harbour into a lake.

We have, however, in the comparatively stable condition of the inferior channel through the breach a reliable basis for the belief that a channel of sufficient width and depth for the commercial wants of Toronto can be permanently maintained without dredging, simply by the currents resulting from the oscillations of the water in the harbour, if but one channel be permitted. The channel through this gap has now a central depth of about four and a half feet and a surface width of about nineteen hundred feet, when the level of the lake is at zero of the gauge. This is equivalent to a cross-sectional area of nearly four thousand feet or of a channel two hundred feet wide and twenty feet of central depth. This channel has been maintained wholly by the currents that pass through it. If the main entrance were completely closed it is safe to assert that it would have been much deeper and proportionately wider.

If it be supposed that the channel through the breach has been maintained by a current sweeping through it, and through the western entrance, at the same time and in the same direction, that is to say, in through one and out at the other, and not by currents induced by the pulsations of the harbour, it is to be answered that such a current would not have the velocity of those currents which result from maximum differences of level between the surface of the harbour and that of the lake. A wind blowing continuously from the southeast would have the effect of creating a current through the gap which would flow out of the western entrance, but the same wind would raise the level in Humber Bay at the same time and thus check, if it did not completely arrest such current. The strongest currents which would flow through the gap, without establishing a counter under-current would probably be induced by winds from the south or southwest. These would elevate the surface in Humber Bay to a greater degree than at the gap. Their effect upon the water on the south shore of the peninsula would be to create a current, towards Scarborough Heights, without materially affecting the level of the surface at the gap. Storms from the east undoubtedly have the effect of creating considerable current through the gap into the harbour. I am of opinion, however, that currents thus created through the gap cannot have the velocity and scouring power which the under-currents hereafter referred to would possess.

The currents which are induced by a rapid rise or fall of the lake, will have their velocities determined by the slope of surface through the channel, (or fall per mile,) and by the amount of frictional resistance of the bed of the channel. It is evident that when an alteration occurs between the surface levels of the lake and the harbour, the steepness of the slope through the channel will be increased in proportion as its length is diminished. The slope of the surface creates the current and the friction retards it; hence it is of prime importance that the channel be kept as short as possible. When the currents are the result of winds prevailing for several days in a direction to fill or empty the harbour an under-current must always exist through the channel in an opposite direction to that which is seen on its surface, provided all other openings from the lake into the harbour be closed.

It is impossible for an east wind to sweep over the harbour for an entire day without creating an outward surface current through the proposed channel, supposing the breach at Privat's Hotel and all communication with Ashbridge's bay to have been closed. This current will continue to exist so long as the friction of the air sets the surface water in the harbour and channel in motion, and it is impossible that the water should continue for any considerable length of time to flow out of the harbour in the direction of the wind, without lowering its surface level. A counter current of equal intensity will then be created below the surface current in the channel. This under-current will be the result of hydrostatic pressure induced by the greater height of surface outside of the harbour.

I should hesitate to advise the construction of a channel of greater dimensions than three hundred feet in width and a central depth of eighteen feet below the present datum plane, although I am not prepared to say that one of greater size cannot be maintained without dredging after it be once completed.

A channel of the dimensions named can be constructed either at the breach on the peninsula, or at the western entrance to the harbour, with nearly equal assurance of its permanence. The question therefore, as to which locality shall be selected for the channel, should be determined mainly by the relative advantages which each would possess for navigation, and the relative cost of each. These are both decidedly in favor of the western location.

So far as to the safety and ease with which vessels could enter either one of these channels during bad weather, there can be no doubt that the preference is most decidedly in favor of the western entrance. Owing to its peculiar position, this entrance is completely protected from storms from every quarter except the south-west. To connect the deep water on the two sides of the peninsula by the shortest route, requires the location of a channel nearly parallel to the direction of these storms; therefore vessels arriving in such weather, would be able to sail directly into the channel and proceed at once to the harbour.

I have laid down upon the general chart of the harbour, (No. 1), the lines upon which the works that would be required for the improvement of the eastern gap should be located, if such improvements were deemed more desirable than that of the western entrance. These are shown in dotted lines, and will be readily found on the map. Where these lines are double, the works would need to be equally as strong and costly as the breakwater required on the south side of the western entrance. In addition to the works at the gap, its improvement would necessitate the complete closure of the western entrance by a dyke from the Queen's wharf to the end of the peninsula, as shown also with dotted lines.

On comparing the length of these several lines of works with those hereinafter recommended, (the location of which is shown in solid lines on the map,) it will be seen that the improvement of the eastern gap would require 4,840 linear feet of heavy work, including 400 feet of the Queen's wharf dyke, and 6,220 linear feet of light work; while the western entrance will require only 2,745 linear feet of heavy work; and only 7,403 linear feet of light work.

In this comparison it is assumed that 800 feet of the landward end of the breakwater, and 1,040 feet of the Queen's wharf dyke, will be of light work. Therefore 2,095 feet less of heavy work, and 1,123 feet more of light work, will be required to improve the western entrance.

The amount of dredging required to make the eastern channel, would likewise be greater than that needed at the western entrance. With such an enormous difference in the extent of the works and because of the other decided advantages in favor of the western entrance, I have deemed it unnecessary to prepare detail plans for the improvement of the eastern gap. They would only be useful in determining accurately the difference in the cost of each entrance. Whereas, if the eastern one cost no more, I should be unwilling to give it the preference.

If the channel were located at the gap it would need to be about 700 feet longer than the western channel, and the currents through it would therefore be less rapid than through the western one under the same conditions of wind and tide. Hence they would not maintain a channel of as great a width and depth as the western one. I should not, however, expect to find much difference in them from the injurious effect of wave action at their lake entrances, because either one selected for improvement must first be dredged to the maximum depth required, and as this would be a depth at which there would be little or no disturbance of the bottom at the end of the channel by wave action, there need but little fear that either channel would require dredging as a result of wave action alone. The lake currents, however, carry more or less sand in suspension, and if this be carried into a channel of greater dimensions than the tidal action or pulsations of the harbour demand, they will be deposited in it and will gradually diminish its size to that which can be permanently maintained by the maximum currents through the channel.

To attempt to utilize the present western channel would involve the removal of a large amount of stone by blasting to obtain a sufficient depth, and would moreover require the channel to be crooked, in as much as the western end of it would neces-

sarily have to be curved to the south west to reach the deep water of the lake. Thus located it would require to be very considerably longer than a straight cut across the peninsula. This greater length, and its curvature would be very objectionable. The greater length would increase the friction of the currents flowing through the channel and therefore diminish their velocity. The curvature would diminish their velocity still more, by checking the momentum of the water.

I am confident that a channel 300 feet wide between parallel works, at the western end of the harbour, with a central depth of 18 feet below the present zero or datum plane, can, when once established by dredging, be afterwards maintained by the natural currents through it, if it be located across the northern end of the peninsula between the lines, shown in the accompanying chart (No. 1), provided all other communication between the lake and the harbour be completely closed.

I have the honor to submit the following

#### RECOMMENDATIONS.

1. The closure of the Eastern Gap with a dike of sheet piling, protected on the sea side against undermining, with brush and stone.

2. The construction of a breakwater and the necessary parallel works to protect and maintain a channel 300 feet wide and 18 feet deep across the northern end of the peninsula, to connect the deep water of the harbour with the deep water of the lake.

3. The excavation of the necessary depth and width of channel through the parallel works, after they shall have been constructed.

4. The closure of the present western channel, after the new shall have been sufficiently developed to afford equal facilities for commerce, by the construction of a dyke from the western end of the Queen's wharf to the northern jetty of the new channel.

5. The closure of all communication between the harbour and Ashbridge's Bay, with a dike of light sheet piling or one of earth, three feet above the present datum plane, or zero of the gauge.

All of these works except those necessary to completely separate the harbour from Ashbridge's Bay, should be located and constructed in accordance with the plans and specifications herewith submitted. The closure of the Eastern Gap, and the construction of the breakwater and channel works, should be executed at the same time to secure the earliest benefit of the proposed improvement. If this be not done, I would then recommend the construction of the channel works and breakwater first, and the closure of the gap while the new channel is being dredged out. I do not think the diversion of the Don into Ashbridge's Bay necessary, except as a sanitary measure. So far as this would affect the channel and harbour, it is probable that the injury which may be done by the small quantity of sediment that the Don brings into the harbour, will be compensated for by the increased current it will give through the channel when in flood. Should it be found a few years after the proposed works are completed that its deposits are injuriously affecting the depth of the harbour, it can then be diverted into Ashbridge's Bay, if it shall not have been previously done for sanitary reasons. It is quite probable that the closure of the Eastern gap and the growth of the city will soon make such diversion of the Don imperative as a means of promoting the public health.

Plans are not submitted for the dyking to separate Ashbridge's Bay from the harbour, because this work will be of a simple character, and comparatively inexpensive. I would recommend that its construction be open to competition, with the understanding that each bidder submit with his proposal the plan by which he intends to execute it, leaving to the Chief Engineer the selection of the best and cheapest proposal. This work will be exposed to very little servitude if it be sufficiently distant from the shore line of the harbour to be safe from floating ice. The greater portion of the marsh near the harbour shore is probably already 3 feet above zero, thus leaving only the sloughs to be closed. In any event the cost of the necessary work here will not probably exceed five thousand dollars.

If the closure of the Eastern gap be executed in accordance with the specifications and plans herewith submitted, I am of opinion that a sand beach will be formed in front of the dyke before the parts of it exposed to decay will be destroyed, and that no expenditure for the maintenance of the dyke will be required. The total estimated cost of the works recommended is \$250,693.85.

I have the honor to be, Sir, with great respect,  
Your obedient servant,

JAS. B. EADS.

St. Louis, Mo., March 4th, 1882.

Hon. Sir H. L. LANGEVIN, K.C.M.G., C.B.,  
Minister of Public Works, Canada.

MEMORANDUM.

TORONTO HARBOUR, ONTARIO.

Toronto, formerly York, is situated on the northern shore of Lake Ontario, in lat. 43° 38' 10" N., and long. 79° 23' 45" W., 333 miles by rail south-west from Montreal, 161 miles from Kingston, and 39 miles north by east from Hamilton.

The harbour is formed inside of the Island, and has its principal entrance from the westward. An entrance known as the 'Eastern Gap' has existed for some years, but, owing to its shallowness, is not used by steamers or sailing craft of large dimensions. At the north-eastern corner the Don empties; and the eastern side is bounded by marshy lands of many acres in extent, which separate it from Ashbridge's Bay.

In 1788 this harbour was minutely described by J. Collins, Deputy Surveyor General, in a report presented to Lord Dorchester, Governor General, on the Military Posts and Harbours on Lakes Ontario, Erie and Huron. Mr. Collins stated it to be "near two miles in length from the entrance on the west to the isthmus between it and a large morass on the eastward. The breadth of the entrance is about half a mile, but the navigable channel for vessels is only about 500 yards, having from three to three and a half fathoms water. The north or main shore, the whole length of the harbour, is a clay bank from twelve to twenty feet high, and gradually rising behind, apparently good land and fit for settlement. The water is rather shoal near the shore, having but one fathom depth at one hundred yards distance, two fathoms at two hundred yards; and when I sounded here the waters of the lake were very high." ("Toronto of Old," by Dr. Scadding, p. 16.)

The first survey of the harbour was made by Bouchette in 1793, and a copy of his plan is attached hereto.

In his work on the "British Dominions in North America," published in 1832, Mr. Bouchette describes the harbour of Toronto as follows:—(Vol I, p. 88.)

"The harbour of York is nearly circular, and formed by a very narrow peninsula stretching from the western extremity of the Township of Scarborough in an oblique direction for about six miles, and terminating in a curved point nearly opposite the garrison, thus enclosing a beautiful basin about a mile and a half in diameter, capable of containing a great number of vessels, and at the entrance of which ships may remain with safety during the winter. The formation of the peninsula itself is extraordinary, being a narrow slip of land, in several places not more than sixty yards in breadth, but widening towards its extremity to nearly a mile; it principally a bank of sand, slightly overgrown with grass; the widest part is very curiously intersected by many large ponds that are the continual resorts of large quantities of wild fowl; a few trees scattered upon it greatly increase the singularity

of its appearance, it lies so low that the wide expanse of Lake Ontario is seen over it; the termination of the peninsula is called Gibraltar Point, where a block-house has been erected. A light-house at the western extremity of the beach has rendered the access to the harbour safely practicable by night. The eastern part of the harbour is bounded by an extensive marsh through which the River Don runs before it discharges itself into the basin."

"No place in either province has made so rapid a progress as York. In the year 1793 the spot on which it stands presented only one solitary Indian wigwam; in the ensuing spring it was selected by Governor Simcoe as the seat of Government for Upper Canada."

With the growth of the population and the clearing and cultivation of the surrounding lands, and notably the disappearance of the Scarborough Heights to the eastward, from whence was derived the materials forming the peninsula, changes were soon apparent in the state of the harbour, and the necessity for its preservation early engaged the attention of those who were interested in its maintenance and improvement. They viewed with alarm the changes which had taken place in the dimensions of the peninsula, and the encroachment of the shoal from Gibraltar Point northward, to the great detriment of the entrance, and so early as 1833, as appears by the journals, Upper Canada Legislature, 1833-34, a select Committee reported on certain reports submitted by Captain Richardson and Captain (afterwards Sir) R. H. Bonnycastle, Royal Engineers, on its preservation. (App. p. 1, *et seq.*)

The Commissioners in their report recommended the construction of a work extending from the island along the top of the shoal to the buoy, in a manner to continue the island to the brink of the channel opposite the present pier (Queen's Wharf), contracting the channel to about 700 feet in width; and also to prevent the waters of the Don from entering the harbour. (App. p. 2.)

Captain Richardson's letter is but an amplification of the views of the Commissioners, of which he was one.

The opinions entertained by Captain (afterwards Sir Richard) Bonnycastle to make the harbour a secure and effectual one for large steamers and deep draught vessels were divided by him into three general propositions:—

- 1st. That of damming up the western estuaries of the Don;
- 2nd. The opening a passage through the eastern end of the peninsula; and
- 3rd. The construction of a breakwater from the shore at the western entrance with works over the whole length of the shoal from Gibraltar Point, to confine the western entrance.

Sir Richard proceeded to debate the first proposition and arrived at the conclusion that it did not signify whether the breaches which the Don had made into the harbour be closed or not, and believed that the river is useful in a very slight degree.

With respect to the second proposition he plainly stated that if an opening be made through the beach the harbour would be entirely destroyed, and if it be done extensive works must be run out into the lake, etc., to arrest and retain the shingle which is (was) brought by the wasting away of the Scarborough Heights from the eastward, and so to prevent a silting up of the channel so formed; but he feared that a navigable channel could not be kept clear, and that vessels would experience much difficulty during gales from the east around by the south to the west, in entering such a channel, and he summed up with the statement that there could not be any harm in making a small canal shut in by flood gates and protected by piers, and that under these restrictions no obstacle would be thrown in the way, and that it would be very useful for the purposes of trade.

The third proposition is discussed at length, and the conclusion arrived at was that the western entrance should be protected and maintained.

It appears that no action was in any way taken on this report, and though the matter engaged attention, little or no regard was paid to the state of the harbour, though a Mr. Roy, C.E., drew attention to its state in an article published in the

*Monthly Review* in June, 1841. Search and enquiry have failed to obtain a copy of this paper.

Under date 4th May, 1847, Mr. C. S. Gzowski, then an engineer in the service of the Department of Public Works, reported that the entrance had narrowed to 250 feet in width, the bar having increased 280 feet in a northerly direction in seven years. (App. p. 17.)

In 1850, Mr. Sandford Fleming, C.E., read a carefully prepared paper before the Canadian Institute, in which he entered fully and minutely into the theory of the formation of the peninsula, described the changes which it was constantly undergoing, and its great increase in area since Bouchette's survey in 1793, and he debated the propositions which had been made and concluded:

1. That the foundation of the peninsula in its early stages may be attributed to the *debris* of the country traversed by the Don, in conjunction with a drift from an ancient promontory at Scarborough.

2. That the more recent portions were formed by materials from the Scarborough Heights.

3. That the formation is due to the travelling of the sand and gravel, under certain action of the waves.

4. That the harbour was being impaired and its only entrance threatened with early destruction by the same cause.

5. That its preservation may be permanently affected by the construction of certain specified works, at well selected points.

6. That the waters of the Don should be permanently excluded.

7. That the opening of an eastern passage would be a great accommodation to shipping; might improve the purity of the water in the harbour; and, if the necessary works to preserve it were properly executed, would have a beneficial effect.

Early in 1852, Mr. Walter Shanly, C.E., at the request of the Harbour Master, submitted for the information of the Harbour Commissioners a report on the state of the channel and the improvements required. (App. p. 18.) In it he stated that from the observations and soundings recorded during twenty years by the Harbour Master it was ascertained that the bar had advanced northwardly across the entrance at the rate of 19 feet yearly, and that the available width of the channel was scarcely 200 feet.

Mr. Shanly's theory of the formation of the peninsula is that the materials forming it were brought from the westward, and that the Don assisted as well, and he states that were the operations of Nature left unmolested, future generations might walk dry shod across to the outer lighthouse.

The remedy he proposed was dredging and the construction of crib-work on the southern side of the channel to define and maintain its width; and to divert the Don into Ashbridge's Bay.

Mr. Kivas Tully, C.E., in a letter dated 10th February, 1853, discussed fully the need of permanently improving the harbour, alluded to the opening of a passage through the peninsula, now known as the Eastern Gap, and suggested its improvement from an economical point of view—

1. On account of the saving of time to vessels arriving from or departing to the eastward, and

2. The tendency of the current created to maintain an open harbour later in the fall and earlier in the spring.

In the appendix, page 22, will be found an able review from the journal of the Canadian Institute, vol. I, p. 162, of the letters and reports by Messrs. Bonnycastle, Shanly, Fleming and Tully.

In 1850 the harbour was placed in commission, Captain Richardson being Harbour Master. This gentleman, in January, 1854, submitted to the Commissioners a report on the state and requirements of the harbour, and alluded to the many changes which had taken place over a period of 50 years, and of the necessity which then existed for steps being taken to ensure the preservation of the western entrance

in a navigable state, and to a depth of 14 feet and a width of 400 to 500 feet. He alluded to a breach through the peninsula to the eastward, near Privat's Hotel, which was then only 140 feet in width. Reference is made to an old chart of about 1800, on which the western entrance was shown to be about 1,455 feet in width from 12 feet inshore to 12 feet on the bar, and that the soundings in the channel were 3 and 3½ fathoms. (App. p. 27.)

This report bore fruit, for the Harbour Commissioners in March, 1854, offered premiums for the three best reports on the means to be adopted for the preservation and improvement of the harbour, the points to be discussed being:—

1. The effects, present or future, to be produced by the breach (Eastern Gap) through the peninsula on the harbour.
2. If prejudicial, the means to be taken to strengthen the coast against further encroachment.
3. If beneficial, the proper mode of making it useful, and the cost of doing so.
4. The advisability of opening a passage between the harbour and Ashbridge's Bay, or an opening from the last into the lake, with an estimate of cost.

These premiums were obtained by Messrs. Hind, Fleming and Tully, and an extra premium was awarded to Captain Richardson for a report submitted by him.

The reports were published at the expense of the Harbour Commissioners, and will be found in the Appendix, p. 30 *et seq.* They furnish a vast amount of information respecting the harbour, and discuss fully the questions submitted by the Commissioners. No attempt is made by the writer to condense the views and opinions expressed in these different reports, because to do so would necessitate the use of extended quotations, which is not within the province of this memorandum.

No action was taken on any of the suggestions made by the writers of these reports as regards the construction of works; but it is gathered from subsequent reports by the Harbour Master—Captain Richardson—that dredging plant was obtained and used to keep the western entrance from closing up.

In 1856 it appears that the available width of the western entrance for deep-draught vessels was only 260 or 270 feet, although dredging had been carried on for some time. At that date 400 feet was considered to be the least width, and 12 feet the least depth, which should be obtained. (App. p. 94.)

In his report for 1857, the Harbour Master states that many changes had been observed in the shape of the island; and that the point bounding Blockhouse Bay on the western side had greatly increased northwardly. He alluded to damage done to the peninsula, that the embankment for its preservation was never finished, and did not advise its repair. (App. p. 95.)

From the report of 1858, it is gathered that a breach had been effected through the peninsula, and that the influx of water into the harbour from the eastward was deemed to be of great benefit. (App. p. 96.)

At the end of 1859 the neck of land at the peninsula had disappeared, and a navigable channel with from 7 to 8 feet of water had taken its place, and new formations of sand on either side appeared. (App. p. 98.)

In the report of 1860 it is stated that the western entrance having been dredged to 400 feet in width, and an average depth of 12 feet, both had been maintained; and that the island shoal had extended westwardly and threatened to encroach on the channel. The depth in the eastern channel was 6 feet. (App. p. 99.)

Capt. Richardson, in his report for 1861, refers to the opening at the eastern end of the harbour as having been the means of purifying the water in the harbour, and of contributing to the health of the city.

The island shoal had extended further to the westward, and beyond the influence of the current deflected and guided by the Queen's Wharf, and the channel had been maintained at its width of 400 feet. (App. p. 100.)

Mr. S. Keefer, then Deputy Commissioner of Public Works, in reporting on a petition of the Council of the Corporation of the City of Toronto, that a survey of the harbour be made "with a view to ascertaining the cause of the dilapidations which have already taken place, and of devising some means of arresting their progress,"

refers to the reports of the gentlemen who had in previous years examined the harbour, and stated the results of his own examination, and advised that a careful survey should be made under the direction of an able hydraulic engineer, as "the subject requires to be treated both theoretically and practically, with a view to the satisfactory delineation of the causes which have operated in the formation, but are now apparently directed to the destruction of the harbour; as well as devising some plan for directing them beneficially in future for its preservation and protection. The problem not being easy of solution should therefore be committed to the ablest hands."\* (App. p. 101.)

No action was taken on this recommendation.

The Harbour Master, in his report for the year 1862, stated that a bar of sand had grown up inside of the eastern entrance over which the water was shoaler than in the entrance itself. The "gap" or entrance had increased to half a mile in width, and the line of beach had so far receded that a boiler of a wrecked steamer which formerly was high and dry, was then 100 yards out in the lake and in deep water.

At the western entrance the island shoal had extended to 300 feet west of the then west end of the Queen's Wharf, and had advanced northwardly 40 feet. (App. p. 103.)

During 1863, following the suggestions of the Harbour Master, the Queen's Wharf was extended westwardly 200 feet, and, up to the end of 1864, a channel 400 feet in width, with a depth of 13 feet, had been secured.

The bar inside of the Eastern Gap had been thrown farther into the harbour and had only 6 feet of water on it, thus limiting the passage to vessels of light draught, (App. p. 105.)

In his report for 1865, Captain Richardson stated that the Highlands of Scarborough, the source from which the materials composing the peninsula and island were derived, no longer existed, and therefore a wasting away of the latter was going on.

The western entrance maintained its width of 400 feet, and a depth varying from  $11\frac{1}{2}$  to  $14\frac{1}{2}$  feet, according to the height of the water in the lake. The island shoal still progressed westwardly, and during 34 years had increased in width 700 feet, or at the rate of 22 feet annually. (App. p. 107.)

Mr. Kivas Tully, Engineer to the Harbour Board, reported that during 1866, the western entrance remained at 400 feet in width, which was due to the extension of the Queen's Wharf westwardly (App. 108); and, in his report for 1867, again referred to the westerly increase of the island shoal, and stated that "the formation west of Lighthouse Point had increased during the last few years, and an additional tongue or arm" (now Hanlan's Point, see plan showing changes in the harbour during 1874, 1875 and 1879) "had formed, which trends in a northerly direction about 300 yards west of the island, making another bay; this formation no doubt will continue to increase." (App. p. 109.)

This tongue, or arm, now known as Hanlan's Point, has increased up to 1880 until it now extends northwardly beyond Gibraltar Point, and the shoal from it has been pushed forward yearly until in 1875 it had narrowed the western entrance to a width of 230 feet—see plan herewith.

In 1876 a report (App. p. 100 *et seq*) was submitted to the Secretary of the Department of Public Works, by Mr. Wm. Kingsford, engineer in charge, who entered fully into the state and requirements of the harbour, and advised that the Parliamentary grant of \$20,000 should be expended in dredging, as "the present approach to Toronto by deep water necessitates an abrupt turn to enter the "Queen's Wharf Channel." In the improvement contemplated, easy entrance and egress should be secured;" and that "the increased navigation of the canal system of the Dominion points out that the entrance should ultimately be 16 feet deep."

Between 1st July, 1874, and 30th June, 1880, the sum of \$49,120.90 had been

\*The date of this report should be 1862, instead of 1872, as printed.



expended, principally in increasing the width and depth of the "Queen's Wharf Channel." Shortly after dredging was commenced it was found that, to obtain a depth of 16 feet at low water, it would be necessary to blast in solid ledge, and to a certain extent this was done. No attempt was made to straighten the abrupt turn, or to render the channel any easier for entrance or exit, the object being the opening of a channel 300 feet in width with 16 feet of water on the old course.

On the plan of the western entrance herewith will be seen the encroachment of the point of the shoal northwardly, and the width of the navigable channel in 1863, 1875, 1879 and 1880.

A plan of the harbour is attached, showing its state in 1841 (?), and it may be compared with that showing the changes observed in the eastern and western entrances in the years 1874, 1875 and 1879.

At the Session of Parliament of 1880, the sum of \$12,500 was appropriated for expenditure in this harbour, part of that amount to be expended in dredging the western entrance, which in the spring of 1880, had been narrowed to 280 feet by the growth of the island shoal northward.

As the present entrance has been pronounced to be abrupt, and it is known that to obtain a depth of 16 feet at low water would necessitate the removal of a large quantity of solid rock at a very great expense, it was judged that—as in former years the entrance was some 500 yards in width with deep water, a comparatively straight cut might be made through the point of the shoal, and a depth of 16 feet obtained without touching the rock. A line of easy entrance from 18 feet outside to the same depth inside was laid out, and a series of borings made showed that a depth of 17 feet below zero of the gauge on the Queen's Wharf could be had without the removal of any rock. This line is about 700 feet to the southward of the Queen's Wharf, and dredging operations have been commenced in the removal of the point of the shoal northward of this line. The material to be removed is fine sand.—

It has been deemed desirable to include in the Appendix a letter by Mr. J. G. Worts, the Chairman of the Harbour Board (p. 115), and also the petitions to His Excellency the Governor General from the Mayor and Corporation of the City of Toronto, and the Harbour Commissioners, praying that steps be taken by the Federal Government to protect the harbour and preserve it for the future (p. 117, *et seq.*)

As, throughout the whole of the reports published in the Appendix, constant reference is made to the height of water in Lake Ontario, and the effects its variation periodically has had upon the changes which have taken place in the peninsula, now island, bounding the harbour on the south, and in the harbour itself, there has been attached an article from the "Canadian Journal," vol. 2, entitled "Variations in the Level of the Lakes," which may not be out of place in connection with the object of this memorandum. Through the courtesy of Mr. Kivas Tully, C.E., who as Harbour Engineer has an intimate acquaintance with the harbour, and the many changes which have taken place during very many years, permission has been given to attach a copy of his paper on "The Fluctuations of Lake Ontario from the year 1854 to 1878," and of the chart prepared to accompany it. (App. p. 132).

The writer believes that he has touched upon the salient points of the reports and documents which have been gathered and printed herewith. That it has been shown that in early days, nearly 100 years ago, the width of the western entrance was nearly 500 yards; that on each successive examination this width was found to be gradually lessening; that through natural causes an opening was made through the peninsula at the eastern end of the harbour, and that a wide and comparatively shallow entrance now exists; and that for nearly half a century it has been the desire of those interested in the welfare of the harbour that steps should be taken to ensure its preservation for the future; that though many reports have been made and suggestions and estimates of cost submitted, none have been adopted nor acted upon, even in part; and the same forces of Nature which have acted through past years are still acting unchecked to the detriment and possible destruction of the finest harbour on Lake Ontario.

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It may not be amiss here to state that the waters of the Don and the sewage from the city still empty into the harbour.

The questions have therefore arisen what course is to be pursued, what is to be done to preserve this harbour; and further is it necessary or desirable so to improve the eastern entrance as to maintain always a navigable depth of 16 feet; and to construct such works as may be required to restrain the encroachment of the Island shoal, and preserve the western entrance at such a width and depth as will give easy access and exit? On the proper solution of these questions depends the preservation of Toronto Harbour.

The writer has to acknowledge the assistance he has received from Mr. M. Baldwin, the Harbour Master, and Mr. Helliwell, the Deputy Harbour Master, in obtaining many of the reports published herewith; and his thanks are due to Mr. K. Tully, C. E., for his reports and paper on the lake levels.

Respectfully submitted,

HENRY F. PERLEY,

*Chief Engineer.*

CHIEF ENGINEER'S OFFICE,  
DEPARTMENT OF PUBLIC WORKS,  
April 11th, 1881.

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NOTE.—The Appendix referred to in this Memorandum is not published.

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 REPORT ON LAKE MANITOBA OVERFLOW.
 

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Ref. No. 10,247.

 CHIEF ENGINEER'S OFFICE,  
 OTTAWA, 22nd December, 1880.

SIR,—There is not any information in the Department relative to Lake Manitoba.

I note in the letter from the Deputy Minister of the Interior (No. 9,961) that during the past few years the water of this lake have been gradually rising, and are now 4 or 5 ft. higher than ever before known. I learn also that a survey was made in order to ascertain the nature and extent of the obstacles in the Fairford River, the outlet into Lake Winnipeg, copies of the plan and section there obtained accompanying the letter.

Enclosed in this letter is a note that I shall furnish an estimate of the probable cost of the dredging required for the improvement of this river.

Lake Manitoba is about 120 miles in length and of an average width of 18 miles, and I have learned from the Deputy Minister of the Interior that in no part of it can a greater depth than 25 feet be found. It is an extremely shallow lake having sandy shores, and advantage has to be taken of the rivers and streams emptying into it to affect a landing.

The Fairford—or, as it is termed on the plan and section “Partridge Crop” River—has an average width for some distance from its mouth of 400 feet, with banks from 7 to 10 feet in height above the present level of the water. According to the soundings given on the plan, it appears that a shoal exists in Lake Manitoba across its mouth, having 5 feet depth in its shoalest part; and in a distance of a mile from the mouth two shoals are found and a third at  $1\frac{1}{2}$  miles still further on.

As marked on the section these shoals are composed of gravel and boulders. I note that the fall in the surface of the river is at the rate of  $2\frac{1}{2}$  feet per mile, and this is sufficient to cause the very rapid current which exists, a current strong enough to scour out any obstruction if composed of a comparatively soft or friable nature. As the obstructions which exist are said to be composed of gravel and boulders, I am inclined to believe that these materials must be compacted together, and will prove to be hard dredging.

It appears that at the time (10th Nov. 1880) the survey was made, Lake Manitoba was 4 or 5 ft. above its normal level, and the water in its outlet correspondingly high. As these soundings show depths of  $4\frac{1}{2}$  and 6 ft. on the obstructions complained of, it follows that when the lake is at its normal level, the water in the Fairford river can only be a foot or more in depth.

The average width of so much of the Fairford as is shown on the plan is 400 feet, and if the deepening proposed is to be of any benefit, a channel of that width must be cut through the obstructions to give vent to the greatest volume of water such a narrow channel will convey. It must be borne in mind that the problem to solve is the lowering of an area of at least 1900 square miles a depth of 4 feet, and maintaining that reduced level for the future; to do this the widest and deepest channel possible to obtain, must be provided.

The following is a statement of the quantity of dredging to be done in the removal of the shoals colored *red* in the section herewith, based on a width of 400 feet:

Channel in Lake Manitoba.....	93,000
“ “ River 4 to 32.....	117,600
“ “ “ 34 to 52.....	18,000
“ “ “ 115 to 124.....	18,900

Total..... 247,500 cub. yds.

To determine the cost of dredging the quantity thus given, I have assumed that the Department will place a dredge with scows and attendant tug on Lake Manitoba, and will continue working for four (4) years, being at the rate of 62,500 cubic yards, measured in the solid, per 5 or 6 working months, per year.

I place expenses as follows :

Machinery for spoon dredge.....	\$8,000 00
Delivery at Lake Manitoba.....	3,000 00
Hull and fitting up.....	6,000 00
Ropes, chains, tools, spare gear.....	4,000 00
Three (3) 50 yard scows.....	3,000 00
Steam tug complete....	10,000 00

Dredging plant.....	34,000 00
Working expenses, dredge and tug 4 years @ \$8,000.....	32,000 00
Contingencies, repairs and renewals, &c.....	6,000 00
Superintendence. 4 years @ \$2,000.....	8,000 00

Total..... \$80,000 00

and  $\frac{100000}{320000} = 32$  cents per cubic yard, which must be considered a reasonable price, but not one which a contractor would accept for the work in question, as not any allowance has been made for profit.

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

(Signed) HENRY F. PERLEY.  
*Chief Engineer.*

F. H. ENNIS, Esq., Secretary,  
Dept. of Public Works.

CHIEF ENGINEER'S OFFICE,

OTTAWA, 15th February, 1882.

Ref. No. 21253.

SIR,—Under date 22nd December, 1880, I submitted a report, No. 10247, on the probable cost of dredging the outlet of Lake Manitoba with a view of deepening it to such an extent that it would carry off the abnormal quantity of water in the lake and maintain the normal level in the future.

As the Department did not possess any information relative to this lake, or of the country surrounding it, and as the information relative to its outlet, the Fairford River, contained in No. 9961, was both incomplete and very unsatisfactory, an appropriation was made at the last Session of Parliament to defray the cost of an examination, not only of the lake and its outlet, but to ascertain, if possible, the cause or causes why the lake has risen and remains above its normal level, and to determine the means to be taken to carry off the surplus water and prevent its rising in the future; and the probable extent and cost of the works required.

In accordance with the instructions contained in your letter, No. 7478, instructions were given to Mr. Thomas Guerin, C.E., to make the examination, &c., required.

This he has done in a most satisfactory manner, and I herewith transmit for the information of the Hon. the Minister, the report he has submitted,

From this report it is gathered that Mr. Guerin saw for himself the effects of the rising of the lake, in the flooded condition of the village of Totogan, situated at the junction of the White Mud and Rat Rivers, six miles from the southern extremity of the lake, and heard the opinions of those who, in dismay at the rising of the waters, were threatening to abandon their farms.

It will be noted that Mr. Guerin, at the outset, assumed that this overflow was due to one of the following causes :—

1. The silting up of the lake by the materials held in suspension and brought by the rivers emptying into it ;
2. The "barring" of the outlet, by the movement towards it of the materials composing the bottom of the lake ;
3. The gradual sinking of the lands surrounding the lake ;
4. That the outlet is unable to carry off the water brought by the rivers which flow into the lake.

During his journey to the outlet, Mr. Guerin became convinced from the soundings taken that the lake was not being filled up by any sedimentary deposit, (1), nor that the adjacent land was sinking (3), for if either of these phenomena had occurred, instead of deeper soundings which were found, the reverse would have been the case; and I may mention that the mouth of the outlet is solid rock and does not show any signs of an accumulation from the bed of the lake (2).

For the determination of cause 4, the inflow of water from the White Mud, and its branch the Rat River, at the southern end of the lake, and the Water Hen, at the northern extremity, the only rivers emptying into Lake Manitoba, was ascertained to be 20,796 cubic feet per second.

The off-take capacity of the Fairford River was found to be 14,833 cubic feet per second, and, therefore, during the time of high water a quantity of 5,963 cubic feet per second is left to accumulate in the lake to overflow its borders, or be carried off by evaporation.

Here, as Mr. Guerin states, an anomalous state of affairs exists; the outlet of this lake, instead of being, as is the rule, larger than the united capacities of the streams emptying into it, is smaller than that of one of them, and the consequence must be that so long as the "Water Hen" continues to bring down equal quantities of water yearly, so long will the lake continue to rise, and it can only become reduced in depth when the rain and snowfall of any season on the area drained by the "Water Hen" are below their usual quantities.

The Fairford River empties into Lake St. Martin from which flows the Little Saskatchewan, which is described by Mr. Guerin as overflowing its banks, expanding and contracting alternately, sometimes rapid, sometimes still; and that its bottom, so far as it has been examined, consisted of rock or boulders, and hard packed gravel, and after a devious course of thirty miles it terminates in Lake Winnipeg.

Lake St. Martin is surrounded by a low flat country which is overflowed in a similar manner to the shores of Lake Manitoba, and the cause was found in the fact that the off-take capacity of the Little Saskatchewan is 2,347 cubic feet less than the discharge through the Fairford, and that this quantity per second of time, less the amount carried off by evaporation, remains to flow over the land.

Mr. Guerin, assuming that the areas of Lakes Manitoba and St. Martin, as given by Professor Hind, viz: 1,902 and 316 square miles respectively, are the normal conditions of these lakes, has determined that the height to which the water has risen above its proper height in each is six feet; and further, from the data obtained, has calculated that the area of land submerged in Lake Manitoba is 323 square miles, and in Lake St. Martin 765 square miles, or 696,320 acres.

The remedy for this state of affairs is simply to provide additional outlets from Lakes Manitoba and St. Martin, and transfer the surplus water to Lake Winnipeg, which from its great size would not be raised over two inches in the year; or as Mr. Guerin states, the rising of the surface of a lake always increases the discharge

through its outlet, it may be concluded that the level of Lake Winnipeg will not be sensibly affected.

In my report of December, 1880, No. 10247, I suggested the deepening of the Fairford River by dredging, to increase the discharge from the lake, and stated that the material of which the bed of the river was composed must be firm, because it had not scoured out under the action of the strong current flowing over it. This bottom, as before stated, Mr. Guerin found to be rock, and therefore, abandoning the idea of deepening the river, he proposes the opening of a new channel from the lake 10,500 feet in length, joining the Fairford River at that distance from its head, where it is  $9\frac{1}{10}$  feet lower than the lake. It will be noted that Mr. Guerin proposes the lowering of Lake Manitoba  $4\frac{1}{2}$  feet, and maintaining it at  $1\frac{1}{2}$  feet above its normal level for the purpose of facilitating navigation.

The character of the Little Saskatchewan has been already described, and is of such nature as not to admit of being improved. To relieve Lake St. Martin Mr. Guerin suggests the opening of a cut to Lake Winnipeg, a distance of  $12\frac{3}{10}$  miles of such dimensions as will effectually carry off all surplus water and prevent its accumulation in the future.

The cost of these works is placed as follows :

From Lake Manitoba to the Fairford River.....	\$36,000
From Lake St. Martin to Lake Winnipeg.....	245,000
Total.....	<u>\$281,000</u>

By the opening of these channels, not only would the waters of these lakes be reduced in a few years to their normal level, but they would remain so, and the many acres of land now submerged and valueless, would be recovered and become of value and fitted for settlement, and not only that, for so long as the Fairford and the Little Saskatchewan remain unchanged, the probabilities are that the waters of Manitoba and St. Martin will continue to rise, and the area of submerged land to increase in proportion.

Mr. Guerin has calculated that 696,320 acres of land are to-day flooded, and that, estimating their average value at \$2.00 per acre, their total value will amount to \$1,392,640, a handsome return for the expenditure of the amount estimated as above.

I cannot conclude this summary of Mr. Guerin's report without bearing testimony to the able manner in which he has performed the duty assigned to him, and for the solution of the problem set before him ; and, although the remedy proposed may appear to involve the expenditure of a large amount of money, yet the result to be obtained will prove to be of immense and lasting benefit.

I have the honor to be,  
Sir,  
Your obedient Servant,

HENRY F. PERLEY,  
*Chief Engineer*

F. H. ENNIS, Esq., Secretary,  
Dept. of Public Works.

## MR. GUERIN'S REPORT.

OTTAWA, 29th January, 1882.

SIR,—It has been already stated in the remarks concerning the River Assiniboine, that in consequence of the flood on that river, last summer, attention was directed without delay to Lake Manitoba.

The party was accordingly transferred to Totogan, a village situated at the junction of White Mud and Rat rivers, and within about 6 miles of the southern extremity of the lake.

This village was at that time flooded to so great an extent that it was with difficulty camping ground could be found in its vicinity.

The appearance of the country all round this place was uninviting. All parties who were consulted on the subject agreed that the lake had been rising every year for five years. The lake had now spread its waters over the land as far as Totogan Village and flooded the houses there. The farmers in the vicinity appeared dismayed and were threatening to abandon their farms. Seeing a lake of over 1,900 square miles in extent rising more and more every year, and spreading over the land, they naturally asked what reason had they for believing that their farms were not going to be irrevocably lost and themselves ruined if they continued to remain in the district. Such were the sentiments then expressed by the people.

To remedy those evils there must be means devised to confine the lake within its legitimate boundaries and prevent it from exceeding those boundaries in future. This is the problem involved whose solution is here submitted.

Before seeking a solution to this question the cause of the overflow must be first discovered; and in searching for this there are four possible causes which prominently suggest themselves:—

1. The lake may rise and overflow its banks in consequence of being filled up by the materials held in suspension in the rivers flowing into it.
2. The lake may rise in consequence of its outlet getting barred by the movement towards its entrance of the materials composing the bottom.
3. The land surrounding the lake may be sinking in consequence of some unknown phenomenon thus causing the water to overflow.
4. The water of the lake may be raised in consequence of an unusually great fall of rain or snow occurring at the heads of those rivers which flow into it; and the outflow at the same time being unable to meet the increased demand on its capacity.

All or any one at those causes could produce the results observable about the lake, and it was therefore necessary to find which of them existed.

In order to ascertain this information it was necessary to examine the rivers flowing into the lake as well as those flowing from it, and likewise to ascertain the quantity of water taken away from it by evaporation. It was also necessary to find whether the water of the lake was rising or falling for it seemed to rise or fall every day several inches in obedience to the direction of the wind.

Lake Manitoba, according to Professor Hind, has an area of 1,902 square miles. It is surrounded by a low flat country and consists of two parts which are united by a strait called "The Narrows": the greater portion of the Lake being south of "The Narrows." The only supply to it, besides the rain and snow which fall on its surface are Water Hen River which flows into it near its northern extremity, and White Mud, and Rat Rivers which flow into it at its southern extremity.

The outlets from the lake are Fairford River and Dog Hung Creek. This latter is too insignificant to be further noticed, but the former issues from the lake at a place north of "The Narrows" and for the first three miles of its length is a large and rapid river with a rocky bottom. It then expands and covers the surrounding country for many square miles, giving rise to a dense growth of bullrushes. In this extent of country is included Partridge Crop Lake, a small body of water clear of

weeds of any kind although a few years ago it was only a morass. Emerging from this lake, the river contracts into its normal dimensions for a short distance and finally terminates in Lake St. Martin.

Lake St. Martin, like lake Manitoba has flooded the surrounding country. It had, a few years ago, an area of 316 square miles according to Professor Hind; but it has lately swollen into much larger dimensions. The only feeder to this lake is Fairford River and its outlet is the Little Saskatchewan. This latter river overflows its banks expanding and contracting alternately; sometimes rapid, sometimes still. Its bottom as far as it has been surveyed consist for the most part of rock or boulders and hard packed gravel. After a devious course of some 30 miles it terminates in Lake Winnipeg.

#### DISCHARGES OF RIVERS CONNECTED WITH LAKE MANITOBA.

While encamped at Totogan, White Mud and Rat Rivers were examined. The discharge of the former was ascertained about three miles above the village. Here there was no visible mark to show that the water of this river had been higher during the previous spring. At the time of examination there was passing in it 1,425 cubic feet per second. It had a width of 185 feet and a maximum depth of 16 feet.

Rat River which unites with White Mud River at Totogan was examined about 5 miles above the junction. The water of this river seemed to have fallen much since the spring—at the time of examination it was only 40 feet wide and there was passing in it only 35 cubic feet per second; although its high water mark showed that during the previous spring it was 250 feet wide and was discharging 729 cubic feet per second.

Having placed some gauges at Totogan, camp was removed to the head of Fairford River which constitutes the outlet of the lake. During this journey soundings were taken in the lake, which showed a depth varying from 9 feet near shore to 15 feet, sometimes 20 feet further outward.

These soundings convinced those who were accustomed to navigate the lake that it was then much deeper than it had been during previous years; a fact which was ample proof that the lake was not being filled by any sedimentary deposit nor was the adjacent land sinking; for if either had been the case the tendency would be to diminish the depth of the lake instead of increasing it.

The discharge through Fairford River was measured at a suitable place about  $\frac{3}{4}$  of a mile from the lake. It had a width of 359 feet and a maximum depth of 10 $\frac{1}{2}$  feet. There were 14,833 cubic feet of water passing in it per second. There was no water mark visible which was higher than the surface of the water then passing in the river, and it seemed to be charged to its full capacity; for in the distance between this locality and the lake it was in places overflowing its banks.

Having inaugurated the work of surveying and sounding this river as well as adjacent portion of the lake, some of the party were transferred to the Head of the Lake for the purpose of examining Water Hen River.

At the mouth of this river there is a large tract of country covered with water and much of it is now producing a dense crop of bullrushes and other weeds; the river having three open channels through these weeds.

About 5 miles above its junction with the lake a suitable place was found for examining it. Here the river was 444 feet wide; its maximum depth was 12 feet and the quantity of water passing in it was 13,930 cubic feet per second. From a water mark visible on its banks it was ascertained that the river had fallen 1 $\frac{9}{10}$  feet from its highest state during the previous spring. When it was at that stage, the quantity of water passing in it amounted to 18,642 cubic feet per second.

#### DISCHARGES FROM AND INTO THE LAKE.

When the examinations of those rivers were made Water Hen contributed 13,930 cubic feet per second, White Mud and Rat Rivers contributed 1,460 cubic feet.



per second, thus making the entire discharge into the lake amount to 15,390 cubic feet per second; while the only discharge from it was that through Fairford river or 14,833 cubic feet per second, thus leaving 557 cubic feet per second to accumulate in the lake. From these facts it follows that at the time the investigation was made the lake had to depend entirely on evaporation to reduce its level.

In time of highest flood, Water Hen River discharges 18,642 cubic feet per second into the lake, White Mud and Rat Rivers discharge 2,154 cubic feet per second into the lake, thus making a total of 20,796 cubic feet per second; while the discharge from the lake could only have been 14,833 cubic feet per second, this being the capacity of Fairford river. It follows therefore that during the time of high water a quantity equal to 5,963 cubic feet per second is left to accumulate in the lake and spread over the adjacent land, or be carried off by evaporation.

Those measurements show an anomalous state of things in connection with Lake Manitoba. It has been a generally understood maxim throughout North America (I believe) that the capacity of the river which forms the outlet of a lake is greater than the united capacities of all the rivers contributing to the lake. The River St. Lawrence is an eminent example of this fact.

In the case of Lake Manitoba, however, the capacity of Water Hen alone exceeds that of Fairford River which forms the outlet of the lake by upwards of 25 per cent. The consequence must be, that whenever Water Hen river gets flooded, the water of Lake Manitoba must rise, and as the capacity of Fairford river aided by evaporation is not sufficient to carry off the surplus water during the time that elapses after Water Hen has passed the point of maximum height, until its next rising, the lake will continue to rise more and more every year until a succession of seasons occur when the rain and snow fall at the water shed forming the source shall be comparatively light.

#### EVAPORATION.

As it appears that evaporation is one of the principal factors in reducing the level of the lake, a contrivance was resorted to at the camp at Fairford for ascertaining the amount of water evaporated each day.

This contrivance consisted of a cylindrical tin vessel about 3 inches deep and as many inches in diameter. It was filled with water and imbedded in another vessel containing a mixture of sand and gravel. The depth of the water was taken by a scale every morning and evening and registered in a book kept for that purpose. A copy of this register will be found at the end of this report where also will be found a copy of the gauge register.

On looking to the first mentioned register, it will be seen that the loss of water each 24 hours gives a mean of 2.10 of an inch, while the loss during the night time alone is only 2.100 of an inch.

In winter time the evaporation of water is inappreciable while the thermometer registers below 32°.

If a piece of ice is measured and weighed and left exposed, it does not diminish to any appreciable extent in bulk or weight while the mercury is below 32°. Scientists assert that evaporation of water goes on in winter, but I have never known or read of any one who has stated what the amount of such evaporation is during freezing weather or during a Canadian winter. The register at Lake Manitoba during the latter part of the summer shows the mean evaporation to be as low as 2.100 of an inch during each night, or while the water was not exposed to the sun's rays; and during some nights it appeared to be nothing. Now as the evaporation during a winter day cannot be greater than that during a summer night it follows that the mean daily loss from evaporation during the cold months cannot exceed 2.100 of an inch in the vicinity of Lake Manitoba. Taking a mean between the three warmer months and nine colder months there will result .065 inches.

## COEFFICIENT OF EVAPORATION.

It must be borne in mind that the vessel used in computing the loss from evaporation was only three inches deep, and as it is well known that the loss from evaporation is greater in a shallow vessel than in a deep one, it follows that the mean daily evaporation of Lake Manitoba is not greater than .065 inches or .005416 feet throughout the year. This is the coefficient which shall be used for evaporation in the present report.

## LAKE ST. MARTIN AND ITS RIVERS.

Lake St. Martin is surrounded by a low flat country, and it could be seen in every case during the journey to Little Saskatchewan river where the shore was approached, that the old shore line was obliterated by the water overflowing the land.

It has been already stated that the only supply to Lake St. Martin is Fairford River, while its outlet is the Little Saskatchewan River. This latter river on leaving the lake is very irregular as may be seen on the accompanying plan; expanding and dividing into branches for the first five miles of its length. At this distance from the lake it contracts for a short space into what appears to be its normal dimensions and here its discharge was ascertained. Its width was 309 feet, its greatest depth was 16 feet and the quantity of water passing in it was 12,486 cubic feet per second.

Seeing that the discharge into the lake through Fairford River is 14,833 cubic feet per second, it follows that a quantity equal to 2,347 cubic feet per second is left in the lake to flow over the land or be carried off by evaporation.

## HEIGHT OF THE SURFACES OF LAKES MANITOBA AND ST. MARTIN ABOVE THEIR NORMAL STATE.

It appears from Professor Hind's report that at the time he made his examination, 1853, Lake Manitoba was confined within boundaries which gave it an area of 1902 square miles, and Lake St. Martin had boundaries limiting its area to 316 square miles. Those areas shall be accepted here as the normal condition of these lakes.

In Professor Hind's report the difference of level between Lake Manitoba and Lake St. Martin is stated to be 15 feet approximately. On this subject it is necessary to remark that unless the weather was calm and had been calm for some time previously, it was difficult to obtain the levels of these lakes otherwise than approximately: for their surfaces rise and fall at the shore several inches each day in obedience to the direction of the wind. The difference of level between these lakes was obtained last autumn and the result varied by about one foot from that obtained by Professor Hind.

This near coincidence goes to show, that although both lakes have risen several feet since the first examination was made by Professor Hind over twenty years ago, yet they have risen equally and the surfaces of both lakes are now at equal elevations above their normal conditions. These elevations are investigated in Note A at the end of this report where it is shown that the height to which the water has risen above its normal state in Lake Manitoba or Lake St. Martin is 6 feet.

## DEPTH OF WATER OVER SUBMERGED LANDS.

Adjacent to the channels of Fairford and White Mud rivers where the former descends to nearly the level of Lake St. Martin and the latter to the level of Lake Manitoba, the depth of water varies from 2 to about 4 feet in some places—some two

hundred feet removed from the channel the depth seldom exceeds 2 feet. Adjacent to the lake where it overflows the land the same depth of 2 feet is found and then of course diminishes to zero. So that one foot may be considered the mean depth of water over the submerged land.

#### QUANTITY OF LAND FLOODED.

The results obtained from the investigation continued up to this point, can now be applied to the determination of the area of land flooded by the overflow of Lake Manitoba and Lake St. Martin. The investigation determining those areas is given in Note B at the end. It will be there seen that the area of land flooded by Lake Manitoba is 323 square miles and by Lake St. Martin 765 square miles, or in other words, in consequence of the capacity of Fairford River not being sufficient to accommodate the increased demand on it when White Mud and Water Hen rivers are flooded, Lake Manitoba has overflowed its banks and flooded 323 square miles of territory; and in consequence of the capacity of the Little Saskatchewan river not being able to accommodate the increased demand on it when Fairford river is at high water, Lake St. Martin has overflowed its banks and submerged 765 square miles of territory: thus giving a total of 1088 square miles of land under water.

#### NATURE OF REMEDY PROPOSED.

The extent of land damaged by the overflow of those lakes being now ascertained and the prime cause being known, the question is reduced to the determination of means by which to redeem those lands as quickly as possible: the work to be as little expensive as possible and to be of such a nature as to debar for ever a recurrence of the present state of things.

On examining the general map of the country it will appear at once that in reducing Lake Manitoba to its original state, there is no other way but to increase the discharge from that Lake into Lake Winnipeg. The discharge from Lake Manitoba to Lake St. Martin must therefore be increased to a certain determinate extent and also that from Lake St. Martin to Lake Winnipeg.

The channels of the rivers Fairford and the Little Saskatchewan as they appear on the plan, forbid the idea of meddling with them to render them suitable for the conveyance of any fixed determinate quantity: although the positions of those rivers point out the most desirable localities where works to increase the discharge should be built.

When the flood of Water Hen river was at  $1\frac{4}{10}$  feet above its level of the 5th August (that having been the day on which the examination was made) the quantity of land flooded by Lake Manitoba was found to be 323 square miles and as the area of the lake is 1902 square miles then  $\frac{(1902 + 323) 5280}{86,400} \times .005416$  is the amount of water evaporated per second.

If to this be added the amount carried off by Fairford river, 14,833 cubic feet per second, the sum will be the total amount of water carried off per second from the lake.

Now, as Water Hen, White Mud and Rat rivers when high give a united discharge into the lake of 20,796 cubic feet per second there will result

$20796 - \frac{(1902 + 323) \times 5280}{86400} \times .005416 - 14833 = 2075$  the quantity by which the water

accumulates per second and spreads over the land, while Water Hen river remains at its maximum height. It would therefore seem that besides the discharge through Fairford river an additional discharge of 2,075 cubic feet per second should be obtained from Lake Manitoba.

It is not necessary, however, to build works giving so large a discharge, for this

state of things exists only during the short interval of high water. At the time the examination was made, this quantity did not exist, the river having fallen  $1\frac{5}{10}$  feet as has been already shown, and it appears that the time the river occupied in rising to high water mark and falling again to the level it had on the 5th August was about three months.

The extra quantity poured into the lake during this rising and falling of Water Hen River would be  $\frac{2}{3}$  the quantity which would be poured into it, if the river during the three months had remained at its high level (See note C at end); hence if  $a$  denote the number of seconds in a month, then  $2,075 \times 3 a \times \frac{2}{3} = 2490a$  represents the entire quantity poured into the lake during the three months in which the flood was rising and falling. This would therefore be the yearly contribution towards raising the lake above its level of the 5th August, if the contributing rivers should continue to rise to the same heights during succeeding years.

If works are built which will carry off 1,480 cubic feet per second, then the quantity carried off during a year will be  $1,480 \times 12a$ , and the lake will be diminished by a quantity equivalent to  $17,760 a - 2,490 a = 15,270a$  and its level will be lowered by a depth equal to  $8\frac{1}{2}$  inches.

According to this arrangement, and allowing the rain and snow fall to continue as great in the future as they have been in the last five years, and that Lake St. Martin be left in its present condition, the flooded land around Lake Manitoba would be freed from water in less than three years and the lake would be reduced to its normal state in less than five years. But, if Lake St. Martin be also relieved by an increased discharge from it, the land will be redeemed and Lake Manitoba lowered much sooner as will be seen further on.

It may be supposed that the equivalent water of the winter snow which falls on the lake itself and remains there until spring forms another source of supply and must be added to the contributions of the rivers supplying the lake, in order to obtain all the accumulation whose removal must be provided for. But the winter snow on the lake does not enter as a factor, for the reason that the snow water has time flow off through the outlet before the rivers rise to their full heights, and therefore those two sources of supply cannot occur at the same time.

#### LAKE ST. MARTIN.

The only supply to Lake St. Martin is Fairford River, which furnishes 14,833 cubic feet per second, and its outlet is the Little Saskatchewan, which carries off 12,486 cubic feet, thus leaving 2,347 cubic feet per second to raise the lake and flood the land. As Fairford River was charged to its full capacity when the examination was made, there can be no higher flood in it than that which then existed; it follows that there must exist an equality between the contribution from this river on the one side and the amounts carried off by the Little Saskatchewan and evaporation on the other side. In this case then, there is no extra amount arising from a high water level going to increase the lake as in the case of Water Hen River. To redeem all the flooded land in one year would require a work competent to carry off 1,162 cubic feet per second. This would lower the lake  $2\frac{1}{10}$  feet in a year. It would, moreover, reduce the lake to its normal state within three years, if the increased discharge from Lake Manitoba were not in operation.

If however the works on Lake Manitoba were finished at the same time, or before those of Lake St. Martin, then the desired effect on the latter lake would be retarded while that on the former lake would not be augmented; but, if the works on Lake St. Martin were completed one year before the completion of those of Lake Manitoba, the effect on both would be augmented. Thus, if Lake St. Martin were reduced  $2\frac{1}{10}$  feet, the discharge from Lake Manitoba through the work which otherwise would produce 1,480 cubic feet per second, would be now increased to 1,637 cubic feet per second, by this means reducing its level by eleven inches in one year and bringing it within its original boundaries in proportionally less time.

Here a question arises as to the desirability of lowering these lakes to their

former levels. If this be done, it can be seen on reference to the soundings given on the accompanying plan, that at the entrance to Fairford River there will be only about two feet of water and at the narrows of Lake St. Martin there will be only the about same depth.

Such a depth is not sufficient to accommodate craft of any respectable size to pass from Lake Winnipeg to Lake Manitoba. It is therefore proposed to lower these lakes to the amount of  $4\frac{1}{2}$  feet, thus leaving  $3\frac{1}{2}$  feet as the minimum depth of water for navigation.

#### PROPOSED CUT FROM LAKE MANITOBA.

With this end in view a cut is here proposed to be made from Lake Manitoba to Station 62 on Fairford River (vide plan). This cut is to be 10,500 feet long and 50 feet wide at bottom with slopes of one in two. The sill at entrance is to be 54 inches below the present level of the lake.

As the water of the lake is to be prevented from descending below the proposed level, it becomes necessary to guard against any undue increase to the discharge through this cut from damage to its entrance. With this view the entrance is to be protected with a double row of sheet piling and to be paved with masonry for 150 feet of its length.

It will be capable of discharging 1,480 cubic feet of water per second, and although discharging into Fairford River, it cannot much affect the discharge through that river from Lake Manitoba. It will raise the water  $9\frac{1}{2}$  inches at the point of concurrence; but this locality being below the rapids, and  $9\frac{6}{10}$  feet below the level of Lake Manitoba, the discharge from the lake will not be influenced to any serious extent.

The cost of this cut is estimated at \$36,000.

#### PROPOSED CUT FROM LAKE ST. MARTIN.

Another cut is proposed to be made from Lake St. Martin, commencing about  $2\frac{1}{4}$  miles south of the head of the Little Saskatchewan River and going direct to Lake Winnipeg, as depicted on the plan of reference.

It will be capable of discharging 1,162 cubic feet per second. It will be  $12\frac{9}{16}$  miles long and 60 feet wide at bottom; being protected at its entrance similarly to that from Lake Manitoba.

The estimated cost of this work is \$245,000. If to this sum be added the cost of the work at Lake Manitoba, \$36,000, there will result, as the estimated cost of all the improvements, the sum of \$281,000.

In consequence of the lateness of the season when the survey was made, there was not an opportunity to take a section along either of those projected lines; the estimate of the cost is, therefore, approximate; but, the country is a plane along both routes, a fact which gives an opportunity for obtaining a close approximation on that account.

It is impossible for me to state, with certainty, what the character of all the land is, which is flooded. There is very little of it occupied by settlers except at the southern extremity of Lake Manitoba and a small patch occupied by Indians at Fairford village. In each of these cases the land is unexceptionally good. I may state that I have sailed in a skiff over unoccupied meadow land, which was covered with some two feet of water in the vicinity of Lake St. Martin where the hay was standing  $2\frac{1}{2}$  feet above the surface; the boat making a channel through it.

Estimating all the flooded land to be worth an average price of \$2 per acre, the total value would reach the sum of \$1,392,640.

It has already been shown that while the supply at the water shed, which forms the source of the contributing rivers, shall continue to be as great as it has been for the last five years, Lake Manitoba must continue to rise for some time to come. Under such circumstances the area of the flooded land would continue to increase;

and, as there are no means of ascertaining whether the supply of water shall commence to decline or continue to increase, so there are no means of ascertaining when or where the flood shall stop if matters are left in their present condition.

It may be supposed that the conducting of such an amount of water as the proposed cut conveys into Lake Winnipeg will be the cause of raising the level of the water of that lake, and thus creating in its vicinity all the hardships which are now complained of in the vicinity of Lake Manitoba.

If the proposed cut were made to Lake Winnipeg, then, although all the water discharged through it were to remain in that lake, it would not raise its surface two inches in the year; but, when the fact is considered that the raising of the surface of a lake will always increase the discharge through its outlet, then it may be concluded that the level of Lake Winnipeg will not be sensibly affected by the proposed improvements:

Those ditches which are here recommended to be cut from Lake Manitoba and Lake St. Martin will never require to be repaired; for the sole object in each case being to convey away a certain amount of water, it follows that after this required amount shall have passed the sill of entrance, it matters not afterwards how it acts; whether it excavates for itself a deeper channel by its action on the bottom, or a wider channel by wearing away the sides, the result in either case would only tend to aid in accomplishing the object in view.

### NOTE A.

#### LAKE MANITOBA.

On referring to the soundings taken in Lake Manitoba, it will be seen that the line A, No. 4, at the head of Fairford River, may be considered the place from which the river starts. The section along that line will be, as in the annexed Figure No. 1, where A, No. 4, represents the surface of the water and is 874 feet long. The numbers along this line represent the soundings that were taken, and are 46 feet apart.

It can be easily ascertained that the area of this section is  $S=7107$  square feet. The wetted perimeter is  $C=874.84$  feet. The Hydraulic depth is  $H=8.1238$ , and the square root of the inclination as the river leaves this line is  $\sqrt{P}=.0077096$ .

#### LAKE ST. MARTIN.

Similarly, the first line of soundings taken at the entrance of the Little Saskatchewan River, as given on plan, may be considered as the line of departure of that river from Lake St. Martin, and is represented in the annexed figure No. 2. The length is 1,080 feet and the soundings are as represented by the figures along this line, being  $67\frac{1}{2}$  feet apart.

The area of this Section is  $S'=8235$  square feet. The wetted perimeter is  $C'=1080.54$ . The Hydraulic depth is  $H'=7.6212$  and the square root of inclination is  $\sqrt{P'}=.005781$ .

Let  $X$  denote the height of water in each of these lakes above its normal state, or the depth below the surface lines of these sections at which the level of the normal state exists. Then, looking at the Fairford section (Figure No. 1), it appears that at the left end the average inclination, for a short distance, of the bed is 8 feet in 92 feet, and at the right end it is 5 feet in 69 feet. Hence the following proportions:—

$8 : 92 :: x : \frac{8}{92}x$  and  $5 : 69 :: x : \frac{5}{69}x$ . Wherefore  $874 - \frac{8}{92}x - \frac{5}{69}x =$  length of Section at depth  $x = 874 - \frac{101}{12}x$  and the area for the depth  $x$  will be  $(874 - \frac{101}{12}x)^2 x$ , and the area of the Section below the depth  $x$  will be  $7107 - (874 - \frac{101}{12}x)^2 x$ .

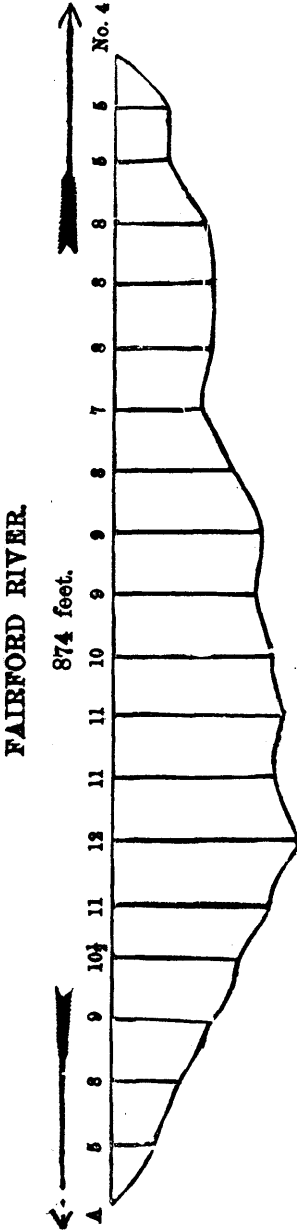


Fig. No. 1.

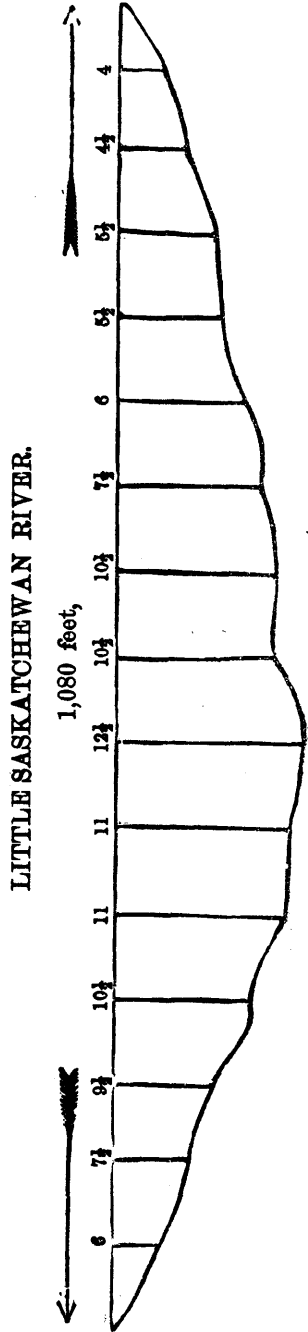


Fig. No. 2.

The wetted perimeter being diminished at the ends by about  $\frac{11}{100}$  ft. will be

$$C = 874.30 - \frac{1012x}{40}$$

$$\text{The Hydraulic depth is } H = \frac{7107 - (874 - \frac{506x}{40})x}{874.30 - \frac{1012x}{40}}$$

Hence, if  $Q$  represent the discharge through Fairford River, the value of  $Q$  when the lake is reduced to its normal condition will be

$$Q = 95 \times .0077096 (7107 - 874 - \frac{506x}{40})x \sqrt{\frac{7107 - (874 - \frac{506x}{40})x}{874.30 - \frac{1012x}{40}}}$$

On referring to the Section (fig. No. 2), the average inclination of the bottom for a short distance at the left end of this Section is  $7\frac{1}{2}$  feet in 135 feet, and at the right end it is  $4\frac{1}{2}$  feet in 135 feet. Hence the following proportions:—

$$7\frac{1}{2} : 135 :: x : \frac{135x}{7\frac{1}{2}} \text{ and } 4\frac{1}{2} : 135 :: x : \frac{135x}{4\frac{1}{2}}$$

The length of this Section at the depth  $x$  will therefore be

$$1080 - \frac{135x}{7\frac{1}{2}} - \frac{135x}{4\frac{1}{2}} = 1080 - 48x$$

and the wetted perimeter is  $1080 - 48x$  almost exactly.

The area of the Section for the depth  $x$  will be  $(1080 - 24x)x$  and the area below the depth  $x$ , or when the lake is in its normal state, will be

$$S^1 = 8235 - (1080 - 24x)x. \text{ The Hydraulic depth will be } \frac{8235 - (1080 - 24x)x}{1080 - 48x}$$

Therefore, the discharge through the Little Saskatchewan, when Lake St. Martin is in its normal state, will be

$$Q_1 = 95 \times .005781 [8235 - (1080 - 24x)x] \sqrt{\frac{8235 - (1080 - 24x)x}{1080 - 48x}}$$

When Lakes Manitoba and St. Martin are in their normal state, the discharge through the Little Saskatchewan, together with the evaporation from Lake St. Martin must counterbalance the discharge through Fairford River. The evaporation of Lake St. Martin, whose area is 316 square miles, is 552 feet per second. If this quantity be added to the value of  $Q^1$  there will result  $Q = Q^1 + 552$ , or the following equation will exist:—

$$[7107 - (874 - \frac{506x}{40})x] \left\{ \frac{7107 - (874 - \frac{506x}{40})x}{874.30 - \frac{1012x}{40}} \right\}^{\frac{1}{2}} \\ + .005781 \times [8235 - (1080 - 24x)x] \left\{ \frac{8235 - (1080 - 24x)x}{1080 - 48x} \right\}^{\frac{1}{2}} + 552$$

The value of  $x$  found from this equation is 6 feet; whence it follows that when the examination was made last autumn the waters of Lakes Manitoba and St. Martin were 6 feet above the legitimate levels of those lakes.



**NOTE B.**

**THE AREA OF LAND FLOODED.**

**LAKE MANITOBA.**

Water Hen River, when at high water, furnishes.	18,642	cubic feet.
White Mud and Rat Rivers.....	2,154	"
Total amount poured into the lake.....	20,796	"
Fairford River carries off.....	14,833	"
Amount remaining in lake.....	5,963	"

This amount of 5,963 cubic feet per second remains to raise the lake and flow over the land or be carried off by evaporation.

Let  $z$  sqr. feet denote the area of land flooded. Then  $z \times 1 =$  cubical contents of all the water over this land.  $1902 \times \overline{5280} \}^2 \times 6$  is the cubical contents of all the water in the lake over its normal state, and as it occupied 5 years in increasing to this amount, there will result,  $\frac{z + 1902 + \overline{5280} \}^2 \times 6}{5 \times 365} =$  the increase per day, and  $(z + 1902 + \overline{5280} \}^2) \times .005416 =$  the amount carried off by evaporation. Hence the following equation:  $\frac{z + 1902 \times \overline{5280} \}^2 \times 6}{5 \times 365} + (z + 902 \times \overline{5280} \}^2) .005416 = 5963 \times 86400$ —the number of seconds in a day being 86400.

The resolution of this equation will give  $z = 323$  square miles.

**LAKE ST. MARTIN.**

Fairford River furnishes. ....	14,833	cubic feet per second.
Little Saskatchewan.....	12,486	" "
Amount remaining in lake....	2,347	" "

This amount of 2,347 cubic feet per second remains to raise the lake and flood the adjacent land, and is partly carried off by evaporation.

Let  $Z^1$  denote the area of land which is flooded by this lake; then, by pursuing the same mode of reasoning as in the case of Lake Manitoba, there will result the following equation:—

$$\frac{Z^1 + 316 \times \overline{5280} \}^2 \times 6}{5 \times 365} + (Z^1 + 316 \times \overline{5280} \}^2) .005416 = 2347 \times 86400$$

The resolution of this Equation gives  $Z^1 = 765$  Square Miles.

**NOTE C.**

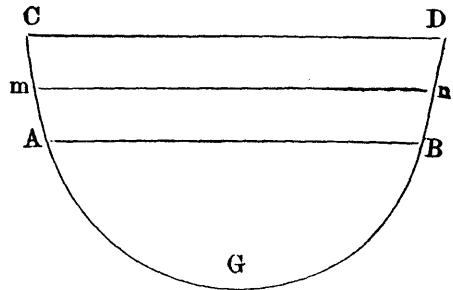
Let C A G B D be a section of Water Hen River ; A B the level of water surface on the 5th August and C D its level when at high water—Let Q=discharge per second at high water,

T = Time the river took to rise during spring to the level of C D.

y = Any intermediate time as when level is at m n.

h = Difference of level between A B & C D = 1.85 feet.

h' = Difference of level between A B & m n.



Now as h is supposed to be described uniformly, it follows that the height h' of m n above A B varies as y. It is also evident that the section A B m n varies as the height h' and consequently as y.

Taking into account the flow through the Section A B C D the discharge must vary as the Section  $\times \sqrt{\text{Hydraulic depth}}$ , and as h and h' may without sensible error be considered the hydraulic depths at the levels C D and m n, it follows that the discharges at C D and m n will vary as  $T T^{\frac{1}{2}}$  and  $y y^{\frac{1}{2}}$ .

Hence if q represent the discharge at level m n.

$$Q : q :: T^{\frac{3}{2}} : y^{\frac{3}{2}} \text{ and } q = \frac{Q y^{\frac{3}{2}}}{T^{\frac{3}{2}}}$$

The entire discharge during the time d y will be  $\frac{Q y^{\frac{3}{2}} d y}{T^{\frac{3}{2}}}$  and during the time y

it will be  $\int \frac{Q y^{\frac{3}{2}} d y}{T^{\frac{3}{2}}}$ . This is  $\frac{Q y^{\frac{5}{2}}}{T^{\frac{3}{2}}} \times \frac{2}{5}$  and when y becomes T this becomes  $Q T \times \frac{2}{5}$ .

By following the same mode of reasoning, if  $T^1$  = the time of falling from high water to the level A B, we would get  $T Q^1 \times \frac{2}{5}$  = the discharge during the time  $T^1$ ; hence  $Q \times (T + T^1) \times \frac{2}{5}$  = the entire discharge, and as  $T + T^1 = 3$  months;  $Q \times 3 \text{ mos.} \times \frac{2}{5}$  is the quantity.

EVAPORATION OF THE WATER of Lake Manitoba in a Tin vessel placed in the centre of another Tin vessel containing a mixture of sand and gravel.

Day of month.	Time of day.	Depth of water in inches.
	h.m.	
July 29th	6.30 A M	2.15
	6.30 P M	1.90
30th	6.35 A M	1.85
	7.15 P M	1.68
31st	9 05 A M	1.63
	6.40 P M	1.30
August 1st	7.30 A M	1.25
	7.00 P M	1.05
2nd	7.00 A M	1.05
	7.00 P M	0.85
3rd	7.15 A M	0.80
	7.00 P M	0.75
4th	7.00 A M	0.70
	7.00 P M	0.50
5th	6.45 A M	0.45
	7.05 P M	0.25
	7.30 P M	1.95 Replenished.
6th	7.15 A M	1.90
	7.45 P M	1.65
7th	8.45 A M	1.60
	7.20 P M	1.30
8th	7.00 A M	1.25
	6.05 P M	1.15
9th	6.15 A M	1.12
	6.45 P M	0.82
10th	6.30 A M	0.80
	6.30 P M	0.50
11th	8.00 P M	2.80 Replenished.
12th	7.00 A M	2.75
	7.00 P M	2.52
13th	6.30 A M	2.50
	7.00 P M	2.30
14th	8.00 A M	2.28
	6.30 P M	2.15
15th	7.00 A M	2.18
	6.00 P M	2.80 Replenished.
16th	6.30 A M	2.78
	6.30 P M	2.65
17th	6.30 A M	2.62
	7.00 P M	2.45
18 h	6 30 A M	2.45
	7.00 P M	2.20
19t	6.30 A M	2.15
	7.00 P M	1.95
20th	6.30 A M	1.92
	7.00 P M	1.75
21st	8.30 A M	1.74
	7.00 P M	1.56

## Evaporation of the Water.—(Continued.)

Day of Month.	Time of Day.	Depth of Water in Inches.
		Removed to Little Saskatchewan.
22nd	7.00 A M	1.54 Replenished.
	7.30 P M	1.35
26th	7.30 A M	2.68
	6.00 P M	2.48
27th	7.00 A M	2.48
	6.30 P M	2.35
28th	7.15 A M	2.34
	6.00 P M	2.20
29th	7.00 A M	2.20
	7.00 P M	2.03
30th	8.00 A M	2.04
	5.45 P M	1.95
31st	7.30 A M	1.95
	6.00 P M	1.78
September 1st	8.30 A M	1.78
	7.00 P M	1.60
2nd	7.30 A M	1.61
	6.45 P M	1.50
3rd	8.00 A M	1.52
	5.30 P M	1.35
4th	9.00 A M	1.35
	5.00 P M	1.40
5th	8.00 A M	1.43
	6.00 P M	1.42
6th	6.30 A M	1.42
	7.00 P M	1.25
7th	7.00 A M	1.25
	7.00 P M	1.05
8th	8.00 A M	1.06
	8.00 P M	0.90
9th	7.30 A M	0.92
	5.30 P M	0.92
10th	8.00 A M	0.92
	4.30 P M	2.50 Replenished.
11th	7.45 A M	2.50
	6.00 P M	2.30
12th	8.00 A M	2.30
	6.30 P M	2.15

REGISTER OF GAUGE at Entrance of Fairford River—Fig. 5 on Gauge having been at the surface of the water when gauge was placed in position.

Day of Month.	Height of Water.	Weather.
July 28th A M	5.00	S. W. Wind.
29th "	4.95	North "
30th "	4.85	North, nearly calm.
31st "	4.90	Calm.
August 1st "	5.15	South wind.
2nd "	5.05	West "
3rd "	4.60	North and cloudy.
4th "	4.60	West wind and clear.
5th "	4.30	North West wind.
6th "	4.50	South "
7th "	5.00	South "
8th "	4.65	North-West "
	4.60	North-West "
9th P M	4.63	West "
	4.50	North wind and clear.
10th A M	4.58	S. W. "
	4.70	South "
11th P M	4.70	West "
	4.60	West "
12th A M	4.60	North "
	4.10	North "
13th P M	4.30	West "
	4.40	S. W. "
14th A M	4.55	South "
	4.60	" "
15th P M	4.80	South "
	4.80	" "
16th A M	4.80	Cloudy.
	4.80	"
17th P M	4.60	Clear.
	4.50	"
18th A M	4.40	
	4.40	
19th P M	4.50	South wind.
	4.50	Cloudy.
20th A M	4.40	North wind.
	4.30	
August 21st P M	4.30	South wind.
	4.50	
22nd A M	4.70	
	4.50	
23rd P M	5.00	South-West wind.
	4.80	Cloudy.
24th A M	4.60	Clear and calm.
	4.00	
25th P M	4.60	Clear and West wind.
	4.50	

## Register of Gauge—(Continued.)

DAY OF MONTH.	HEIGHT OF WATER.	WEATHER.
26th A M	4.40	North wind.
P M	4.30	Calm.
27th A M	4.30	North wind.
P M	4.20	" "
28th A M	4.40	Cloudy with rain.
P M	4.40	Clear.
29th A M	4.40	West wind.
P M	4.30	Very calm.
30th A M	4.20	North wind and clear.
P M	4.10	North wind.
31st A M	4.10	North. Cloudy
P M	4.10	" "
September 1st A M	4.10	" "
P M	4.10	" "
2nd A M	4.10	North wind.
P M	4.30	West wind and clear.
3rd A M	4.40	South wind.
P M	4.40	West "
4th A M	4.50	" "
P M	4.40	North "
5th A M	4.50	West "
P M	4.40	Very clear.
6th A M	4.40	Calm and clear.
P M	4.30	South wind.
7th A M	4.40	N.W. "
P M	4.40	West "
8th A M	4.40	Very calm.
P M	4.50	West wind.
9th A M	4.60	N.W. "
P M	4.60	West and cloudy.
10th A M	4.60	Very clear
P M	4.50	South wind; cloudy.
11th A M	4.30	West wind; cloudy.
P M	4.30	North "
12th A M	4.30	Very calm.
P M	4.30	South wind.
13th A M	4.40	" "
P M	4.50	" "
14th A M	5.50 ?	North "
P M	4.10	Very calm.
15th A M	4.10	Very calm.
P M	4.10	North wind.
16th A M	4.10	Cloudy.
P M	4.10	"
17th A M	4.10	West wind.
P M	4.20	North "
18th A M	4.20	West " (Cloudy.)
M	4.10	Calm; cloudy,

Register of Gauge—*Continued.*)

DAY OF MONTH:	HEIGHT OF	WEATER.
19th A M	4.10	North wind.
P M	4.10	" "
20th A M	4.30	North; raining.
P M	4.30	West wind.
21st A M	4.30	S.W. wind.
P M	4.60	
22nd P M	4.70	

The whole respectfully submitted.

THOS. GUERIN,  
*Engineer in charge of Surveys.*

HENRY F. PEBLEY, Esq.,  
Chief Engineer of Public Works.

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 APPENDIX No. 6.
 

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 REPORT ON PUBLIC WORKS IN BRITISH COLUMBIA, BY HON. J. W. TRUTCH, C.M.G.
 

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Ref. No. 29,433.

VICTORIA, B.C., 1st November, 1882.

SIR,—I beg to submit for your information the following report upon the Public Works carried on under my supervision during the fiscal year ended 30th June last, accompanied by a tabular statement thereof.

## 1. BEAVER ROCK.

This important work was brought to a conclusion on the 22nd August, 1881 and after a careful survey had been made by which it was determined that there were no projecting points of rock within 12 feet 6 inches of low water, level spring tides. The barges, caisson and other plant were removed and stored. There is now a depth of 12 feet 6 inches of water at low water, spring tides, over the whole site of the rock. I had the honor of addressing you more fully on this matter in my letters dated 28th of June\* and 16th September, 1881, \* in which I asked your instructions as to the depth of water to be obtained, and as to the disposition to be made of the balance of the contract price as well as of the barges, caisson and other plant employed on the work, but have not received your directions on the latter point.

## 2. BULKHEAD AND REPAIRS TO MARINE HOSPITAL.

This work consisting of a bulkhead along the foreshore of Victoria Harbour in front of the Marine Hospital, with landing stage and steps, together with an extension of the verandah, a new brick tank and sundry minor repairs, was performed by Messrs. Smith & Clark, Contractors of this place, for the sum of \$1,163 in a satisfactory manner.

## 3. REPAIRS AND ALTERATIONS TO VICTORIA POST OFFICE.

The work done on this building has, I believe, put it in as efficient and stable condition as practicable. This work consisted in altering the internal arrangements to accommodate the Savings Bank and Telegraph Office, building new vaults, water-closets and vestibules, and in lengthening the stairway, painting and kalsomining the inside walls, and rendering with Portland cement mortar the rear and side walls of the main building and vaults, and paving the backyard. This work was performed satisfactorily under contracts—for the greater part—by Messrs. Charles Hayward, & Smith & Clark, Contractors of this place, the expenditure amounting in the aggregate to \$4,279.25:

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\* In Annual Report 1881, Appendix No. 6, pages 70 and 72.



## 4 DREDGING AND REPAIRS TO DREDGE VESSELS.

Operations with the object of improving Victoria Harbor by dredging were commenced on the 19th of January last, after the dredge and other vessels had been put in thorough repair—under the direct superintendence of Mr. Robert Dexter.

Acting on representations made to me by the Board of Trade of this City, that the harbor along the front of the wharves had to some extent filled in, as to which I reported to you by letters of 19th and 25th January \* last, I directed the Superintendent to dredge from a point south of the proposed site of the Custom House wharf to Johnson Street, for a width of 50 feet and to a depth giving 14 feet at low water spring tides. After dredging in this locality until the end of April, I became fully satisfied from personal observation, and from the reports of the Superintendent, that the harbor had not filled in to any appreciable extent from tidal effects or from sewage or street scourings, but only from the result of carelessness of persons unloading coal. In consideration of this fact and of the high rate of the cost of the work, and that it was found impossible to obtain the desired depth of water throughout this portion of the harbor on account of rock cropping up in several places, causing frequent injury to the dredge and consequent expense, I decided to discontinue operations here and send the dredge to resume works on the spit off Shoal Point, at the entrance to the harbor, which was accordingly done on the 1st of May, and this work continued until the close of the fiscal year 1881-82.

On resuming operations at Shoal Point, the Superintendent was directed to turn his attention principally to cutting a channel, to a depth of 14 ft. at ordinary low water spring tides, through the spit which extends about 450 feet from the point. Rock having been struck in several places in the line of this proposed channel before the required depth was reached, it was thought advisable to dredge outside, that is, to the northward, of these rocks, and inside of the former site of the old Beacon or Buoy No. 2, thus affording to large vessels a better sweep when approaching "Dredger Rock."

I stated more fully my views with reference to the dredging operations, both in the Inner Harbor and at Shoal Point in reports to you dated 19th and 25th January and 9th February \* last, to which I beg to draw your attention.

I enclose a statement prepared by Mr F. C. Gramble, Assistant Engineer in my office, showing the work performed by the dredge between the 19th January and 30th June and the cost thereof. This statement shows (firstly) the total quantity of material dredged along the wharf front, to be about 11,808 cubic yards of stiff blue clay, mud, sand and coal at an expenditure of \$4,988.88 or at a cost per cubic yard of about 42½cts not including repairs; and (secondly) the total quantity removed at Shoal Point from 1st May to 30th June to be 10,548 cubic yards at an expenditure of \$2,470.84, or at a cost per cubic yard of about 23½cts not including repairs. Since the 30th June operations have been continued at Shoal Point with still more satisfactory results.

From the foregoing it will appear that from the 19th January to the 30th of June the amount expended on dredging was \$7,459.72 which, together with the amount expended on "Repairs to Dredge vessels" viz. \$3,372.98 makes a grant total expenditure on this service of \$10,832.70.

In compliance with your instructions, conveyed to me in Departmental letter dated 3rd May last—acknowledged 25th May.—I caused a survey to be made of shoal Point showing the site of dredging operations. This survey was accordingly made in June and therefore does not show the full result of last year's work. It will consequently be necessary in order that the full results of dredging at Shoal Point during 1882 may be exhibited that further soundings may be taken on discontinuance of dredging operations in January next, by which time the appropriation for dredging will have been expended. I propose to send you then a further report on this subject with a plan of the locality and chart of the soundings.

\* See notes following this report.

## 5 POST OFFICE BUILDING, NEW-WESTMINSTER.

Mr. Charles Hayward signed the contract for the erection of this building on the 6th December last, but owing to the unfavorable season, he was not able to commence building until May when he was further delayed pending your decision upon some proposed alterations. The progress has therefore not been as rapid as could be desired, partly owing to the above circumstances and partly to certain difficulties which have arisen between Mr. James Kennedy, Superintending Architect (appointed in accordance with instructions contained in the Chief Architect's letter dated 16th August, 1881, and telegrams of 9th, 13th and 22nd March, 1882) and the contractor; but as these difficulties arose subsequently to the close of the last fiscal year, they need not be detailed in this report. I shall, however, have the honor of addressing you further on this subject in a separate report at an early date.

## 6. PENITENTIARY WORKSHOPS, NEW WESTMINSTER.

The contract for this work was awarded to Messrs. Elliot and Levy of New Westminster, for the sum of \$3,359, and was carried out under the supervision of Mr. James Kennedy and completed on the 11th March last. Extra work costing \$31.75 brought the amount expended up to \$3,390.75.

## 7. PENITENTIARY FENCE.

A double fir board fence 12 feet high with cedar posts throughout, enclosing about 27 acres of the Penitentiary Reserve, has been erected. This work was executed by convict labor under the direction of the Warden in a satisfactory manner. The expenditure amounted to \$2,300.

## 8. IMPROVEMENT COURTNEY RIVER.

I addressed you fully on the 14th November, 1881, \* on the attempt made to remove snags from this river.

## 9. REPAIRS TO VICTORIA BATTERIES.

The work of repairing two of the Victoria Batteries, viz. those at Finlayson and Macaulay Points, was performed by day's labor after consultation with the Acting Deputy Adjutant General, Captain Dupont, who has expressed his satisfaction with the works done. I have addressed you more fully on this subject in a separate report of 31st October last.\*

## 10. REPAIRS TO PUBLIC BUILDINGS.

Various necessary repairs have been effected on the several Public Buildings in this Province at an aggregate cost of \$486.74; but do not seem to call for special mention.

## 11. PENITENTIARY, NEW WESTMINSTER.

This account includes certain repairs to and supplies furnished the Penitentiary Building amounting to the aggregate sum of \$369.50

\* See notes following this report.

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**12 & 13. NAAS AND SKEENA RIVERS IMPROVEMENTS.**

Upon the authorization conveyed by letter No. 11,839 of 28th March, and No. 13,749 of 28th July last and by telegram of 24th April last, Mr. Croasdaile and Mr. Turner were instructed by me to expend \$500 and \$1,500, respectively, in removing snags from the channels of the Naas and Skeena Rivers as reported by my letters to you of 17th April \* and letter from my Secretary, Mr. Roebuck to Mr. Secretary Ennis of 15th August last.\* I have, however, not received any reports from either Mr. Croasdaile or Mr. Turner as to expenditures on these works and consequently no payments have been made by me on these accounts.

**14. TELEGRAPH SERVICE.**

A report on this service from Mr. J. Wilson, District Superintendent, has been forwarded by me, with covering letter of this day's date, to Mr. F. N. Gisborne, Chief Superintendent, who will doubtless embody the same in his annual report to you.

I have the honor to be, Sir,  
You obedient servant,

JOSEPH W. TRUTCH.

The Honorable

Sir HECTOR L. LANGEVIN, K.C.M.G., C.B.,  
Minister of Public Works,  
Ottawa.

BRITISH COLUMBIA.—PUBLIC WORKS DEPARTMENT, 1881-82.

STATEMENT of Public Works carried on in the Province of British Columbia, during fiscal year ended 30th June, 1882.

Name of Work.	Province, District or County.	Number and Date of Letter authorizing Expenditure.	Expenditure authorized.	Expenditure or liability incurred from 1st July, 1881, to 30th June, 1882.	Letters from Dominion Government Agent to the Honourable the Minister of Public Works.
No. 1.—Beaver Rock.....	Victoria, B.C. ....	No. 8991, Sept. 16, 1881....	\$ 6,500 00	\$ 1,783 66	18th November, 1881, 26th February, 1882 and 17th April, 1882.
No. 2.—Marine Hospital.....	do .....	23rd April, 1881, from Thos. Scott, Chief Architect.....	1,163 00	1,163 00	3rd August, 1882.
No. 3.—Repairs and alterations to Victoria Post Office. ....	do .....	16th August, 1881.....	2,950 00	.....	Telegram, 18th April, 1881. 14th May, 1881. Letter, 14th May, 1881.
No. 4.—Dredging Victoria Harbour. Repairs to Dredge vessels.....	do .....	No 9830, Nov. 9, 1881....	660 00	4,279 25	Telegram, 25th October, 1881.
	do .....	No. 7453, June 22, 1881....	7,500 00	7,459 72	19th August, 1881. 19th January, 1882.
	do .....	do do .....	3,400 00	3,372 98	23th January, 1882. 9th February, 1882.
	do .....	Telegrams 16th and 24th September, 1881.....	.....	.....	10th March, 1882. 25th May, 1882.
No. 5.—New Westminster Post Office Building .....	New Westm ster, B.C.....	Contract dated 6th Dec, 1881, enclosed in Letter from Chief Architect 27th January, 1882.....	15,474 00	.....	Telegrams, 15th September, 1881. 22nd September, 1881. 28th September, 1881. Letters 22nd April, 1882. 27th May, 1882.
	do .....	Telegram Chief Architect, 15th August, 1881.	742 00	No. 1 750 00	1st June, 1882. 13th June, 1882. 21st June, 1882. 17th July, 1882. 11th August, 1882. 25th September, 1882.
	do .....	Telegram Chief Architect.....	135 00	No. 2 500 90	Telegram to Chief Architect, 11th August, 1882.
No. 6.—Penitentiary workshop.....	do .....	Telegram, 26th Oct, 1881, authorizing. Contract dated 17th Nov, 1881..	3,359 00	No. 3 1,058 00	.....
No. 7.—Penitentiary Fence.....	do .....	No. 7080, 21st May, 1881.	1,900 00	No. 4 2,238 98	.....
No. 8.—Courtney River Improvement.....	British Columbia....	No. 8901, 21st Sept, 1881, and No. 7453, 22nd June, 1881.....	500 00	.....	.....
No. 9.—Repairs to Batteries.....	Victoria, B.C. ....	No. 11557, 27th May, 1882.	600 00	.....	.....

BRITISH COLUMBIA.—PUBLIC WORKS DEPARTMENT, 1881-82.—Continued.

STATEMENT of Public Works carried on in the Province of British Columbia, during fiscal year ended 30th June, 1882.

Name of Work.	Province, District or County.	Number and Date of Letter authorizing Expenditure.	Expenditure authorized.	Expenditure or liability incurred from 1st July, 1881, to 30th June, 1882.	Letters from Dominion Government Agent to the Honourable the Minister of Public Works.
			\$ cts.	\$ cts.	
No. 10.—Repairs to Public Buildings	do	General authority by No. 4564, 15th Nov., 1880		486 74	Nil.
No. 11.—Repairs to Public Buildings New Westminster, B.C.	do	do		369 50	Nil.
No. 12.—Naas River Improvement... British Columbia	British Columbia	No. 11839, 28th March, 1882, and No. 13748, 28th July, 1882	500 00	Nil.	Letters 18th November, 1881, 25th February, 1882, 17th April, 1882, Secretary's letter 15th August, 1882.
No. 13.—Skeena River Improvement.	do	No. 1374, 28th July, 1882.	2,000 00	Nil.	Letters 29th November, 1881, 18th Jan., 1882, 15th August, 1882.
No. 14.—Telegraph Service	do	.....		43,411 88	Letter 1st November, 1882.

JOSEPH W. TRUTCH.

1st November, 1882.

## NOTES.

## DREDGING AND REPAIRS TO DREDGE VESSELS.

Ref. No. 20894.

VICTORIA, B.C., 19th January, 1882.

SIR,—Adverting to my letter to you of 27th October last, I have the honour to report that pursuant to your instructions to me by Departmental letter No. 9087 of 30th September last, the government dredge vessels and tug steamer "Georgia" have been brought to Victoria and the repairs necessary to place them in effective condition duly carried out, and that dredging operations in Victoria Harbor were commenced this morning.

It was found on inspection that the tug steamer "Georgia" was in so leaky a state that she had to be hauled out, a new sternpost put on to her and other extensive repairs made to her hull.

It is estimated that these repairs will render her efficient for the service she is now employed in for about two years longer, but after that period of work, she will probably become unfit for further service and will certainly not be worth further repairing.

The whole cost of repairing the tug and dredge which as far as was practicable has been done by contract with the lowest tenderers, will however not exceed the prescribed amount (\$3,400) appropriated for this purpose, including the wages of the crew of the dredger who have been engaged since the beginning of November in cleaning and repairing the machinery of that vessel.

Before coming to a conclusion as to the most beneficial manner of employing the services of the dredger, I thought it desirable to obtain the opinions on this matter of the Board of Trade, the Harbour Master, and the Agent of the Marine and Fisheries Department here.

These authorities concur in recommending and urging that the dredge should in the first place be set at work in the inner harbor to remove the accumulation of deposit which is supposed to have resulted from the sewage of the town, and to deepen the channel along the wharf frontage.

I have accordingly directed that dredging operations should be commenced in front of the site of the proposed Dominion Government wharf, opposite the Custom House, and continued along the city front as far as may be found advisable.

I have, however, serious apprehension that in consequence of the distance of the locality so proposed to be dredged from the mouth of the harbor, outside of which the dredged material has to be dumped and the consequent loss of time to the dredge in awaiting the return of the punts and tug, the cost per cubic yard of such dredging will be found to be excessive, as compared with that of continuing the dredging of the spit off Shoal Point at the mouth of the harbor where the length of towage would be diminished more than one half.

It is on this latter work that the dredge has been principally employed hitherto, and as it is clearly most essential to the improvement of the harbour that its entrance should be straightened and deepened by the removal of this spit, I propose that the dredge shall return to this work as soon at all events as that in the inner harbor commenced on this morning has been completed, which should not occupy her more than two or three months at most; and should this latter operation, after working on

it long enough to afford a practical test, prove too costly to be continued, as I fear may result, I propose to desist from it, and to set to work at Shoal Point spit forthwith.

Trusting this may receive your approval,

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

JOSEPH W. TRUTCH.

The Honourable

Sir HECTOR L. LANGEVIN, K. C. M. G., C. B.,  
Minister of Public Works,  
Ottawa.

Ref. No. 21112.

VICTORIA, B. C., 25th January, 1882.

SIR,—With reference to my letter to you of the 19th instant, reporting that the dredge after having undergone thorough repair had been set to work to deepen the inner harbor and wharf frontage at Victoria, with the ultimate intention, after this has been accomplished, of resuming the operation, on which she was formerly engaged, of removing the bar at Shoal Point which impedes the entrance of vessels of any considerable draught into the harbor, I have the honour to represent, that in order to execute economically this latter work, which would probably take two years to complete, it is obviously necessary, as has been pointed out by Mr. Pearse in his successive annual reports, that provision should be made for carrying it on continuously throughout the year.

The unsatisfactory results of the contrary course, which has prevailed for the most part, in former years, is so sufficiently shown by the statements accompanying Mr. Pearse Report of the 12th January, 1880, as to render further remark superfluous.

I beg therefore to recommend that, if it be determined to continue dredging improvements in Victoria Harbour, provision for such continuous work be made by an appropriation of a sum of not less than \$18,000 per annum, viz \$15,000 for running expenses of the dredge and tow steamer (being at the rate of \$1,250 per month) and \$3,000 to cover repair and renewal of machinery and plant.

In connection with the dredging of Shoal Point spit, and in order that the fullest benefit may be derived therefrom, it is very desirable that the rock in mid channel, known as "Dredger Rock," should be removed. The cost of the removal of this rock has been estimated by Mr. Pearse at \$16,625; but sufficient data to base a close estimate of the work upon does not appear to have been obtained by him, and in order to procure this information more fully, and also to determine the exact points at which dredging can be most advantageously carried on, it is very desirable that a hydrographical re-survey of this portion of the harbor should be made forthwith.

The cost of this survey would be probably not less than \$1,000 including the expense of boring through the superincumbent clay down to the surface of the "Dredger" rock so as to ascertain the cubic contents of the portion of that rock which would have to be removed to give 14 feet ordinary low water over it.

I should be glad to have this survey undertaken this spring, and beg to ask your authority for such work within the limit of expenditure above stated, in addition to the salary of Mr. Gamble whose services I propose to employ in charge of it.

I have also to advise that four more punts be built to take the place of those now in use which are fast becoming worn out. Two of these punts should be supplied at once so as to prevent delay of the work in case of accident to those now in use. I propose to build these punts of a somewhat different model to the present ones, and estimate that they would cost \$750.00 a piece.

I beg to ask your authority to have two such punts built forthwith, and two more this summer, and that for the purpose of meeting the cost of these latter two, the sum of \$1,500 be added to the appropriation for next year's service in the improvement of Victoria Harbor.

The estimate for this service for the year 1882-83 would thus stand as follows :

*Dredging in Victoria Harbor.*

Running expenses of dredge and dredge vessels at \$1,250.00 per month.....	\$15,000 00
Repairs of dredge and dredge vessels .....	3,000 00
Two new punts .....	1,500 00
<b>Total dredging .....</b>	<b>\$19,500 00</b>
Removal of "Dredger Rock." Mr. Pearse's estimate.....	\$16,625 00

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

JOSEPH W. TRUTCH.

The Honorable Sir HECTOR L. LANGEVIN, K.C.M.G., C.B.,  
Minister of Public Works, Ottawa, Canada.

Ref. No. 21651.

VICTORIA, B.C., 9th February, 1882.

SIR,—In reference to the estimate submitted in my letter to you of the 25th ultimo of the amount that will be required to meet the expense of continuing dredging operations in Victoria Harbor during the fiscal year 1882-83, I have the honour to enclose herewith a statement of the persons employed and wages paid, and showing in detail the present total monthly expenditure on this work, which amounts to \$1,193.90, a month, to which I have added in my estimate \$51.10 for contingencies, making \$1,245.00 a month and \$18,000 for the year's work.

I am unable to specify particulars as to the expenditure of the sum of \$3,000 proposed by me to be provided to meet necessary repairs and renewals of the plant and machinery.

Substantial repairs have just been effected, and it may be hoped that the expenditure of the whole of this sum may not be found requisite;—but in a work of this character the machinery is constantly liable to break down, and it is most desirable that a fund should be available to meet such contingencies.

I have added to the estimate a separate item of \$1,500 for two new punts to be built after the 30th June next, bringing up my estimate for dredging operations next year in Victoria Harbor to \$19,500.

In my letter above referred to of 25th ultimo, I have asked your authority to have two punts constructed immediately, making four new punts to be provided in all, to take the place of those now in use which are fast becoming worn out, and also to have a re-survey made of the harbor at an expense not to exceed \$1,000. As these contemplated expenditures would, however, be in excess of the amount appropriated



for dredging operations in British Columbia this year, I await your direction on the matter before incurring any expense on this account; but should you not consider it advisable to have these latter works undertaken immediately, I would beg to suggest that provision should be made for their execution after 30th June by the addition to the estimate for 1882-83 of the requisite amount to cover them, viz: \$2,500.

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

JOSEPH W. TRUTCH.

The Honorable

Sir HECTOR L. LANGEVIN, K.C.M.G., C.B.

VICTORIA HARBOUR IMPROVEMENTS.

ANALYTICAL STATEMENT of Work performed by the Dredge in Victoria Harbour, B.C., from the 19th of January, 1882, to the close of the Fiscal Year ended 30th June, 1882, of which 117 days were dredging days.

Month.	Dredged Material and Number of Punts.							Total Number of Punts.	Capacity of Punts in Cubic Yards.	Quantity dredged in Cubic Yards.	Cost.	Cost per Cub. Yard.	Remarks.
	Hard Clay.	Sand.	Clay and Sand.	Gravel and Boulders.	Coal and Sand.	Coal and Shingle.	Sand and Shingle.						
January.....	78							78			\$ cis.		
February.....	120							120					
March.....	158	40	42					240					
April.....		20	54	48	68	28		218	18	11,808	4,988 88	42½	Cost shewn here does not include that of repairs. Taken from Harbour along front of wharves.
May.....							294	294					
June.....							292	292	18	10,548	2,470 84	23½	Taken from spit off Shoal Point at Harbour entrance. Cost shewn here does not include that of repairs.
		356	60	96	48	28	586	1,242		22,356	\$7,459 72		

Dredging..... \$7,459 72  
 Repairs..... 3,372 98  
 Grand total..... \$10,832 70

F. C. GAMBLE,  
 Assistant Engineer.

VICTORIA, 5th August, 1882.

STATEMENT showing present current Monthly Expenditure in connection with Dredging operations in Victoria Harbour, with estimate for twelve months work from 1st July, 1882, to 30th June, 1883.

Name.	Capacity.	Rate of Wages.	Amount.	Totals.
		\$ cts.	\$ cts.	\$ cts.
<b>Upon Dredge :—</b>				
Robt. Dexter.....	Superintendent.....	125 00	125 00	
William Steele.....	Engineer.....	100 00	100 00	
George Gardner.....	Fireman.....	50 00	50 00	
John Geider.....	Blacksmith.....	50 00	50 00	
<b>Upon Tug "Georgia" :—</b>				
William Scott.....	Captain.....	50 00	50 00	
Robt. Wickens.....	Engineer.....	70 00	70 00	
<b>Upon Dredge :—</b>				
Chas Repath.....	Carpenter and deck-hand..	50 00	50 00	
John Ramsay.....	do do ..	40 00	40 00	
Nicholas Sylvers.....	do do ..	40 00	40 00	
Wm. Saunders.....	Cook.....	40 00	40 00	
Jas. Griffiths.....	Deck-hand.....	40 00	40 00	
				655 00
Provisions (about) per month.....				200 00
Fuel—Coal, 30 tons, at \$5.25.....			157 50	
Wood, 26 cords, at \$3.90.....			101 40	
Water supply, per month.....				258 90
Sundries—Lumber, nails, iron, rope, oil, tallow, cotton waste (about).....				10 00
Actual current monthly expenditure.....				75 00
Add—For contingencies (say).....				1,198 90
				51 10
				1,250 00
Giving estimated expenses of working dredge in Victoria Harbour for 12 months from 1st July, 1882, to 30th June, 1883.....			15,000 00	
General repairs.....			3,000 00	
Two new mud punts.....			1,500 00	
Total Estimate for dredging and dredge repairs, Victoria Harbour Improvements for 1882-83 .....				\$19,500 00

JOSEPH W. TRUTCH.

Victoria, B.C., 10th February, 1882.

## IMPROVEMENT COURTNEY RIVER.

Ref. No. 19319.

VICTORIA, B.C., 14th November 1881.

SIR,—I have the honour to report to you that in accordance with your instructions to me by Department letter No. 8901 of 21st September last, I chartered the steamer "Maude" at \$40 a day for the purpose of undertaking the removal of the snags at the mouth of Courtney River, and proceeded in her himself (as I could not obtain the services of any other person acquainted with the locality on whom I felt reliance) on the 3rd instant to Nanaïmo, and next day to Comox. The 5th and 7th instant were devoted to ascertaining the exact positions of the snags which offered the greatest hindrance to navigation, and in attaching to them at low tide chains and buoys so that the steamer might make fast to them at high water. On the 8th, the tide being favourable, the steamer entered the channel through the sands in Comox bay, and with much difficulty and after grounding frequently, reached the snags and attempted to tow them out to sea. Every effort to effect this, however, proved unavailing. The channel is so narrow, tortuous and shallow (not exceeding in depth 8 feet at high water according to observations made) and with so strong a current from the river setting across the sands, that it was found impracticable to drag the snags out to sea. After several renewed efforts during the 8th and 9th instant had proved unsuccessful, I concluded that further attempts would be futile, and therefore left for Victoria, which was reached on the 10th instant.

I have only to remark that though this attempt to remove the snags at the mouth of the Courtney River with a steamer of 6 feet draught proved unsuccessful, it established the fact that the entrance to and departure from this river, are impracticable, even for vessels of such light draught except at the top of exceptionally high tides, and in my judgment precludes all ground for renewing such an undertaking.

The expense of this service has been kept within the prescribed sum] (\$500), appropriated for this purpose.

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

JOSEPH W. TRUTCH.

The Honorable

Sir HECTOR L. LANGEVIN K.C.M.G., C.B.,  
Minister of Public Works, Ottawa, Canada.

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 REPAIRS TO VICTORIA BATTERIES.
 

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Ref. No. 29247.

VICTORIA, B.C., 31st October, 1882.

SIR,—I have the honour to enclose a copy of a report to me from Mr. F. C. Gamble, Assistant Engineer in this office, upon the work recently carried out under his immediate superintendence in repairing and strengthening the Victoria Batteries, and representing that the sum authorized to be expended thereon, viz: \$600 did not suffice to complete all the requisite work, but that this might be accomplished by the expenditure of a further sum of \$150, which Mr. Gamble advises should be appropriated for this purpose.

I have communicated the substance of Mr. Gamble's report to Captain Dupont, Acting Deputy Adjutant General, who has informed me that he will address the Department of Militia and Defence in support of Mr. Gamble's recommendation, in which I also beg to express my concurrence.

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

JOSEPH W. TRUTCH.

The Honorable

Sir HECTOR L. LANGEVIN, K.C.M.G., C.B.,  
Minister of Public Works, Ottawa, Canada.

VICTORIA, B. C.

SIR,—I have the honour to make the following report upon certain repairs to Finlayson and Macaulay Points Batteries, carried out in accordance with your verbal instructions.

Public tenders were invited for the work but all were found to exceed the amount appropriated, namely, \$600, in consequence of which you directed me to do the work by day's labor.

The repairs to Finlayson's Point Battery consisted in revetting or stockading in front of the guns with sawn cedar and around the traverse and along the side and rear parapets with split cedar, cleaning out the drains and putting in a log culvert. These repairs placed this Battery in as serviceable a condition as it was possible to do without exceeding the sum I had set apart for the purpose out of the appropriation, viz: \$235.00.

The expenditure of this sum on Finlayson's Point Battery left a balance of three hundred and sixty-five dollars to be expended on Macaulay Point Battery. I was in hopes that with this sum I would be able to place this Battery in as efficient a state as the other, but, in consequence of the limited time at my disposal, the great demand for labor, consequent upon the expected arrival of the Governor General, and the exorbitant wages demanded, I was only able to stockade in front of the guns, around the traverses and along the side parapets, leaving undone the rear parapets and shelter trenches to the magazine.

To do this latter very necessary work the further sum of \$150.00 will be required, which, together with the material we have on the ground, will put the Battery in a thoroughly serviceable state.

I have the honor, etc.,

F. C. GAMBLE,  
*Asst. Engineer*

The Hon. J. W. TRUTCH, C. M. G.,  
Dominion Government Agent,  
Victoria.

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NAAS RIVER IMPROVEMENT.  
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Ref. No. 23478.

VICTORIA, B. C., 17th April, 1882.

SIR,  
I have the honor to acknowledge the receipt of your instructions by Departmental letter No. 11839 of the 28th ultimo, relative to improving the channel of Naas River, and to inform you that in accordance therewith, I have made arrangements with Mr. Croasdaile to-day to have the requisite work carried out under his personal direction within the limit of expenditure prescribed in your instructions, viz: \$500.00 and with the proviso that no payments can be made, on this account, until after the 1st of July next.

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

JOSEPH W. TRUTCH.

The Honorable  
Sir HECTOR L. LANGEVIN, K.C.M.G., C.B.,  
Minister of Public Works, Ottawa, Canada.

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SKEENA RIVER IMPROVEMENT.  
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Ref. No. 26775.

VICTORIA, B. C., 15th August, 1882.

SIR,—I am directed by Mr. Trutch to acknowledge the receipt of your letter No. 13749, of the 28th ultimo, and to state that instructions have already been given by Mr. Trutch as authorized by the Honorable the Minister by letter No. 11839 of the 28th March last, and by telegram of the 24th April, respectively, to Mr. Croasdaile to expend \$500.00 in continuing the removal of snags from Naas River, and to Mr. J. H. Turner, for the expenditure of \$1,500.00 in removing snags and placing buoys, Skena River, under his superintendence.

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I am also to state that Mr. Trutch is about to invite tenders for the removal of snags, Fraser River, and hopes to have this work carried out this autumn within the limit of expenditure authorized in your letter.

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

H. S. ROEBUCK,  
*Secretary.*

F. H. ENNIS, Esq.,  
Secretary,  
Dept. Public Works, Ottawa, Canada.

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 APPENDIX No. 7.
 

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 SLIDE, BOOMS, ETC.,—SAGUENAY DISTRICT.
 

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CHIEF ENGINEER'S OFFICE,

OTTAWA, 5th December, 1882.

Ref. No. 29915.

SIR,—Herewith I transmit a report by Mr. Assistant Engineer Rosa on the works, etc., executed in connexion with the slide and booms at Lake St. John, River Saguenay, during the fiscal year ended 30th June, 1882.

I have the honor to be, Sir,

Your obedient servant,

HENRY F. PERLEY,

*Chief Engineer.*

F. H. ENNIS, Esq., Secretary,  
Public Works Department.

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 QUEBEC, 18th November, 1882.

SIR,—I have the honor to report as follows on the works executed during the last fiscal year in connection with the slide and booms at Lake St. John, River Saguenay.

The bulkhead of the slide has been reconstructed as well as dam No. 7 which is 231 feet in length, 28 feet in height, and a mean width of 30 feet on the slope. These two works cost \$3,500.00.

A length of 669 feet of slide has been rebuilt, and temporary repairs made on a length of 2,000 feet of the old portion, at an outlay of \$3,000.00.

At the close of the year there remained 1,260 feet of slide to be reconstructed, and probably of this length 900 or 1,000 feet will be finished during the current year.

No. 6 dam which was constructed in 1860 should be rebuilt before the rising of the lake next spring. It is about 128 feet in length, 18 feet in height, and of a mean width on the slope of 32 feet.

During 1881-82, 32,000 logs 12 to 14 feet in length and 6,000 pieces of timber from 28 to 30 feet in length, or a total of 38,000 pieces, passed down the slide.

I have the honor to be, Sir,

Your obedient servant,

JOSEPH ROSA,

*Assistant Engineer.*

HENRY F. PERLEY, Esq., Chief Engineer,  
Public Works Department,  
Ottawa.



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APPENDIX No. 8.

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SLIDES AND BOOMS—ST. MAURICE DISTRICT.

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OFFICE OF THE SUPERINTENDENT,  
ST. MAURICE WORKS,

Ref. No. 25922.

THREE RIVERS, 24th July, 1882.

SIR,—I have the honor of submitting to you, for the information of the Honorable the Minister of Public Works, my report in reference to the works placed under my superintendence, for the year expiring on the 30th of June last.

The height of the water in the St. Maurice and its tributaries has been very advantageous for the floating of timber, and over 500,000 logs have been placed, at an early date, inside the booms. The booms suffered no accidents in spite of the enormous pressure they had to bear.

The cost of carrying out the works amounts this year, to \$16,572.20. The increase on last year's expenditure, is due partly to the reason that the floating of timber lasted all the summer of 1881, bringing on heavy expenses at each station; the increase in the salaries and the buying of chains to the amount of several hundred dollars, can also account for it.

A sum of \$2,993.91 has been placed in my hands to make repairs.

These repairs have been effected at the following stations :

MOUTH OF THE ST. MAURICE.

2,200 feet of boom planked with 3-inch deals.

CAPE CORNEILLE.

Repaired pier No. 6.

“ “ of the bridge shed.

Made a wharf to protect the shed foundation.

GRES FALLS.

1,500 feet of boom planked with 3-inch deals.

Built a house 18 x 14 feet, for the use of the men.

SHAWENEGAN BAY.

634 feet of new boom 24 x 13 inches.

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LES HÉTRÉS.

418 feet of new boom 24 x 13 inches.

I have in hand \$303.40, balance from the grant placed at my disposal for repairs.

Contracts have also been awarded to the amount of \$7,142.00 for the construction of two piers and the repair of seven others, at the mouth of the St. Maurice.

All those works have been executed.

I have the honor to be, Sir,

Your obedient servant,

**CHARLES LAJOIE,**  
*Superintendent. St. Maurice Works.*

## APPENDIX No. 9.

## SLIDES AND BOOMS,—OTTAWA DISTRICT.

OTTAWA RIVER WORKS OFFICE,

Ref. No. 27601.

OTTAWA, 31st July, 1882.

SIR,—I have the honor to submit the following report on the works under my charge, on the Ottawa River and tributaries, for the fiscal year ended 30th June last.

During the season of 1881, a low pitch of water generally prevailed at all the stations, and after the spring floods had run off, the rafts of square timber and the saw log drives, in many cases, as the summer months advanced, had to be laid up or abandoned until the following spring.

After the business of the season had been completed, an examination of the foundations of the various slides and other river works was made, in the lowest stages of the water, and the work of repairs was begun, continued during the winter of 1881-82, and finished only last spring.

## ON THE MAIN OTTAWA RIVER.

The boom piers at *Sault au Recollet* were repaired and the boom in its chain fastenings strengthened.

The foundations and side piers of the slide at *Hull* were thoroughly overhauled, and such repairs made to the bottom and slide planking as were required.

At the *Ottawa* or *South Chaudiere* Station, the bulkheads were re-modelled; the side piers and booms improved and strengthened; decayed timbers removed from the apron structures and sound material substituted—and a close inspection was made of the wires and cables of the *Union Suspension Bridge* and steps promptly taken to guard against corrosion.

At the *Chats* slide extensive repairs had to be executed on the curved side pier by way of facing up the same, and the bottom timbers of the slide were renewed at places where they had failed through exposure to the heavy tear and wear of the traffic at this important station; and the same may be said of the necessary repair works which had to be done at the *Cheneaux* boom and the *Portage du Fort*, *Mountain*, *Calumet*, *Joachim* and *Rocher Capitaine* slides, where the foundations of piers, bottom timbers and bulkheads of slides and the gates and retaining booms were materially strengthened.

The following repairs were carried out on

## TRIBUTARIES OF THE OTTAWA.

*Gatineau River*.—The boom and piers near the mouth had decayed caps, pickets and timbers renewed and certain additional stone filling placed in crib-work. A clearance of rubbish was made from the gaps and the outlet channels and from Pond's creek, and the fences and a bridge across the canal repaired.

*Madawaska River.*—At *Ragged Chute*, the new channel for timber on the easterly side of the river was deepened and straightened by excavating and removing certain rocky obstructions, that had caused much delay and damage to passing timber, at this point; the side piers and booms were also overhauled and a safer, more extensive and reliable system of boomage provided at this place.

At *High Falls*, a short distance further down stream, certain renewals of covering plank had to be effected and the booms and piers strengthened, while at *Chutes* lower down the river, the wing dams were partially sheeted anew.

At *Springtown* the retaining boom and piers were prepared for the season's business, and at the *Arnprior* station the slide was patched, and some alterations were made in the position of the retaining boom and piers in the *Chats Lake*, at the mouth of the *Madawaska*, to meet the requirements of the lumbermen on that stream, as well as to present infringement on the riparian rights of the owners of a very extensive and newly erected saw-mill on a river frontage adjacent to the Government booms.

*Coulouge River.*—A serious break having occurred at the *High Falls* slide in *May*, 1880, the works, although then repaired, were so much shaken in the region of the high bents and crib foundations that constant bracing and strengthening had to be resorted to. A large portion of the worn out planking caused by the friction of the logs which are shot through the slide with great velocity, had to be removed and replaced by new planks.

*Black River.*—The slide at *High Falls* near the mouth was repaired and strengthened and as far as possible put in a state of efficiency; but with so abrupt a pitch at the lower end of the slide and so heavy a body of water thrown in at the head, taken in connection with the great jam of timber waiting for passage, it happened last spring that lumber under these conditions and not having a sufficient number of men to take charge of it, was fed without proper check and in a wedge-like mass, forced out a portion of the side of the slide and thus caused a few days' delay. The necessary repairs were, however, made with due diligence and the remainder of the drive passed in safety.

*Petewawa River.*—On this stream, the dams and slides were stanchd, as much leakage had existed, and on the lower reaches, where the works are in places showing symptoms of decay, after being in use twenty-four years, patching, to a greater extent than was necessary in the earlier history of the works, had to be done by the officers in charge.

*Dumoine River.*—The long slide on this river had its planking repaired; the side piers were underpinned and the series of dams at the upper "chûtes" had their timbers and planking made good, where the action of the ice and water had abraded and stripped the more exposed portions of these structures.

#### THE WORKS OF CONSTRUCTIONS CONSISTED OF :

The deepening of portions of the bed of the *River du Lièvre* by blasting a reef at *Little Rapids* about ten miles above *Buckingham Village*, and removing boulders from the channel at *Long Rapids*, a short distance below *High Falls*. These improvements, when certain arrangements shall have been made by the lumbermen to keep an open passage through their saw-log booms situated between the stations referred to,—will facilitate the navigation by small craft on that reach of the *Lièvre* between *Buckingham* and the foot of the *Portage* road past *High Falls*.

On the *Ottawa*, a short distance below the *Village of Portage du Fort* the work of removing a sand bar was commenced, but as this can only be done to advantage, with the appliances available, at the season of low water, action had to be deferred until a period of the year later than is covered by this report.

Immediately below the *Union suspension bridge* a rocky island or reef impeded the flow of water from the foot of the *Great Chaudière Falls* and divided the swift current, throwing the northerly branch of it with great force against the line of

wharves on the Hull frontage; and that in the southerly channel with a like result along the lumber shipping docks forming part of the city of Ottawa. During a very considerable portion of the busy season of the year, at the time of high water, it was found impracticable to place boats and barges in position for the shipping of lumber, but since the reef was blasted off, last fall, there has been a marked improvement, the current being now directed to mid-channel and navigation for river craft uninterrupted, throughout the season, to mooring places further up steam than the site of the former obstruction.

On the South Nation River, near the village of Plantagenet, two wingdams were constructed one on each side, with the view of contracting the volume of water and rendering more easy of access the entrance between the booms at the head of the short slide recently constructed. These dams have had the desired effect on the descent of the various kinds of lumber, on that stream.

Last spring, the tributaries and main river attained flood height later than usual, but the pitch of water was most favorable for the raftsmen, as although an early start was not affected the gradual melting of the snow and ice, and the timely rain falls about the sources of the rivers yielded the steady flow of a heavy volume of water for a lengthened period and thus enabled the river drivers to make a "clean sweep" and reach the main Ottawa with the reasonable expectation that their timber and saw-logs would arrive at their destinations in one season.

Of course with such large bodies of timber moving at high stages of the water, certain breaks and detentions at the works were unavoidable. In addition to the accident at Black River, already referred to, a break of the foundation timbers, sills and planking at the Calumet slide took place in the month of June; the services of a large force of men were immediately brought into requisition to execute the repairs, so that the detention on that occasion did not exceed more than a day or two. Minor repairs were executed at other places during the progress of the drives, as occasion required.

The construction of a large dam across the Ottawa River at Carillon, to supply water to the new canal at that place, was the means of flooding out the pier dams which were built by the Government upwards of twenty years ago. These old works were placed in the line of the rapids for the purpose of confining the flow of water to navigable channels to admit of the passage of timber and have been wiped out under the present system. A crib slide through this new dam was constructed by the Government under the direction of the Department of Railways and Canals, and was opened for the passage of timber early in May; but as already reported in a former communication to your Department, although the running of timber was all that could be desired when it reached the slide proper, the approaches to it were so dangerous and difficult with the winds in certain directions, that a very considerable extension of the guide booms and support piers was imperatively required as a safe guard against the destruction of life and property. I understand this matter is now engaging the attention of the proper authorities, and that such additional works as are required for the expeditious and safe passage of timber at Carillon slide, will be constructed without unnecessary delay.

I may mention that at several stations on the Ottawa, such as *Calumet*, *Mountain*, *Portage du Fort* and *Chats*, escaped saw-logs from the drives, frequently lodge in the slide channels and on the aprons and besides battering the works, they are often the means of wrecking passing cribs of square timber. The break in the *Calumet* slide was largely due to this cause, and it seems as if more stringent measures will have to be adopted to confine the logs to their own proper channels, as the crib slides are not adapted for their passage, and they yield no revenue in the shape of tolls at such slides.

The slides and other works at *Calumet* and *Mountain* Stations, after between thirty and forty years' service, are much dilapidated and a renewal of their principal parts is urgently required, as well as a thorough overhauling of the *Black River*

slide. At the head of the *Chats* Rapids, at least three snubbing piers should be provided for the safe mooring of rafts preparatory to the timber being piloted to the head of the *Chats* slide. An estimate of the cost of these works will be transmitted in due time.

All of which is respectfully submitted,

GEO. P. BROPHY,  
*Supt. Eng., O. R. Works*

F. H. ENNIS, Esq.,  
Secretary of Public Works, Ottawa.

STATEMENT of Expenditure for Repairs and Construction of Works on the Ottawa River and tributaries, for the fiscal year ended 30th June, 1882.

Work.	Name of		Letter of Authority.		Expenditure from 1st July, 1881, to 30th June 1882. \$	Remarks.
	Province.	County.	No.	Date.		
Slides and Booms, Upper Petewawa.	Ontario.....	Renfrew, N.R.....			142 83	Repairs.
Hull Slide, Ottawa River.....	Quebec.....	Ottawa.....			159 33	do
Chats Slide, do.....	Ontario.....	Carleton.....			333 75	do
Chenaux Boom, do.....	do.....	Renfrew, S.R.....			160 45	do
Mountain Slide, do.....	Quebec.....	Pontiac.....	4,479	10th Nov. 1880.	258 19	do
Calumet Slide, do.....	do.....	do.....			362 25	do
Rocher Capitaine Slide, Ottawa River.	do.....	do.....			178 70	do
Gatineau Boom.....	do.....	Ottawa.....			118 30	do
Contongue Slide.....	do.....	Pontiac.....			125 24	do
Deepening River du Lièvre.....	do.....	Ottawa.....	3,791	17th Sept., 1880	705 41	O'nstruction
Removal of reef from Ottawa River below Suspension Bridge.....	Ontario & Quebec.	City of Ottawa (Carleton Co.).....			4,927 59	do
Dams on South Nation River.....	Ontario.....	City of Hull(OttawaCo).....			528 66	do
Dredging bar in Ottawa River below Portage du Fort.....	Ontario and Quebec.	Prescott.....			299 00	do
Works at lower stations on Petewawa.....	Ontario.....	Renfrew, N.R.....			847 70	Repairs.
Chaudière Slide and Sault au Recollet Boom.	Ontario and Quebec.	City of Ottawa (Carleton), Laval, Hochelaga.....			301 38	do
Chaudière and Hull Slides.....	do do	City of Ottawa (Carleton)and City of Hull, (Ottawa).....			338 39	do
Mountain, Calumet and Chats Slides.....	Quebec and Ontario.	Pontiac and Carleton.			185 00	do
Jochim Slide.....	Quebec.....	Pontiac.....			639 82	do
Chaudière Slide and Suspension Bridge.....	Ontario and Quebec.	City of Ottawa, (Carleton)City of Hull (Ottawa).....			207 51	do
Chaudière and Hull Slides.....	do do	City of Ottawa (Carleton) City of Hull (Ottawa).....			238 08	do
Calumet Slides.....	Quebec.....	Pontiac.....			625 60	do

	2,086	17th Sept., 1881	20,000 00	
Rocher Capitale Slide.....	do	do	do	390 00
Portage du Fort Slide.....	do	do	do	225 22
Boom at mouth of Madawaska.....	do	do	do	221 97
Hull and Chaudière Slides.....	do	do	do	47 53
Mountains and Portage du Fort Slides.....	do	do	do	130 00
Chaudière Slide.....	do	do	do	997 64
Coulonge Slide.....	do	do	do	952 14
Ragged Chute dam, Madawaska River.....	do	do	do	3,629 45
Chats Slide.....	do	do	do	1,880 09
Hull Slide.....	do	do	do	529 84
Slide and dams, Dumoine River.....	do	do	do	4,192 05
Gatineau Boom.....	do	do	do	610 97
Black River Slide.....	do	do	do	386 91
Works at High Falls and Ragged Chute, Madawaska.....	do	do	do	4,317 81
Total.....	2,454	10th Oct., 1881.	7,500 00	\$28,184 80

D. SCOTT,  
Accountant, O. R. Works.

OTTAWA, 31st July, 1882.



## APPENDIX No. 10.

## SLIDES AND BOOMS—NEWCASTLE DISTRICT.

TRENT CANAL WORKS,  
SLIDES AND BOOMS DIVISION,  
ENGINEER'S OFFICE,  
PETERBOROUGH, Nov. 30th, 1882.

Ref. No. 30041.

SIR,—I have the honor to submit my Annual Report on the Slides and Booms-division of the Trent Navigation System for the fiscal year ended 30th June 1882.

The works embraced in this division are those connected with the descent of timber, and the improvements of the rivers leading to the several canals throughout the district.

The canals, locks, swing bridges and all works connected with the navigation are under the control of the Department of Railways and Canals.

The water on the upper reaches during the past year attained its greatest height on May 17th, and fell rapidly, reaching its lowest level on September 14th, The reading recorded, being the lowest during my experience. This seriously affected the steamboat navigation; but the "drives" reached their destinations without an exception.

The low water was in a great measure due to the manner in which it was regulated on the feeders.

The principal tributaries down which timber is brought to the main rivers and lakes are as follows:

Gull-River,  
Burnt-River,  
Squaw-River,  
Massissaga-River,  
Crow-River,

And as lumbering operations are now carried on so far up on these tributaries those operating on them have from time to time to build small dams and slides to get their timber down to the main stream.

The first two viz: Gull and Burnt Rivers, drain a vast area of country, and in their respective courses, there are a number of large reservoirs, some having an area of over seven square miles, at the foot of which dams have been constructed in order to hold the water in reserve for use in the dry season. Were it not for these reservoir dams the clearances effected by settlers and the more extended system of drainage, would have the effect of causing extremes in high and low water, whereas now, by proper and careful management of these higher levels, these levels on the main line should not vary more than from 2 feet to 2 feet 6 in.

The improvements and repairs executed under this Department, at the respective stations along the line were as follows, viz :—

## FENELON FALLS.

The slide was found on executing temporary repairs to be in a very unsafe condition, all the floor timbers were decayed, and had to be replaced, and in order not to exceed the appropriation the planking could not be completed in such a manner as I would have desired; this however will be attended to this year and the slide wall rebuilt. The following is the quantity of timber that passed through this slide, viz :—

Saw logs.....	161,309
Boom timber, pieces.....	2,047
Cedar.....	999

## SCUGOG RIVER.

The improvements on this river consisted in removing the sunken logs and snags that obstructed navigation from the Town of Lindsay to its outlet into Sturgeon Lake, so as to get a depth of 5 feet water at low water. This was accomplished in a satisfactory manner to the great benefit of navigation. Previous to this improvement the propellers although of small tonnage were constantly meeting with mishaps to their screws, and barges laden with lumber frequently ran on snags and sunken logs.

## BOBCAYGEON.

The works at this station consist of a canal, lock, dams, wharves and swing bridge. They are under the control of the Department of Railways and Canals.

Obstructions to navigation that occur in the river approaching the canal both above and below are being removed under the direction of this Department.

The quantity of timber that passed down the channel was as follows, viz :

Saw logs.....	239,158
Boom timber, pieces .....	2,203
Square " " .....	166

## BUCKHORN.

The works connected with the descent of timber, and under the control of the Department, consist of a slide, booms and piers. The bulkhead of slide is being renewed, new stop logs were supplied and a new boom built.

Improvements to the navigation at this station are about being carried out by the Department of Railways and Canals, consisting of the construction of locks, which in all probability will necessitate the erection of several boom piers and booms, to divide the steamboat channel from the timber channel.

The quantity of timber passed through this slide consisted of :

Saw logs.....	249,158
Boom timber, pieces.....	2,703

## BURLEIGH.

I have described the works at this station in previous reports, and stated that they were originally erected by a committee of lumbermen, which has now ceased to exist, and as this is another of the stations at which the Government are about

constructing works for the extension of inland navigation, for which the contract has been let, it will be necessary for the Department to assume control of the works connected with the descent of timber (which I respectfully suggest), and charge tolls similar to those on other works of a like description on timber, &c., &c., descending the river.—See Annual Report for year ended June 30th.1881.

The quantity of timber that passed through the slide here was as follows, viz:—

Saw logs.....	249,158
Boom timber, pieces.....	2,703
Square “ .....	166

LAKEFIELD.

There is a dam and slide at this station. The dam retains the level of Katchawanno Lake to a navigable height for steamers drawing 4' 6". It is badly in need of extensive repairs. The slide also requires attention.

The dam is private property, but negotiations are, I am informed, being carried on with a view of placing it under Departmental control which if carried out will be a public benefit.

The removal of the boulders that obstructed the steamboat channel was completed and gives general satisfaction.

The quantity of timber, &c., that passed through this slide, was as follows, viz :—

Saw logs.....	408,181
Square timber.....	2,407
Boom “ .....	3,641

PETERBOROUGH.

The banks of sawdust and slabs in the river approaching the town and upon which I reported to the Chief Engineer, are being removed.

LITTLE LAKE.

The works erected here consisted in the construction of a boom pier at south end of boom.

This was necessary in order to diminish the strain on the snubbing posts and prevent the boom when filled with logs, from breaking loose.

The boom requires to be renewed, it is unsafe in its present condition, and it is necessary to take the precaution previous to permitting saw logs to enter it, to swing on a double boom outside, so as give security in case of any accident to the old boom.

Its storage capacity is about 80,000 saw logs.

WHITLAW'S RAPIDS.

The guide booms and flooring of slide were repaired and boulders removed from the channel approaching the lock.

The dams, canal and lock are under the control of the Department of Railways and Canals.

The quantity of timber, &c., that passed through the slide, was as follows:—

Saw logs.....	279,181
Boom timber, pieces.....	2,404
Square “ “ .....	2,407

OTONABEE RIVER.

Accumulations of saw-dust and slabs have become so great at the mouth of the river, as to a great extent impede the passage of steamers.

It is necessary that they should be removed and active measures taken to prohibit parties from throwing slabs &c., into the river.

HASTINGS.

The slide received general repairs, and three boom piers, renewed from low water mark to top. The guide booms require renewal. The lock, dam, swing bridge, &c., are under the control of the Department of Railways and Canals.

The following is the quantity of timber, &c., that passed this station, viz :

Saw logs.....	153,590
Boom timber, pieces.....	781
Square " " .....	2,407

HEELEY'S FALLS.

The slide is undergoing extensive repairs, for which an appropriation was made at last session of Parliament, and the guide boom extended 200 feet.

During the past year, and previous to the running of logs, &c., on examining the slide it was found that the leakage through the platform above the stop logs was so great that it was absolutely necessary to shut the water off, and in order to do so a "cofferdam" had to be constructed across the throat, which was attended with a great deal of trouble, and the flooring repaired.

As there was no appropriation for this we had to use a portion of that granted for other stations.

The quantity of timber, &c., that passed through this slide, was as follows :

Saw logs.....	263,700
Boom timber, pieces.....	900
Square " " .....	2,407

MIDDLE FALLS.

No repairs were executed during the last year.

The slide and wing wall of basin are in a very unsafe condition, and if allowed to go much longer without receiving the necessary repairs, it will take a considerable amount to put them in proper order; whereas by a small expenditure now, it would keep them for many years to come in a safe working condition.

The quantity of timber, &c., that passed through this slide during the past season was as follows :—

Saw-logs.....	277,938
Square timber, pieces.....	3,731
Boom timber, " .....	1,417
R. R. ties " .....	22,380

CHISHOLM'S RAPIDS.

There are extensive works at this station; comprising a canal lock, dam, slide, waste weir, guide booms, &c.

The canal and lock are under the control of the Department of Railways and Canals.

The dam was repaired and the leakage stopped to a great extent, which is a great boon to the lumbermen, as it enables them to "flood" in low water.

The slide which is 100 feet long and 50 feet wide, requires repairs, and made narrower; there is no necessity for such a width, and it permits a great waste of water.

This I shall make a detailed report upon for the information of the Hon. the Minister.

The works at 'Middle Falls,' 'Heeley's Falls,' and Chisholm's Rapids connected with the descent of timber were many years ago transferred to a committee of lumbermen for their management, and I beg respectfully to draw the attention of the Hon. the Minister to that portion of my last annual report referring thereto, and also to the "Chief Engineer's" report on the same subject.

The quantity of timber, &c., that passed through this station during the past year was as follows, viz:—

Saw-logs . . . . .	277,938
Boom timber, pieces . . . . .	1,417
Square timber, " . . . . .	3,731
R. R. ties " . . . . .	22,380

In respectfully submitting the above,

I have the honor to be, Sir,

Your obedient servant,

THOMAS D. BELCHER,  
*Superintending Engineer.*

F. H. ENNIS, Esq.,  
Secretary, Department Public Works,  
Ottawa.

## APPENDIX No. II.

## REPORT ON TELEGRAPH LINES AND SIGNAL SERVICE.

## TELEGRAPH AND SIGNAL SERVICE.

No. 27805.

OTTAWA, 30th September, 1882.

SIR,—I have the honor to submit the following report upon the above service for the fiscal year terminating 30th June, 1882.

## BRITISH COLUMBIA.

The expenditure upon this system has been \$38,702.37, about one fourth of such amount being upon construction account; and the revenue paid in to the credit of the Receiver General is \$18,414.24, *versus* \$10,544 for the previous year, and \$5,320 for 1879-80, when the expenditure was \$41,496.

The construction party, under the management of Mr. Hartley Gisborne, have cut down all dead and threatening timber and brushwood, and thoroughly repaired the line between Yale and Deep Creek, a distance of 277 miles.

Line interruptions from breakage have been much less frequent and more quickly repaired, and consequent despatch of business has commanded the confidence of the public, as exemplified by the large increase in tariff receipts.

## GULF OF ST. LAWRENCE.

The Expenditure has been ;

Upon the Anticosti system \$1,575.00 *versus* Revenue \$454.00

“ “ Magdalen Islands 4,069.00 “ “ 835.00

Weather, shipping and fishery reports being transmitted free of charge

All cables have remained in perfect working order excepting at the landing point of Bird Rock, since repaired, but not at present in operation, the new light house keeper there not being as yet conversant with the proper management of the transmitting instruments. Mr. District Superintendent LeBourdais awaits an opportunity of landing upon the rock to put the cable in operation again.

## BAY OF FUNDY.

The Expenditure upon the above system has been \$1,308.00 *versus* Revenue \$565.00.

The Grand Manan and Campo-Bello Islands cable was damaged by a wreck pounding upon it: but it has been satisfactorily repaired.

## ATLANTIC COAST.

The line between Canso and Halifax, (worked under an agreement with the late Dominion Telegraph Company, without cost to Government,) has been maintained in effective operation.

## NORTH SHORE AND RIVER, ST. LAWRENCE.

A heavy cable has been successfully laid across the Saguenay river, and the Chicoutimi and Mille Vaches land lines have been satisfactorily maintained and operated under contract with the Montreal Telegraph Co. at a cost to Government of \$1,200.

## NEWFOUNDLAND.

The 14 mile land line between Port au Basque and Cape Ray lighthouse, is now in course of construction under contract with the Anglo-American Cable Co., and when completed will entail an annual cost to the Government for interest upon cost, repairs and operating, of \$250.00 per annum.

## SIGNAL SERVICE.

23 stations have been established at the following points, at an annual outlay of \$700 at 14 stations not connected by Government telegraph lines.

L'Islet	Martin River Lighthouse	South Point Lighthouse.
River du Loup	Cape Magdalen "	Heath Point "
Brandy Pots	Fame Point "	Amherst Island "
Rimouski	Cape Rosier "	Grosse Isle "
Father Point Lighthouse	Cape Despair... "	Bird Rocks "
Little Metis "	Pointe Maquereau "	Meat Cove, C.B. "
Matane "	West Point Anticosti	Low Point Lighthouse.
Cape Chatte "	South West Point "	

## MANITOBA AND NORTH WEST TERRITORIES.

Per Order in Council, the telegraph lines in the above District have been transferred to my superintendency since June 30th, 1882, and active measures are now being taken to reconstruct them and also to reorganize that service.

In conclusion I may add that the general revenue is improving upon a decreased expenditure.

I have the honor to be, Sir,  
Your most obedient servant,

F. N. GISBORNE,  
*Superintendent.*

F. H. ENNIS, Esq.,  
Secretary, Department of Public Works.

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 APPENDIX No. 12
 

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 QUEBEC HARBOR IMPROVEMENTS.—RIVER ST. CHARLES AND  
GRAVING DOCK AT LEVIS.
 

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Ref. No. 29870.

 HARBOUR COMMISSIONERS' OFFICE,  
QUEBEC, 2nd December, 1882.

SIR,—I have the honor to transmit you herewith the Resident Engineer's Reports both on the Graving Dock and the Harbor Improvements for the fiscal year ended on the 30th June last.

I have the honor to be, Sir,  
Your most obedient servant,

A. H. VERRET.  
*Secretary-Treasurer.*

F. H. ENNIS, Esq.,  
Secretary, Public Works Department,  
Ottawa.

 REPORT ON THE GRAVING DOCK WORKS AT ST. JOSEPH DE LÉVIS.
 

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 RESIDENT ENGINEER'S OFFICE,  
QUEBEC HARBOUR WORKS,  
24th November, 1882.

SIR,—I have the honor to report on the progress made with the graving dock works now on course of construction, at Point Levis, for the fiscal year ending June 30, 1882, in compliance with instructions received for the information of the Honorable the Minister of Public Works.

The total contract sum for works as yet incomplete but so far accepted for the graving dock fully equipped, including the builders' contract, machinery, caisson, etc., amounts to \$398,820.18; to this has to be added engineers' expenses and sundries, \$47,237.99, making a total of \$446,058.17, after allowing for a deduction of \$6,158.22, being the difference in cost according to the schedule of rates between the circular Head as now adopted and the second entrance at Head.

The sum authorized under the Act, 38 Victoria, chapter 56, was \$500,000, but a further sum will be required to pay certain incidental charges since accruing and not foreseen and estimated for at the date of the above appropriation.

The total expenditure to the 30th June, 1882, amounts to \$329,502.79, leaving a balance of \$170,497.21 at that date.



The works executed during the past fiscal year include an extension of the dock excavation to the rear of the intermediate dam across the main body of the dock and the placing of the arterial drains, bottoming up the concrete and laying dock floor a further distance of 100 feet, thereby extending this part of the structure to  $\frac{3}{4}$  rds. of its lengths from the circular head.

On the outside of the entrance works, the filling up to the pile heads with clay according to instructions amounting to 1,500 cubic yards had been completed and the excavation for the piling and concrete for the proposed addition to the structural works proceeded with, and a commencement made with the pile driving in connection with it. These piles were driven to a depth of 55 feet below coping through 20 feet of sand, being work involving a considerable amount of patient labor.

Tenders for the boilers were called for in August, 1881, and the offer of three suitable ready-made boilers of the best quality was accepted from Messrs. Carrier, Lainé & Co., for the sum of \$4,500 fixed complete, whereby a great saving was effected over the cost of strictly new boilers in terms of the specification.

A second instalment on account of the contract for the pumping machinery was paid to Messrs. Carrier, Lainé & Co., of \$8,000, making a total so far of \$16,000 out of a gross sum of \$32,000 and an advance on the boilers of \$3,000, making a total payment of \$19,000 to this firm for these purposes.

The work already so far finished includes 300 feet of the dock with the wing walls, and entrance works, while the work remaining to be done includes the construction of the engine house and pump wells, with the fixing of the machinery, boilers, &c., the whole of the materials for which are either now on the ground or in the engine works of Messrs. Carrier, Lainé & Co. The caisson has to be put together and tested, this will probably take two months to effect and the work necessary should be let in advance by tender.

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

WOODFORD PILKINGTON, *M.I.C.E.*,  
*Resident Engineer.*

A. H. VERRET, Esq.,  
Sec. Treasurer.

#### QUEBEC HARBOR IMPROVEMENT WORKS.

#### PROGRESS REPORT ON THE "PRINCESS LOUISE EMBANKMENT AND DOCKS," RIVER ST. CHARLES, QUEBEC.

RESIDENT ENGINEER'S OFFICE,  
QUEBEC, 24th November, 1882.

SIR,—Acting on instructions received, I have the honor to report on the progress made with the works above described connected with the harbor extension and improvements in the river St. Charles, Quebec, for the information of the Hon. the Minister of Public Works for the fiscal year ended June 30th, 1882.

The total amount of the original contract and extra works carried out in connection with this first section of these works, amounts to the sum of \$734,507.49 found as follows :

To block sum of original contract.....	\$529,296 31
“ “ “ “ allowed contingencies.....	25,000 00
“ “ “ “ supplementary dredging.....	62,500 00
“ “ “ “ stone face (boucharded).....	21,974 90
“ “ “ “ northern cribwork.....	58,059 53
“ stone and ballast for concrete at contract rates.....	37,676 75
“ additions made by award of arbitrators in excess of deductions.....	47 27
	76
Placing the total amount of work done at.....	<u>\$734,555 76</u>
Total amount paid contractors.....	\$616,222 42
Leaving a balance due of.....	118,333 34

The entire works comprised in this first section of these designs for harbour improvements are complete so far as the materials from the dredgings would permit, but a considerable quantity of filling still remains to be put into the embankment. This dredging and filling work is included in the second section and has been contracted for by Messrs. Larkin, Connolly et Co., to be proceeded with and completed during the season of 1883, together with the closing of the end of the embankment at the foreshore near the Gas House Wharf.

During the latter part of this fiscal year, nothing was done beyond calling for tenders for dredging and for the closing of the incomplete space at the end of the Wet Dock Wall, contracts for which have since been signed.

The work still remaining to be done to complete these designs includes the execution of these contracts, together with the work involved in connection with the Cross Wall and Entrance Works for the future Wet Dock by the production of the line of Dalhousie street between two walls enclosing an embankment to a junction with the Quay Walls of the Wet Dock and Tidal Basin respectively as originally proposed, which will probably form the third and last section of these works.

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

WOODFORD PILKINGTON, M.I.C.E.,  
*Resident Engineer.*

A. H. VERRET, Esq.,  
Sec. Treasurer.

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 APPENDIX No. 13.
 

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 ANNUAL REPORT OF THE MONTREAL HARBOR COMMISSIONERS ON  
 THE DEEPENING OF CHANNEL BETWEEN QUEBEC  
 AND MONTREAL.
 

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 HARBOR COMMISSIONERS OF MONTREAL.  
 SECRETARY'S OFFICE.

Ref. No. 28839.

MONTREAL, 30th October, 1882.

SIR,—I have the honor, by direction of the Harbor Commissioners, to forward herewith, for the information of the Honorable the Minister of Public Works, copy of the Chief Engineer's Report on the dredging operations for deepening the ship channel between Montreal and Quebec, for the fiscal year ended the 30th June last.

As you have already been informed in previous communications under date of the 16th November and 17th December 1880—and the 18th October 1881, it is impossible to answer exactly the question asked.

I would, however, state as follows, viz :

*Question (1).* The grants made by statute and the Acts relating thereto since 1st July 1867.

*Answer.*—The works are carried on under the Acts 36 Victoria, Cap. 60; 44 Vic., Cap. 7, and 45 Vic., Cap. 44—whereby a total sum of \$1,780,000 was authorized to be advanced to the Commissioners, to bear interest at 4 per cent., for the purpose of dredging the channel to 25 feet, at low water.

*Question (2).* Number and date of letter authorizing any expenditure each fiscal year, up to the 1st July 1882.

*Answer.*—None.

*Question (3).* Expenditure authorized each year to same date.

*Answer.*—No special amount.

*Question (4).* Expenditure or liabilities incurred each year to same date.

*Answer.*—No liabilities, everything is paid for as the work proceeds.

*Question (5).* Amount available for completion 1st July, 1882.

*Answer.*—\$80,000.00.

*Question (6).* Probable amount repaired for completion 1st July, 1882.

*Answer.*—It is expected the above amount \$80,000 will practically complete the channel to 25 feet.

*Question (7).* Revenue each year.

*Answer.*—None.

The capital cost of the dredging plant included in above expenditure is \$534,809, exclusive of certain Harbor plant previously on hand and now employed in the work.

I have the honor to be, Sir,

Your most obedient servant,

H. D. WHITNEY,  
*Secretary.*

F. H. ENNIS, Esq.,  
 Secretary, Department of Public Works,  
 Ottawa.

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**HARBOUR COMMISSIONERS OF MONTREAL.**

CHIEF ENGINEER'S OFFICE,  
MONTREAL, 18th October, 1882.

SIR,—In compliance with the request of the Secretary of Public Works, I beg to submit the following report upon the work of deepening the ship channel of the St. Lawrence between Montreal and Quebec, during the Government fiscal year ended 30th June, 1882.

The places at which the greatest quantities of work have been done are at Cap Charles and Cap La Roche, where the dredging is of rock, and in Lake St. Peter, the new Contrecoeur channel and Pointe aux Trembles where the dredging is of earth.

The following are the chief details of the year's work. The cost of the dredging at each place is generally taken as that of the previous summer, for the reason that the expenditure cannot well be sub-divided to the end of the Government fiscal year which occurs in the middle of the working season.

The costs given include all charges and outlay of every kind, except for interest and depreciation of plant.

CAP CHARLES.

The work of deepening the channel through the shale rock shoal was continued to the close of navigation of 1881 and resumed soon after the opening in 1882. By the end of the fiscal year the shoal had been practically cut through to 2½ feet 3 inches deep, at low water, but there remained some boulders and loose rock to be removed. The quantity of rock and boulders lifted during the year is 17,695 cubic yards, at an average cost of about 85 cents per yard.

POUILLIER BAYER.

The channel has been somewhat straightened by the removal of 857 cubic yards of boulders from the south side of the shoal.

CAP LA ROCHE.

Dredging was continued in the rock during the working season by two dredges, with frequent assistance from a stone lifter, and by the end of the fiscal year nearly the whole shoal had been cut through to 22 feet deep, at low water. Quantity dredged, 45,295 cubic yards at an average cost of about 70 cents per cubic yard.

BECANCOUR UPPER TRAVERSE.

A new line of traverse, further to the north at its upper end and in deeper water than the old one, was determined upon, and some boulders and the tops of small stony shoals have been removed to make it available to 25 feet at low water. Quantity of stones and boulders lifted, 368 cubic yards.

## PORT ST. FRANCIS.

In the spring of this year the Iron and Force shoals were cut through to 25 feet deep at low water. Quantity dredged, 2,040 cubic yards, hard pan and boulders, costing \$1.14 per cubic yard.

## LAKE ST. PETER.

Dredging was continued throughout the working season, and by the close of the fiscal year the whole lake channel had been finished to 25 feet depth, except about a mile of partial cutting at No. 3 light ship. Total quantity dredged during the fiscal year, 1,056,655 cubic yards, costing  $3\frac{1}{10}$  cents per cubic yard.

## ILE DE GRACE.

A shoal about half a mile in breadth, consisting chiefly of coarse sand has been put through. Quantity dredged, 33,600 cubic yards costing 25 cents per cubic yard.

## CONTRECOEUR CHANNEL.

Dredging was rapidly prosecuted in the fall of 1881, and continued at a slower rate in 1882, until the middle of June, when the 25 feet depth was practically completed. Quantity dredged, 227,760 cubic yards, costing  $12\frac{1}{2}$  cents per cubic yard.

## CAP ST. MICHEL AND VARENNES.

In the latter half of the summer of 1881 and spring of this year a number of small points and shallow places were cleaned off. Quantity dredged, 32,850 cubic yards at an average cost of about 24 cents per cubic yard.

## POINTE AUX TREMBLES.

Dredging was continued last fall and this summer up to the close of the fiscal year. Quantity dredged, 88,100 cubic yards, costing  $15\frac{1}{2}$  cents per cubic yard.

## MONTREAL.

The ship channel leading into the harbour proper has been deepened at a number of places. Quantity dredged, 98,382 cubic yards, costing  $23\frac{1}{10}$  c. per cubic yard.

The aggregate quantity of dredging done at all points during the government fiscal year ended 30th June was 1,603,612 cubic yards, as against 1,229,937 cubic yards in the preceding year.

The expenditure on working account, which is made up only at the end of each Harbour Commissioners' year at 31st December, was for the year ended 31st December 1881, \$167,301 with an aggregate of 1,453,788 cubic yards dredged, as against \$147,038 for 1880 with 1,219,231 cubic yards dredged.

The floating plant in the work was substantially the same as before and consisted of two large and three ordinary elevator dredges for working in earth; three elevator dredges for working in rock; three spoon dredges part of the time; two steam stone lifters, seven screw tugs, one paddle wheel tug; five barges used as coal tenders and smith's shops; nineteen hopper bottom scows and three flat scows.

Yours respectfully,

JOHN KENNEDY,  
*Chief Engineer.*

H. D. WHITNEY, Esq.,  
Secretary, Montreal Harbour Commissioners.

APPENDIX No. 14.

STATEMENT of Property purchased or sold by the Department of Public Works, during the Fiscal Year ended 30th June, 1882.

Date of Sale.	Vendors.	Purchasers.	Property Purchased or Sold, &c.	For what purpose used.	Area, &c.	Price of Sale.
July 4, 1881.....	P. Cullen.....	Her Majesty.....	Part of town lots Nos. 1, 53, 54 and 140, at Charlottetown, P.E.I.	Construction of a Marine Hospital.	.....	\$ cts. 1,800 00
do 19, 1881.....	D. McInnes.....	do.....	Part of lots Nos. 9 and 10, on King and John Streets, Hamilton, Ont.	Post Office, &c.....	.....	35,908.32
Aug. 30, 1881.....	A. Northwood.....	do.....	Part of lot No. 94, corner of King and Fourth Streets, Chatham, Ont.	Post Office, &c.....	.....	8,000 00
Oct. 17, 1881.....	Her Majesty.....	J. & W. Keough.....	Old building standing on property purchased from A. Northwood, Chatham.	.....	.....	125 00
Nov. 22, 1881.....	Trustees, C. W. Presbyterian Church (St Thomas).	Her Majesty.....	Part of lots Nos. 4 and 5, on Talbot Street, St. Thomas, Ont.	Post Office, &c.....	132 X 122 feet....	7,000 00
Dec. 7, 1881.....	A. H. Davidson.....	do.....	Part of lot No. 16, corner of Pitt and Second Streets, Cornwall, Ont.	do.....	100 X 80 feet....	8,000 00
Feb. 28, 1882.....	Corporation of Town of Stratford.	do.....	Lot on Ontario Street, at its junction with north side of Erie Street, Stratford.	do.....	.....	Donated.
Dec. 5, 1881.....	His Lordship the Bishop of Chicoutimi.	do.....	Part of lot No. 74, Town of Chicoutimi, Que.	Marine Hospital.....	209 X 418 feet....	400 00
Feb. 24, 1882....	Heirs Wright.....	do.....	Donation of portion of Reserve, on Main Street, Hull, Que.	Post Office, &c.....	120 X 125 feet....	Donated.
March 31, 1882....	F. A. Vail and others....	do.....	Lot of land in the Parish of Sussex, N.B....	do.....	90 X 180 feet....	1,600 00
Feb. 4, 1882....	Her Majesty.....	Geo. E. Franklin.....	Crown Grant of portion of Penitentiary Land at Halifax, N.S.; between Franklin Street and the Harbour.	.....	100 X 100 feet....	900 00
April 12, 1882....	Roman Catholic Episcopal Corporation of Archat.	Her Majesty.....	Lot, corner College and Main Streets, at Antigonish, N.S.	Post Office, &c.....	240 square yards.	1,750 00

A. GOBELL.

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 12th December, 1882.

**APPENDIX No. 15.**

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**REPORT OF THE SECRETARY OF THE OFFICIAL ARBITRATORS.**

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No. 23718.

OFFICIAL ARBITRATORS, CANADA,  
OTTAWA, 26th October, 1882.

SIR,—I beg to transmit herewith a statement of the claims referred to and arbitrated upon by the Official Arbitrators, in connection with the Department of Public Works during the fiscal year ended 30th June, 1882.

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

CHS. THIEAULT,  
*Secretary to the Official Arbitrators.*

F. H. ENNIS, Esq.,  
Secretary, Public Works Department.

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STATEMENT of claims referred to and arbitrated or reported upon by the Official Arbitrators in connection with the Department of Public Works, during the Fiscal Year ended 30th June, 1882.

Claimant.	Nature of claim.	When referred.	To whom referred.	Whether referred for Award or Report.	Amount claimed.	Amount awarded or recommended.	Date of award or report.	Remarks.
Mrs. Mary Patton...	Graving dock, Pt. Lévis, damage by appropriation of a right of way.....	4th Nov., 1881	Full Board.....	'Award'.....	\$ cts. 22,500 00	\$ cts. 2,000 00	2nd Sept, '82..	
Samuel Platt .....	Goderich Harbor, damage to property in connection with works at.....	11th do	do	do	12,000 00 per year...	20,510 00	24th Feb'y '82.	
W. B. Flaherty.....	St. John, N.B., Post-Office building, damages for wrongful condemnation of iron used for....	27th Jan. 1882	Wm. Compton.	Report .....	.....	.....	.....	Claimant asked to postpone his case.

CHARLES THIBAUT, Secretary to the Official Arbitrators.



## APPENDIX No. 16.

## STATEMENT of the Opening and Closing of Navigation.

## PROVINCE OF NOVA SCOTIA.

Name of Port.	County.	Date of Closing, 1881.	Date of Opening, 1882.	Depth of Water available at low water.	Remarks.
				Feet.	
Annapolis.....	Annapolis.....	Always open .....		15 to 20	In very severe winters thin ice forms, but screw steamers could always enter.
Barrington.....	Shelburne.....	do .....		12 to 20	At anchorage, wharves dry at low water.
Digby.....	Digby.....	do .....		18	About 10 feet at end of steamboat pier.
Halifax.....	Halifax.....	do .....		20 to 30	At wharves. 70 to 100 ft. in harbor.
Liverpool.....	Queen's.....	do .....		7	On bar. At Brooklyn 24 ft.
Lockeport.....	Shelburne.....	do .....		8	
Lunenburg.....	Lunenburg.....	do .....		12	
Parsonsboro.....	Cumberland.....	do .....			Dry in harbor.
Pictou.....	Pictou.....	Jan. 4, '82	April 24.....	19	At wharves. 40 ft. in harbor.
Shelburne.....	Shelburne.....	Always open.....		40 to 60	
Sydney.....	Cape Breton.....	Jan. 6, '82	May 9.....	48	
Windsor.....	Hants.....	do 11, '82	Mar. 22.....		Dry.
Yarmouth.....	Yarmouth.....	Always open.....		13	

## PROVINCE OF NEW BRUNSWICK.

Buctouche.....	Kent.....	Dec. 1...	May 10...	12	8 ft. on bar.
Chatham.....	Northumberland	Nov. 28...	do 5...	35 to 40	In harbor. 17½ ft. on Horseshoe bar.
Dalhousie.....	Restigouche.....	Dec. 3...	do 7...	30	South channel. 70 ft. north channel.
Dorchester.....	Westmoreland...	do 22...	Mar. 22...	10	
Moncton.....	do .....	Jan. 6, '82	April 4.....		Dry.
Newcastle.....	Northumberland	Nov. 23...	May 5...	30	In harbor. 17½ ft. on Horseshoe bar.
Richibucto.....	Kent.....	Dec. 18...	do 9...	12	
Sackville.....	Westmoreland...	do 21...	April 15...	4	
Shediac.....	do .....	do 2...	May 9...	12	
St. Andrews.....	Charlotte.....	Always open.....		14	In inner harbor.
St. John.....	St. John.....	do .....		24	At entrance of harbor. 60 feet in harbor.
St. Stephen.....	Charlotte.....	do .....		6	30 ft. at the Ledge, 4 miles below the town.

## PROVINCE OF PRINCE EDWARD ISLAND.

Charlottetown...	Queen's.....	Dec. 27...	May 6...	20	40 to 60 ft. in stream.
Souris.....	King's.....	do 31...	do 4...	20	At end of railway wharf. 18 ft.
Summerside.....	Prince.....	Nov. 28...	do 9...	16	At railway wharf. 26 to 30 ft. in harbor, low water, spring tides.

## APPENDIX No. 10—Continued.

## PROVINCE OF QUEBEC.

Name of Port.	County.	Date of Closing, 1881.	Date of Opening, 1882.	Depth of Water available at low water.	Remarks.
				Feet.	
Bay St. Paul.....	Charlevoix.....	Nov. 15...	April 15...	Over 36	
Berthier(en bas).....	Montmagny.....	do 15...	do 15...	.....	
Carleton.....	Bonaventure.....	do 22...	May 3...	18 to 24	
Chicoutimi.....	Chicoutimi.....	do 18...	do 18...	10	
Éboulements.....	Charlevoix.....	Dec. 1...	April 1...	Over 36	
Étang du Nord.....	Gaspé.....	Oct. 15...	May 21...	.....	
Matane.....	Rimouski.....	Nov. 28...	April 10...	17	Upper end new pier. 12 ft. old pier, 5 ft. on bar.
Montreal.....	.....	Jan. 2, '82	do 11...	20	22 ft. ordinary low water.
Murray Bay.....	Charlevoix.....	Dec. 8...	Mar. 28...	8 to 14	
New Carlisle.....	Bonaventure.....	do 1...	April 15...	10	At end of pier.
Port Daniel.....	do.....	do 1...	do 25...	.....	
Quebec.....	.....	Nov. 28...	do 22...	6 to 168	
Rimouski.....	Rimouski.....	Dec. 25...	Mar. 23...	8	L. W. sps. 10 ft. 6 in., half tide.
Three Rivers.....	.....	Nov. 28...	April 22...	17	At Richelieu and Ontario Navigation Co's Wharf.

## PROVINCE OF ONTARIO.

Belleville.....	Hastings.....	Dec. 10...	Mar. 10...	5 to 9	At docks. 9 ft. in channel.
Brighton.....	Northumberland	do 19...	do 27...	.....	
Cobourg.....	do.....	do 10...	April 10...	8	
Collingwood.....	Simcoe.....	Nov. 30...	do 18...	12	
Fort Williams.....	Algoma.....	do 20...	do 27...	.....	
Kincardine.....	Bruce.....	do 20...	May 1...	9	
Kingville.....	Essex.....	Jan. 1, '82	April 1...	7 to 9	
Little Current.....	Algoma.....	Nov. 28...	May 7...	.....	
Meaford.....	Grey.....	Dec. 2...	Mar. 16...	10	
Morpeth.....	Kent.....	Open whole winter...	.....	9	11 ft. at outer end of dock.
Napanee.....	Lennox.....	Nov. 28...	Mar. 27...	7	
Newcastle.....	Durham.....	Dec. 10...	April 1...	8	Harbour free of ice nearly all last winter.
Oakville.....	Halton.....	do 5...	do 17...	10	
Owen Sound.....	Grey.....	do 31...	Mar. 20...	9	
Port Albert.....	Huron.....	Nov. 4...	April 15...	6	
Port Burwell.....	Elgin.....	do 30...	do 1...	7 to 8	
Port Darlington.....	Durham.....	Dec. 8...	Mar. 25...	8	
Port Hope.....	Durham.....	do 5...	Mar. 30...	12	
Port Stanley.....	Elgin.....	do 15...	do 20...	10	At entrance.
Shannonville.....	Hastings.....	Nov. 25...	April 1...	6	
Thunder Bay.....	Algoma.....	Jan. 15, '82	do 28...	.....	
Toronto.....	Toronto.....	Dec. 19...	Feb. 27...	11 to 16	
Trenton.....	Hastings.....	do 6...	April 4...	14	In harbor. 9 ft. on bar.
Whitby.....	Ontario.....	do 7...	do 4...	.....	
Windsor.....	Essex.....	Open whole winter...	.....	.....	

## PROVINCE OF MANITOBA.

Winnipeg.....	Selkirk.....	Nov. -5...	April 18...	6	
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