

**CANADA CANAL COMMUNICATION.**

---

RETURN to an Address to His MAJESTY, dated 4 February 1831;—*for*,

**COPIES OF THE CORRESPONDENCE**

**BETWEEN**

**THE TREASURY, THE SECRETARY OF STATE FOR THE COLONIES,**

**AND THE ORDNANCE,**

**ON**

**THE CANAL COMMUNICATION IN CANADA.**

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Whitehall, Treasury Chambers, }  
10 February 1831.

T. SPRING RICE.

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*Ordered, by The House of Commons, to be Printed,*  
*10 February 1831.*

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## L I S T.

No.		Page
1.—	LETTER - - Henry Goulburn, Esq. to George Harrison, Esq. - 26 June 1817 -	5
2.—	Ditto - - - Lieut.-Gen. Sir J. Sherbrooke to Earl Bathurst - 1 April 1817 -	5
3.—	Ditto - - - Capt. Romilly to Major Henderson - - - 21 Mar. 1817 -	6
4.—	TREASURY MINUTE, dated - - - - - 4 July 1817 -	6
5.—	LETTER - - Henry Goulburn, Esq. to George Harrison, Esq. - 20 Nov. 1817 -	7
6.—	Ditto - - - Lieut.-Gen. Sir J. Sherbrooke to Earl Bathurst - 5 Sept. 1817 -	7
7.—	REPORT on Canal between Montreal and La Chine } by Capt. Romilly - - - 1817 -	9
8.—	ESTIMATES for - - ditto - - ditto - - - } - - - - -	9
9.—	TREASURY MINUTE, dated - - - - - 30 Dec. 1817 -	11
10.—	LETTER - - Henry Goulburn, Esq. to George Harrison, Esq. - 23 Mar. 1819 -	11
11.—	Ditto - - - Duke of Richmond to Earl Bathurst - - - 14 Jan. 1819 -	11
12.—	REPORT on Military Settlements, &c. by Lieut.-Gen. Cockburn - 26 Nov. 1818 -	12
13.—	REPORT on Navigation of the Ottawa, &c. by Capt. Mann - - - - 1818 -	14
14.—	TREASURY MINUTE, dated - - - - - 25 May 1819 -	16
15.—	LETTER - - Henry Goulburn, Esq. to George Harrison, Esq. - 26 July 1819 -	16
16.—	Ditto - - - Duke of Richmond to Earl Bathurst - - - 20 May 1819 -	16
17.—	TREASURY MINUTE, dated - - - - - 13 Aug. 1819 -	17
18.—	LETTER - - R. W. Horton, Esq. to George Harrison, Esq. - 10 Dec. 1823 -	17
19.—	TREASURY MINUTE, dated - - - - - 9 April 1824 -	18
20.—	LETTER - - R. W. Horton, Esq. to George Harrison, Esq. - 14 May 1824 -	19
21.—	Ditto - - - Earl Dalhousie to R. W. Horton, Esq. - - - 3 Feb. 1824 -	19
22.—	REPORT on Progress of the Grenville Canal; by Capt. Du Vernet - - - 1823 -	20
23.—	REPORT on the Rideau Canal; by a Commission - - - - - 9 Sept. 1825 -	21
24.—	EXTRACT REPORT; by Joint Committee - - - - - 6 April 1825 -	22
24. (a.)—	REPORT and ESTIMATE; by Commissioners - - - - - 20 Dec. 1823 -	23
25.—	LETTER - - R. Byham, Esq. to R. W. Horton, Esq. - - - 3 April 1826 -	36
26.—	MEMORANDA - Major-Gen. Sir J. C. Smyth to General Mann - 14 Mar. 1826 -	37
27.—	LETTER - - R. W. Horton, Esq. to W. Griffin, Esq. - - - 18 April 1826 -	39
28.—	Ditto - - - Major-Gen. Sir J. C. Smyth to General Mann - 17 Aug. 1826 -	39
29.—	Ditto - - - R. Byham, Esq. to R. W. Horton, Esq. - - - 15 Jan. 1827 -	40
30.—	Ditto - - - General Mann to R. Byham, Esq. - - - - - Jan. 1827 -	41
31.—	Ditto - - - Colonel Durnford to Major-Gen. Darling - - - 14 Oct. 1826 -	41
32.—	Ditto - - - Colonel Durnford to Lieut.-Colonel By - - - 14 Oct. 1826 -	42
33.—	Ditto - - - Major-Gen. Darling to Colonel Durnford - - - 25 Oct. 1826 -	42
34.—	Ditto - - - R. W. Horton, Esq. to R. Byham, Esq. - - - 31 Jan. 1827 -	42
35.—	Ditto - - - Lieut.-Colonel By to General Mann - - - - - 1 Nov. 1827 -	43
36.—	Ditto - - - Marquis of Anglesey to Rt. Hon. W. Huskisson - 26 Jan. 1828 -	44
37.—	Ditto - - - Major-Gen. Bryce to General Mann - - - - - 23 Jan. 1828 -	44
38.—	REPORT from Committee of Engineers on Plans, &c. Rideau Canal, 22 Jan. 1828 -	45
39.—	LETTER - - R. W. Hay, Esq. to R. Byham, Esq. - - - 25 Feb. 1828 -	50
40.—	Ditto - - - Rt. Hon. W. Huskisson to Master-Gen. of Ordnance, 14 Mar. 1828 -	50
41.—	LETTER - - Lord Beresford to the Rt. Hon. W. Huskisson - 17 Mar. 1828 -	51
42.—	Ditto - - - Rt. Hon. W. Huskisson to Lord Beresford - - - 26 Mar. 1828 -	51
43.—	INSTRUCTIONS to Committee in Canada, relating to Rideau Canal 27 Mar 1828 -	53

LIST—*continued.*

No.		Page
44.—	LETTER - - R. W. Hay, Esq. to G. R. Dawson, Esq. - - - 9 Apr. 1828 -	54
45.—	TREASURY MINUTE, dated - - - - - 27 June 1828 -	54
46.—	DESPATCH - Lt.-Gen. Sir J. Kempt to the Rt. Hon. W. Huskisson 28 June 1828 -	55
47.—	REPORT of Committee at Canada, on Rideau Canal - - - 28 June 1828 -	56
48.—	LETTER (A.) from said Committee to Lieut.-Colonel By - - - 28 June 1828 -	60
49.—	Ditto - - - Lieut.-Colonel Fanshawe to General Mann - - - 30 June 1828 -	61
50.—	Ditto - - - R. Byham, Esq. to R. W. Hay, Esq. - - - 29 Sept. 1828 -	62
51.—	Ditto - - - R. W. Hay, Esq. to R. Byham, Esq. - - - 22 Oct. 1828 -	62
52.—	Ditto - - - R. Byham, Esq. to R. W. Hay, Esq. - - - 7 Nov. 1828 -	62
53.—	Ditto - - - Lieut.-Colonel Fanshawe to General Mann - - - 28 Oct. 1828 -	63
54.—	COMPARATIVE STATEMENT; by Lieut.-Colonel Fanshawe - - - - -	64
55.—	LETTER - - R. W. Hay, Esq. to the Hon. J. Stewart - - - 22 Nov. 1828 -	64
56.—	TREASURY MINUTE, dated - - - - - 23 Dec. 1828 -	65
57.—	LETTER - - R. Byham, Esq. to R. W. Hay, Esq. - - - 12 Jan. 1829 -	65
58.—	REPORT - - Lieut.-Colonel By to General Mann - - - 20 Nov. 1828 -	65
59.—	LETTER - - R. W. Hay, Esq. to R. Byham, Esq. - - - 16 Jan. 1829 -	66
60.—	Ditto - - - Lieut.-Gen. Sir J. Kempt to Rt. Hon. Sir G. Murray 12 Feb. 1829 -	67
61.—	ESTIMATE of Sums required to complete Works at Grenville - - 22 Dec. 1828 -	68
62.—	Ditto - - - of probable Expense of Canal, &c. at Châte à Blondeau 29 Jan. 1829 -	69
63.—	Ditto - - - of probable Expense of Canal at Carillon Rapids - - - - -	71
64.—	LETTER - - Earl of Dalhousie to the Rt. Hon. W. Huskisson - - 30 Jan. 1828 -	72
65.—	Ditto - - - Major Du Vernet to Major-General Darling - - - 26 Dec. 1827 -	72
66.—	Ditto - - - Major Du Vernet to Major-General Darling - - - 10 Jan. 1828 -	73
67.—	STATEMENT of Expenses, &c. of the Grenville Canal; 1819-1828 12 Feb. 1829 -	74
68.—	DESPATCH - Secretary Sir G. Murray to Lt.-Gen. Sir J. Kempt - 4 April 1829 -	75
69.—	LETTER - - R. W. Hay, Esq. to R. Byham, Esq. - - - 12 June 1829 -	75
70.—	DESPATCH - Lt.-Gen. Sir J. Kempt to the Rt. Hon. Sir G. Murray 13 April 1829 -	75
71.—	LETTER - - Lieut.-Colonel By to Lieut. General Sir J. Kempt - 4 April 1829 -	75
72.—	LETTER - - Lieut.-Colonel By to General Mann - - - 4 April 1829 -	76
73.—	Ditto - - - R. W. Hay, Esq. to R. Byham, Esq. - - - 20 July 1829 -	77
74.—	DESPATCH - Lt.-Gen. Sir J. Kempt to the Rt. Hon. Sir G. Murray 30 April 1829 -	77
75.—	REPORT - - Lieut.-Colonel By to Lieut.-Colonel Couper - - - 23 April 1829 -	77
76.—	REPORT - - Lieut. Pooley to Lieut.-Colonel By - - - <del>20 April 1829</del> -	78
77.—	LETTER - - R. W. Hay, Esq. to the Hon. J. Stewart - - - 28 July 1829 -	80
78.—	Ditto - - - R. Byham, Esq. to R. W. Hay, Esq. - - - 8 July 1829 -	80
79.—	TREASURY MINUTE, dated - - - - - 4 Aug. 1829 -	80
80.—	LETTER - - R. W. Hay, Esq. to the Hon. J. Stewart - - - 20 Aug. 1829 -	81
81.—	DESPATCH - Lt.-Gen. Sir J. Kempt to the Rt. Hon. Sir G. Murray 1 April 1829 -	81
82.—	LETTER - - Lieut.-Colonel By to Colonel Durnford - - - 16 Mar. 1829 -	82
83.—	ABRIDGED STATEMENT, &c. of Works on Rideau Navigation 1 Mar. 1829 -	82
84.—	LETTER - - Lieut.-Colonel By to Lieut.-Colonel Couper - - - 20 Nov. 1828 -	85
85.—	Ditto - - - Secretary to Ordnance Office to the Hon. J. Stewart 28 Aug. 1829 -	86
86.—	Ditto - - - Lieut.-Colonel By to Lieut.-Colonel Couper - - - 20 Nov. 1828 -	87
87.—	TREASURY MINUTE, dated - - - - - 10 Sept. 1829 -	87
88.—	Ditto - - - R. Byham, Esq. to the Hon. J. Stewart - - - 23 Sept. 1829 -	88
89.—	Ditto - - - R. W. Hay, Esq. to the Hon. J. Stewart - - - 19 Nov. 1829 -	88
90.—	DESPATCH - Lt.-Gen. Sir J. Kempt to the Rt. Hon. Sir G. Murray 20 Sept. 1829 -	89

LIST—*continued.*

No.		Page
91.—EXTRACT	Letter from Col. Durnford to Lieut.-Col. Couper	5 Sept. 1829 - 89
92.—Ditto	Letter from Lieut.-Col. By to Colonel Durnford	27 Aug. 1827 - 89
93.—LETTER	R. D. Fraser to Lieut.-Colonel By	14 Aug. 1829 - 90
94.—Ditto	R. Byham, Esq. to the Hon. J. Stewart	29 Jan. 1830 - 90
95.—TREASURY MINUTE, dated		2 Feb. 1830 - 90
96.—LETTER	R. Byham, Esq. to the Hon. J. Stewart	8 Mar. 1830 - 92
97.—TREASURY MINUTE, dated		19 Mar. 1830 - 93
98.—LETTER	R. W. Hay, Esq. to the Hon. J. K. Stewart	14 June 1830 - 94
99.—DESPATCH	Lieut.-Gen. Sir J. Kempt to Sir George Murray	12 Feb. 1830 - 94
100.—LETTER	Lieut.-Colonel By to Lieut.-General Sir J. Kempt	8 Jan. 1830 - 94
101.—Ditto	Lieut.-Colonel By to General Mann	31 Dec. 1829 - 95
102.—Ditto	R. W. Hay, Esq. to the Hon. J. K. Stewart	14 June 1830 - 96
103.—REPORT and ESTIMATE of Canal at Carillon Rapids		98
104.—DESPATCH	Lt.-Gen. Sir J. Kempt to the Rt. Hon. Sir G. Murray	1 April 1830 - 106
105.—LETTER	Colonel Durnford to Lieut.-Colonel Couper	8 Mar. 1830 - 107
106.—Ditto	Colonel Durnford to Lieut.-Colonel Couper	8 Mar. 1830 - 107
107.—TREASURY MINUTE, dated		18 June 1830 - 108
108.—LETTER	R. Byham, Esq. to the Hon. J. Stewart	23 June 1830 - 108
109.—STATEMENT; Amount of original Estimates for Canals in the Canadas		109
110.—LETTER	R. Byham, Esq. to the Hon. J. Stewart	23 June 1830 - 110
111.—REPORT	Lieut.-Colonel By to Colonel Durnford	30 Dec. 1829 - 110
112.—LETTER	R. Byham, Esq. to the Hon. J. Stewart	9 July 1830 - 113
113.—Ditto	Secretary of Ordnance to the Hon. J. Stewart	17 Aug. 1830 - 114
114.—EXTRACT	Letter from Colonel Durnford to Colonel Mann	24 April 1830 - 116
115.—LETTER	R. W. Hay, Esq. to the Hon. J. K. Stewart	18 Aug. 1830 - 116
116.—DESPATCH	Lt. Gen. Sir J. Kempt to the Rt. Hon. Sir G. Murray	8 June 1830 - 117
117.—LETTER	Colonel Durnford to Lieut.-Colonel Couper	29 May 1830 - 117
118.—REPORT and ESTIMATE; by Lieut.-Colonel Du Vernet		16 May 1830 - 118
119.—LETTER	R. W. Hay, Esq. to the Hon. J. K. Stewart	13 Sept. 1830 - 119
120.—DESPATCH	Lt.-Gen. Sir J. Kempt to the Rt. Hon. Sir G. Murray	20 July 1830 - 119
121.—ABSTRACT REPORT on Line of Rideau Canal; by Lt.-Col. By		120
122.—LETTER	Lieut.-Colonel By to Colonel Durnford	15 Mar. 1830 - 122
123.—Ditto	Lieut.-Colonel By to General Mann	15 Mar. 1830 - 122
124.—Ditto	Colonel Durnford to Lieut.-Colonel Couper	24 April 1830 - 126
125.—Ditto	Lieut.-Colonel Couper to Colonel Durnford	27 April 1830 - 126
126.—Ditto	Colonel Durnford to Colonel Mann	24 April 1830 - 127
127.—Ditto	R. J. Routh, Esq. to the Hon. J. Stewart	4 Aug. 1830 - 129
128.—Ditto	Lieut.-Colonel By to R. J. Routh, Esq.	10 July 1830 - 131
129.—Ditto	R. W. Hay, Esq. to the Hon. J. Stewart	2 Feb. 1831 - 132
130.—Ditto	R. Byham, Esq. to R. W. Hay, Esq.	24 Jan. 1831 - 132
131.—STATEMENT of Sums granted and required for completing Works,		8 Feb. 1831 - 133

## P L A N S :

No. 1.	PLAN of the Carillon Canal	} <i>Placed at the end, after page 133.</i>
Nos. 2 & 3.	PLAN and SECTION of Part of the Ottawa and North Rivers	
No. 4.	SECTION of Dam at Hog's Back	
Nos. 5 & 6.	PLAN and SECTION of the Line of the Rideau Canal	

## CANADA, CANAL COMMUNICATION.

CORRESPONDENCE relative to the CANAL COMMUNICATION  
in *Canada*.

No. 1.—LETTER from *Henry Goulburn, Esq.* to *George Harrison, Esq.*  
&c. &c. &c.

SIR,

Downing Street, 26th June 1817.

I AM directed by Earl Bathurst to transmit to you the copy of a letter from Lieutenant General Sir John Sherbrooke, dated the 1st of April last, stating the necessity of sending out a competent civil engineer, to superintend the execution of the proposed Canal between Montreal and La Chine, and I am to request you will lay the same before the Lords Commissioners of the Treasury, and acquaint their Lordships, that as there appears every reason to believe that the remaining sums necessary for the completion of this most important work will be either voted by the Colonial Assembly, or subscribed in the province by private individuals, Lord Bathurst thinks it advisable that it should be carried on in a manner to ensure the public advantages which cannot fail to result from its proper execution, and therefore earnestly recommends to their Lordships that they will be pleased to authorize the expense of sending out a competent civil engineer, to superintend the undertaking during such a period as may be necessary to ensure its successful progress.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

I am, &amp;c. &amp;c.

(signed) *Henry Goulburn.*

No. 2.—LETTER from Lieutenant General Sir *John Sherbrooke* to the  
Right Hon. Earl *Bathurst*, &c. &c. &c.

MY LORD,

Quebec, 1st April 1817.

UPON the receipt of your Lordship's Despatch, No. 54, of the 7th of December, with its inclosure, I lost no time, in obtaining all the information in my power on the subject of Lieutenant Considine's Plan for the better navigation of the St. Lawrence between Montreal and La Chine, the result of which is, that in the opinion of the most competent judges, the water-wheels proposed by Mr. Considine could not, with any chance of success, be applied in that part of the river, particularly on account of the rise and fall of the water, and the variation of the course which must be taken by boats in consequence.

The immense bodies of ice occasionally floating down the river present also a most formidable obstacle to the plan.

I transmit to your Lordship a copy of a Report made hereupon by Captain Romilly, an officer of experience in the Royal Engineers stationed at Montreal, to whom, by my desire, the commanding royal engineer forwarded Mr. Considine's proposal.

With respect to the proposed Canal between Montreal and La Chine, which I cannot but consider as highly important and desirable, I avail myself of this opportunity of mentioning, that provided a civil engineer is sent out from England to superintend its execution, without which indeed it would be impracticable to engage in it, I have little doubt, should you wish it, that the House of Assembly of Lower Canada would, in their next session, vote a further sum, in addition to the £. 25,000. already appropriated by them in aid of this service.

No. 3.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Or should your Lordship wish to relinquish altogether the execution hereof at the expense of Government, I am inclined to believe (so much are the people here convinced of its utility) that the work might be accomplished by subscription for shares amongst individuals.

On this subject I shall be glad to be honoured with your Lordship's commands ; but I beg leave to impress upon your attention, that whichever mode shall be adopted, the assistance of the civil engineer will be equally and absolutely indispensable. Sir George Prevost and Sir Gordon Drummond, having already represented this point, of the necessity of which no doubt can be entertained, the House of Assembly consider a pledge to have been made to them by my predecessors, that such assistance would be afforded to the undertaking.

I have the honour, &c. &c.

(signed) *J. C. Sherbrooke.*

No. 3.—LETTER from Captain *Romilly* to Major *Henderson*, &c. &c. &c.

SIR, Royal Engineer's Office, Montreal, 21st March 1817.

I HEREWITH return the copies of Lord Bathurst's letter, and Mr. Considine's proposal for drawing boats up the rapids of the St. Lawrence River, between La Chine and Montreal, by machinery worked by water-wheels. The theory is certainly very good—any power may be obtained from such wheels, turned by so strong a current. But the difficulties to be overcome appear to me so great, that I doubt whether the project can be put into execution. The first is certainly the rise and fall of the water in wet and dry seasons, at least ten feet ; the course of the boats running at one time close to the banks, and in the summer fifty yards further into the river ; there are also a number of rocks and shoals which must be removed and cut away, to gain sufficient depth of water. I do not see how the posts to support the chain or rope can be secured, so as to resist the floating ice, which comes down the river with great force on the breaking up, of the frost ; to preserve the wheels from this will be difficult and require strong and expensive piers. With regard to the number and particular points where the water-wheels should be situated, a correct survey must be made of the river, and the soundings carefully marked, it is impossible now to give an opinion on this head, from the river being frozen up.

I have no hesitation in allowing this project might be usefully applied in some places where the distance is short, but do not think it will allow of a moment's comparison in point of utility, with a canal.

I have the honour, &c. &c.

(signed) *Samuel Romilly,*  
Captain Royal Engineers.

No. 4.—TREASURY MINUTE relative to the proposed Canal between  
*Montreal and La Chine.*

Copy of Treasury Minute, dated 4th July 1817.

READ Letter from Mr. Goulburn, dated 26th ultimo, transmitting, by direction of Earl Bathurst, the copy of a letter from Lieutenant General Sir John Sherbrooke, stating the necessity of sending out a competent civil engineer to superintend the execution of the proposed Canal between Montreal and La Chine ; and stating, that as there appears every reason to believe that the remaining sums necessary for the completion of this most important work, will be either voted by the Colonial Assembly, or subscribed in the Province by private individuals, Lord Bathurst thinks it advisable that it should be carried on in a manner to ensure the public advantages which cannot fail to result from its proper execution, and therefore earnestly recommends to their Lordships, that they will be pleased to authorize the

the expense of sending out a competent civil engineer to superintend the undertaking, during such a period as may be necessary to ensure its successful progress.

Acquaint Mr. Goulburn, for the information of Earl Bathurst, that under the circumstances stated, My Lords are pleased to sanction the expense which will necessarily be incurred by a civil engineer being sent from this country to superintend the works in question.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 5.—LETTER from *Henry Goulburn, Esq.* to *George Harrison, Esq.*  
&c. &c. &c.

SIR,

20th November 1817.

I AM directed by Lord Bathurst to transmit to you, for the information of the Lords Commissioners of the Treasury, a despatch which has been received from Lieutenant General Sir J. Sherbrooke relative to the expense of making a Canal from Upper La Chine to Montreal in Canada.

In submitting the Report and Estimates inclosed in that despatch to the consideration of their Lordships, Lord Bathurst is anxious that you would call their particular attention to the extreme importance which has been attached, by the most competent judges, to the opening of such a communication. Their Lordships are fully aware, from the reports long since transmitted to them, that in the event of war with the United States the safety of the Canadas must depend mainly upon the measures which may have been previously taken to facilitate the communication and the means of conveyance between the different extremities of those provinces; and as the object of the proposed Canal is to obviate the difficulties which at present attend a navigation up that part of the Saint Lawrence near Montreal, Lord Bathurst cannot but consider it as a work of the most urgent necessity. It is on these considerations that his Lordship, although fully sensible of the difficulty of providing funds for such an undertaking, cannot nevertheless avoid recommending it to the consideration of their Lordships, and submitting to them, that in the event of their consenting to defray half the expense of the work, he entertains little doubt but that the Colony, which has already appropriated £. 25,000 currency to the undertaking, would willingly defray the remaining expense. His Lordship too cannot but consider it important, by commencing such an undertaking, to afford means of support to those numerous emigrants who have lately proceeded from the United Kingdom to Canada, and who, in the event of not being employed, must either be thrown a burden upon the government, or be left in a state of absolute want and misery.

I am, &c. &c.

(signed) *Henry Goulburn.*

No. 6.—LETTER from Lieutenant General *Sir J. Sherbrooke* to the  
Right Hon. *Earl Bathurst*; &c. &c. &c.

MY LORD,

Quebec, 5th September 1817.

IN obedience to your Lordship's commands, expressed in your letter of 10th October 1815, addressed to Sir Gordon Drummond, I have the honour to transmit herewith a report and estimate of a Canal from Upper La Chine to Montreal, which have been prepared by Captain Romilly of the Royal Engineers, whom your Lordship is aware was directed to undertake the survey for this purpose.

I have the honour, &c. &c.

(signed) *J. C. Sherbrooke.*

No. 6, 5 Sept. 1817.

N<sup>os</sup> 7 & 8.

N<sup>os</sup> 7 & 8.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 7. — REPORT on the proposed CANAL between *Montreal* and *La Chine*;  
by Captain *S. Romilly*.

Montreal, 1817.

THE course of the St. Lawrence from La Chine to Montreal forms a considerable curve. The navigation is very difficult, owing to the rapidity of the water and the shallowness of particular parts.

The current is strong from some distance above La Chine. The first rapid commences near the windmill, on the high point of land between the upper and lower village, and extends to the government depôt. It is so rough that the boats take a long time to haul up it. From hence to the mill the water is smooth, but with a strong current.

At the mill, Sault St. Louis commences, which is extremely rough: a lock has been constructed here, but it does not admit large boats. The rapid extends to about a mile below the mill. There are a number of large beds of rock, which render the navigation very difficult during the dry seasons. The boats generally pass up unloaded, and take in their cargo at Upper La Chine; after this to Montreal the water is smooth and swift, with the same inconveniences of rocks and shallows.

A strong current, called St. Mary's, extends to two miles below the town, at the foot of which vessels are detained, frequently for weeks, till they get a strong mough wind sufficient to enable them to stem the current.

To obviate these difficulties it would be highly desirable to cut a Canal from St. Mary's to Upper La Chine, which line would be the chord to the curve the river forms. The distance is from ten to eleven miles.

A ravine runs the whole distance between the Upper and Lower La Chine roads, separating the town and the St. Lawrence suburb.

A small stream, called the Little River, flows through the ravine and empties itself into the St. Lawrence at the St. Antoine suburb. Another rivulet takes its source from the woods near St. Mary's in a favourable direction to the St. Lawrence, but with a contrary course. It joins the Little River in the above suburb.

The bottom of the ravine, a low ground, is for the most part a swamp, and covered with underwood. Below Côte St. Pierre the Little River forms what is called the Little Lake, which is covered with clusters of trees close together: the Canal must run through part of this, as near the edge as possible, and must be formed with piles of cedar. When within a mile of the proposed head of the Canal the soil begins to be very rocky. The Canal will cross the turnpike road at the Tanning Village (after following the low ground) and pass in rear of the town to the brick house used as a navy store. The land rises all the way from Montreal, and the bank will have to be cut into fifty feet; but it appears the best place for the Canal to end at, as it is at the bottom of the worst part of the current, and the water is so deep that large vessels can lay close to the shore, which is not the case at the Rivulet Michon, three quarters of a mile lower down the river, where there is a bar which would prevent ships coming near the Canal if it ended there.

The most serious obstacle to be contended with here is the floating ice. When the river breaks up in the spring it sometimes rises to near the top of the bank, and would carry away any pier that could be run out into the river. The only method would be, to construct a low one first sufficiently high to bring in the boats in the driest season, so that when the water rises, the whole of the floating ice would pass above the walls of the Canal; the sides of the bank of the river must be piled, to prevent their being cut into by the ice.

The head of the Canal to be at Ellis's, in Upper La Chine; the greatest rise of the water is six feet, and in the summer, when the water is at the lowest, there are some rocks which must be blasted. The first lock at this point to be sufficiently high to allow for the difference between the depth of the water in summer and spring, as the soil is very rocky all along the side of the river; the Canal to be for one boat only till the rock is past, after which it will be desirable that it should be large enough for two. The second lock will be below Côte St. Pierre; the fall is 4. 8. a third between the Tanning Village and the St. Antoine suburb.

Two more will be required for the branch which passes through the Hay Market, by the Little River into the St. Lawrence.

The part of the Canal from the back of the town to St. Mary's, will be expensive, as the ground rises all the way, and the bank is very high. But it is absolutely necessary

on

on account of the great delay and difficulty the ships experience in overcoming the current.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

The Canal should be constructed for the largest Durham boats, which are 60 feet long, and from 11 to 13 ft. 6 in. broad; they draw 2 ft. 6 in., and carry 10 ton. To allow these to pass with facility, the single part should be 16 feet at bottom, the sides to slope in the proportion of 3 to 5 feet base; the double to be 30 feet at the bottom, carrying 3 feet depth of water, which gives 40 feet at the surface. The part through the Little Lake, and the worst places of the swamp, to be formed with cedar pickets, eleven or twelve feet long, and driven down at a slope of  $\frac{1}{2}$  fastened together at top by a square ribband.

That part which crosses the town by the Hay Market must be built of masonry, to take up as little of the interval between the houses as possible; and, as at the point of separation the ground is low, a bason can easily be excavated to contain any number of boats, which would be of great advantage to them in loading, and furnish water for the locks.

Along the line of the Canal there are several springs, which will amply compensate for evaporation, &c.

The greatest objection to the Canal is, that it will cease to be navigable some time before the river does, owing to the water being stagnant, which will freeze immediately, though the St. Lawrence will remain open some weeks later on account of the rapidity with which it flows.

(signed)

Sam<sup>r</sup> Romilly,

Capt. Royal Engineers.

No. 8.—ESTIMATE for a CANAL from *Upper La Chine to Montreal*; to be navigated by Durham boats, 60 ft. long, 13 ft. 6 in. wide, and drawing 2 ft. 6 in. water; part to be for one boat only, 16 feet at bottom, the sides sloped in the proportion of 5 feet base to 3 in height, and carrying 3 feet water.

MILITARY:

	£.	s.	d.
To excavating 5,000 running feet of single Canal, 8 ft. 6 in. within soil, principally rock, being 17,685 cubic yards, at 1s.	884	6	—
To removing 7,500 cubic yards of earth from the above, at 4d.	125	—	—
To digging 3,833 feet of single Canal, 6 feet within soil, chiefly stones and rock, 10,200 cubic yards, at 9d.	382	10	—
To removing the earth from the same, 3,400 cubic yards, at 4d.	56	13	4
To 2,500 feet of double Canal, through swamp and Little Lake, 3 feet deep, 9,722 cubic yards, at 6d.	243	1	—
To 2,500 feet through marsh, 4 feet within soil, 19,185 cubic yards, at 6d.	479	12	6
To 4,819 feet, 6 feet within soil, 42,835 cubic yards, at 4d.	713	16	4
To 7,936 feet of double Canal, 3 feet within soil, 30,862 cubic yards, at 4d.	514	7	4
To 9,100 feet of ditto, 7 ft. 6 in. deep, 108,000 cubic yards	1,800	—	—
To 5,900 ditto, 3 ft. 6 in. in soil, 27,380 cubic yards, at 4d.	456	6	8
To sloping, beating down, and sowing with hay seed the sides of the Canal, at 3d. per square rod	486	9	—

CIVIL:

To a pier at the head of the Canal	500	—	—
To rivetting the sides of the Canal in the Little Lake with cedar pickets, 10 to 12 feet long, furnishing the materials at £. 3. to 10 feet, both sides included	750	—	—
To forming towing paths and roads on both sides of the Canal at £. 4. to every 180 feet	1,173	6	8
To clearing the underwood and trees at 25s. per acre, 90 acres	112	10	—
To building three locks, materials included; at £. 700. each	2,100	—	—
To making sluices and gates for the same	750	—	—
To four main bridges, at £. 125.	500	—	—
To cartage on the whole Canal	500	—	—

The land to be purchased, including cut and cover, is 180.3 acres

Add Contingencies 1-10th

£.	12,527	17	10
	1,352	—	—
£.	13,779	17	10

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

ESTIMATE of the Branch through the *Hay Market* into the *St. Lawrence*,  
by the *Little River*.

	£.	s.	d.
<b>MILITARY :</b>			
To excavating 14,008 cubic yards of single Canal, at 4 d.	233	9	4
To filling in 2,900 cubic yards at 6 d.	72	10	-
<b>CIVIL :</b>			
To constructing two dams at £.200	400	-	-
To 3,836 toises of masonry, at 50s.	9,590	-	-
To a wharf at the Junction of the Canal and St. Lawrence, formed of cedar filled in with stone	500	-	-
To two locks, materials included	1,400	-	-
To locks, gates and sluices	500	-	-
To five bridges	625	-	-
	£.	13,320	19 4
Add Contingencies 1-10th		1,332	- -
		14,652	19 4
The Branch from La Chine		13,779	17 10
	£.	28,432	17 2

Amounting to Twenty-eight Thousand Four Hundred and Thirty-two Pounds Seventeen Shillings and Twopence, Halifax Currency.

(signed) *Samuel Romilly*,  
Captain Royal Engineers.

ESTIMATE of the Lower Branch of the proposed CANAL from *Montreal* to  
*St. Mary's* : (the Navy Store.)

	£.	s.	d.
<b>MILITARY :</b>			
To excavating 10,210 running feet of double Canal, 10 feet within soil, being 176,595 cubic yards, at 4 d. per yard	2,943	5	-
To digging the Branch leading into the St. Lawrence, 39,300 cubic yards, at 5 d. per yard	818	15	-
To sloping, beating down and sowing the sides of the Canal with hayseed, at 3 d. per square rod, 1,323.6 rods	198	10	9 ½
<b>CIVIL :</b>			
To a wharf at the junction of the Canal with the River, from the lowest water-mark to the bank, to be formed of cedar filled in with stone	500	-	-
To 3,525 toises of masonry, from the wharf to the bend of the Canal, at 50 s. per toise	8,812	10	-
To building two locks with masonry, at £.700 each	1,400	-	-
To making and fixing two pair of gates and sluices	500	-	-
To forming towing-paths on both sides, at £.4 per 180 feet, 51 ½ acres	205	6	8
To a large bridge on the main road	200	-	-
To six small ones, at £.125	750	-	-
The land to be purchased, 35 acres.			
	£.	16,328	7 5 ½
Add Contingencies		1,632	- -
	£.	17,960	7 5 ½

Amounting to Seventeen Thousand Nine Hundred and Sixty Pounds Seven Shillings and Fivepence Halfpenny, Halifax Currency.

(signed) *Samuel Romilly*,  
Captain Royal Engineers.

No. 9.—TREASURY MINUTE relative to the Expense of making a Canal from *Upper La Chine* to *Montreal* in *Canada*.

Correspondence  
relative to the  
Canal Communi-  
cation in *Canada*.

Copy of Treasury Minute, dated 30th December 1817.

READ Letter from Mr. Goulburn, dated 20th ultimo, inclosing a despatch from Lieutenant General Sir John C. Sherbrooke, relative to the expense of making a Canal from Upper La Chine to Montreal in Canada. In transmitting these papers Mr. Goulburn strongly urges the opinion of Lord Bathurst as to the expediency and necessity of this undertaking in a political and civil point of view, and states the readiness of the Colony to defray a considerable portion of the expense, in addition to that which they have already advanced for its commencement.

Write to Mr. Goulburn, acquainting him for the information of Earl Bathurst, that if the legislative authorities in Canada will make provision for one-half of the expense attending the construction of this Canal, My Lords will not object to sanction the payment of the remainder out of the Army Extraordinaries.

No. 10.—LETTER from *Henry Goulburn, Esq.* to *George Harrison, Esq.*  
&c. &c. &c.

SIR,

Downing-street, 23d March 1819.

I AM directed by Earl Bathurst to transmit to you the copy of a despatch from the Duke of Richmond, dated Quebec, 14th January, and to request that you will lay the same before the Lords Commissioners of the Treasury, for their Lordships' consideration and decision, as to the degree of encouragement which it may be expedient to afford to the plans developed in this despatch, and its inclosures; you will, at the same time, represent to their Lordships the importance which has long been attached, by every military man, to the formation of a communication between the provinces of Upper and Lower Canada, by the line of the Ottawa.

No. 11.

I am, &c. &c.  
(signed) *Henry Goulburn.*

No. 11.—LETTER from the Duke of *Richmond* to the Right Hon. Earl *Bathurst*,  
&c. &c. &c.

MY LORD,

Quebec, January 14th, 1819.

REFERRING to that part of my despatch No. 13, the 10th November last, respecting the navigation of the Ottawa or Grand River, I have now the honour to transmit a Report made to me by Capt. Mann, of the Staff Corps, whom I directed to survey the Carillon and Long Sault Rapids in October last. From the report of this officer, on whose judgment I have every reason to rely, it appears evident, that all the difficulties which at present obstruct the navigation of the Ottawa may be overcome, at a trouble and expense very trifling compared with the importance and utility of the object to be attained; an importance of which the people of this province are so convinced, that I have little doubt one half at least of the proposed expense will be cheerfully defrayed by themselves.

No. 13.

If your Lordship concurs with me in this view, I propose employing the Staff Corps on the Ottawa as soon as the weather will admit next spring, and joining to them the assistance of such labourers as the sum appropriated to the object and the country itself will admit of our procuring.

With Capt. Mann's Report I have the honour to transmit another from Lieut.-Colonel Cockburn, Deputy Quartermaster General, on the subject of the military settlement in the neighbourhood of the Rideau, and pointing out the communication

No. 12.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

which may be established in that direction between La Chine and Kingston, your Lordship will observe, that owing probably to Capt. Mann's Report on the Ottawa not having reached head quarters at the time the Quartermaster General's was made, he is less sanguine as to the facility of improving the navigation of the Carillion and Long Sault Rapids than I think myself justified in being. Both land and water communications in that direction appear of the utmost importance, and both may, I am convinced, be obtained with great ease.

With regard to the general policy of continuing our exertions to form a loyal and war-like population on the banks of the Rideau and Ottawa, I entirely agree with Col. Cockburn, and I know of no measures more likely to conduce to this desirable object than those recommended in the two Reports I now transmit.

I have the honour, &c.

(signed)

Richmond.

No. 12.—REPORT on the Military Settlement in the Neighbourhood of the Rideau, pointing out the Communication which may be established in that direction between *La Chine* and *Kingston*, by Lieut. General *Cockburn*.

FROM *La Chine*, which is nine miles from Montreal, and the general place of embarkation for Upper Canada, to the foot of the Chaudiere Rapids on the Grand or Ottawa River, is a distance of about 110 miles; and the rapids of *St. Anne's*, and the Long Sault excepted, perfectly easy of navigation.

*St. Anne's Rapids.*

The rapid of *St. Anne's* is about 16 miles from *La Chine*, and, though swift and shallow, of so short a continuance, as not to offer any serious impediment in ascending the river.

*Long Sault Rapids.*

The Long Sault Rapids commence about 35 miles from *La Chine*, and extend in a more or less violent degree, for a connected distance of 12 miles: the batteaux are obliged to unload at the foot of these rapids, and, thus lightened, are poled up without risk, although it generally takes from one to two days to ascend the whole of the 12 miles.

The cargoes are carted over the portage at a moderate expense, the road being good. Should it ever be deemed expedient to improve this part of the river communication, the expense will, I fear, be very much increased, on account of the great rise and fall of water which takes place in the Ottawa at the different seasons of the year.

The River Rideau falls into the Ottawa about 110 miles from *La Chine*, and one mile below the falls of the Chaudiere.

Road from the  
Landing to Rich-  
mond.

The place fixed on for the landing of all articles going to the new settlement at Richmond, is in a small but remarkably fine bay, situated just below the Chaudiere falls; from this bay to the village of Richmond, is a distance of about 21 miles, and by the great exertion of Captain Burke (the Secretary) and the settlers, a very good road has been made from the one place to the other.

Village of Rich-  
mond.

The spot fixed upon for the village of Richmond, is in the north-east angle of the township of Goulburn; and its establishment promises to render the greatest possible assistance in the important object of obtaining throughout the new military townships an industrious and loyal population. The settlers from Perth had, from their great and increasing numbers, been unavoidably placed so far from that village, as to render their occasional visits to it difficult in the extreme; and had the disbanded soldiers of the 99th been put down there, the want of roads, and the distance they must have travelled through the woods to have obtained their provisions, would have been tantamount to withholding the indulgence of rations from them altogether.

It was under these considerations, that the late Commander of the Forces so strongly recommended to his Grace the Duke of Richmond the formation of a new establishment in the township of Goulburn; and I am sincerely happy in being able to state, that the most sanguine expectations respecting its utility have been  
amply

amply fulfilled. Four hundred heads of families have already been located in the vicinity of Richmond. Several houses are building in the village, and seven or eight half-pay officers have fixed upon it as their future place of residence.

Correspondence relative to the Canal Communication in Canada.

The road, or rather the tract, which is opening between Richmond and Perth, runs in the direction of the base line of the new military townships, and, generally speaking, about two miles from it. It is on this road, and, as nearly as circumstances will admit, in the centre of the township of Beckwith, that a provision store is to be built. The road will be sufficiently opened in the course of a month, to admit of sleighs passing over it during the winter; and I would earnestly recommend that an expenditure of three or four hundred pounds, exclusive of two or three months' rations of provisions and rum, might be allowed for the payment and subsistence of about 80 men, to be employed in making it passable for waggons during the summer.

Road from Richmond to Perth.

A reference to the accompanying Plan will show, that when this road is opened, and a provision store built in Beckwith, each of the new townships will be equally eligible for settlement; and thus a very large proportion of land will be anxiously sought after, which the settlers have hitherto been averse to being placed on.

The total of men, women and children, located under the direction of the Quartermaster General's Department in the Rideau Settlement, is from 4 to 5,000, and, great as that number may appear, I have no doubt it would, ere this, have doubled its present amount, had the village of Richmond been established at the same time with that of Perth, and the road of communication, now proposed, been immediately opened.

Population.

That the continuance of this system must produce a continuance of expense, I am fully aware; but when the advantages to be derived from its furtherance are taken into consideration, I cannot but hope the means of extending it will be sanctioned and approved.

Every person who has looked at these Provinces in a military point of view, has immediately perceived the importance of a communication being established in the direction of the Rivers Ottawa and Rideau; were the latter made navigable, it would materially enhance the value of this communication, but the expense of doing so would (from personal observation) I think, be too great to admit of its being commenced on at the present moment; and it is under this impression that I see more strongly the advantage of opening the road between Richmond and Perth, which, if ultimately continued on to Kingston, would not only add to the trade and welfare of that important town, but would establish a communication between Upper and Lower Canada, distinct from the St. Lawrence, and at the same time insure prosperity to the military settlements. Another great advantage to be derived from the military settlements is, that from the number of meritorious officers and soldiers living there, a militia force will always be produced so respectable, both as to numbers and discipline, as to afford protection to that part of the St. Lawrence, at the back of which the new townships have been laid out.

Communication from Lower Canada to Kingston, in direction of Ottawa and Rideau Rivers.

Advantage to be derived from Militia of Military Settlement.

The events of the last war did most clearly evince that the inhabitants of the more distant parts of Upper Canada (I allude to the neighbourhood of Lake Erie), were not only useless as to the general defence of the province, but were unequal even to the protection of their own property; for many of them suffered severe and heavy losses from the incursions and plunder of the enemy, for which they are, I understand, now seeking remuneration from Government. How much more advantageous therefore must it be, to put the emigrants who may arrive from England on lands at the military settlements, than to scatter them in small numbers, as heretofore, in the different parts of the province!

The very situation of the country in the vicinity of the Rideau, bounded as it is by the Ottawa and St. Lawrence, points it out, under every consideration, as the most eligible in the two Canadas for settlement; and if it meets the views of Government to authorize a certain expenditure in provisions, for the assistance of the poorer class of emigrants who may come out, I am persuaded the population at the settlements might be increased to any amount to which it may be deemed advisable to extend it.

Advantageous situation of Military Townships.

To receive the poorer class of emigrants, however, without giving them some assistance in provisions, experience has shown to be both cruel and impolitic; and

The poorer class of Settlers must be assisted, or not received.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

I feel warranted in humbly recommending that this description of encouragement should be given.

Deputy Quartermaster General's Office,  
Quebec, November 26th, 1818.

*Fra<sup>t</sup> Cockburn,*  
L<sup>t</sup> Col<sup>l</sup> and Dep<sup>t</sup> Q<sup>r</sup> Master Gen<sup>l</sup>.

No. 13. REPORT on the Navigation of the *Ottawa or Grand River*, ascending from *Point Fortune* to the head of the *Long Sault*; with Observations on the means of improving it, or rendering it practicable for loaded Batteaux, Gun Boats, &c. Surveyed in October 1818; by Captain *J. W. Mann*.

Carillion Rapids.

THE first obstructions, in ascending this part of the Ottawa River, are the Carillion Rapids, which commence at Point Fortune, and extend about one mile and a quarter: the water during the autumn is, in most parts, extremely shallow, particularly near the banks of the river, and at the head and foot of the rapids on the north side, the level at this season being generally seven or eight feet lower than in spring. Batteaux, having great labour to ascend, take out part of their cargoes, which is conveyed by land to the head of the Long Sault. The channel is on the south side, but there are few parts of it sufficiently near the shore to admit of their being assisted from thence by a tow-rope, as will appear by the soundings laid down in the Plan; there being, however, fewer obstructions on this side, it is the best for any works connected with the river that would facilitate the navigations; but there cannot be much improvement made to it without incurring considerable expense, as the great variation of the levels, at different seasons, would render it necessary, if locks were constructed, to raise the walls extremely high. Should a tow-path be constructed, it must be useless, except for two or three months in the year; and the bed of the river being a flat rock, there would be great labour in any excavations that might be necessary. A bank of stones has been thrown up on the south shore, which forms a canal, into which batteaux are admitted by a lock; but as the bank does not retain the water, and the lock is not sufficiently deep, this work is, during the autumn, rather an obstruction than an assistance to the navigation. It would, therefore, I think, be advisable, if the lock was not altogether removed, to make an open passage through the bank, or to construct one higher up, at A, where there is sufficient water; from which place, to the head of the rapid, I propose bringing the channel near enough to the shore, that batteaux may be assisted from thence by a tow-rope; this may be done by removing the stones and excavating the rock; but where the latter cannot be effected, I would recommend catch waters being thrown out to turn the stream, and consequently give a greater depth of water near the shore. With these improvements, loaded batteaux may ascend with ease, providing two or more are in company, the crews assisting each other at the most difficult places. The probable expense of these works would be, for the lock (if constructed, and of the same description as the one before mentioned) £. 400; for the excavation and catch-waters, judging by the soundings, the parts that require improvement, and the price of similar works on the river, £. 800, making together a total of £. 1,200.

£. 1,200.

Chûte à Blonde.

After passing the Carillion Rapids, the next obstruction is the Chûte à Blonde, distant about four miles; the current being strong, batteaux ascend with some difficulty; but there is a sufficient depth of water near the shore on the south side, except at the upper and lower parts of the rapid; but these places would admit of being deepened without much labour. The difference between spring and autumn is about eight feet, the distance from the head to the foot of the rapid half a mile, and the fall three feet eleven inches. On the north side, between the island and main land, the fall is much more sudden, from which circumstance, as well as the water being shallow, this channel is never used except during the spring. The only works which would completely remove the difficulties in passing this rapid, appear to be either a canal on the north side (taking advantage of the ravine nearly parallel with the river), or by throwing a dam across the north channel, as represented in the Plan (A.) (B.) in which a lock might be placed; but as there would in the first case be a great deal of rock to cut through from the end of the ravine to the foot of the rapid, besides the excavation necessary in the ravine, the expense of this work would probably not be compensated by the advantages resulting from it. The dam across the channel could not either be constructed without considerable expense, on account of the

the great rise of water in the spring; I therefore think the only work advisable would be, to remove the obstructions already mentioned in the south channel, and to form a towing-path for the spring, by levelling the top of the adjacent bank, the flat rock under the bank answering this purpose the rest of the year; with these improvements loaded batteaux may ascend, by the crews assisting each other, as recommended for the Carillon Rapids: the probable expense of these works would be about £. 200.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

£. 200.

From the head of this rapid to Bois Brulé, on the foot of the Long Sault, the current is very gentle; but batteaux have some difficulty in ascending at the openings of the navigation, on account of the ice which collects at this part of the river in great quantities.

From the Chûte  
à Blonde to Bois  
Brulé.

From Bois Brulé there is a strong rapid to the head of Stoddard's Island, which is extremely difficult to ascend, particularly the upper part. The channel in the spring is on the north bank of the river; during the summer on the south, passing between the island and main land; and in the autumn on the same bank to the foot of the island, and from thence to the head of the rapid on the north side of the island. The navigation of this part of the river does not appear susceptible of any material improvement; the construction of a towing-path I would not propose, there being nearly the same variation in the height of the water, at different seasons, as at the rapids before-mentioned; the upper part might be avoided by taking advantage of the still water between Stoddard's Island and the south shore, ascending the falls, marked in the Plan (C.) and (D.); but as there would be the same objection to locks as before stated (owing to the rise of water in the spring, and a great deal of rock to excavate, as well as large stones to remove), the construction of these works does not appear advisable.

From Bois Brulé  
to the head of  
Stoddard's Island.

The part of the river between Stoddard's Island and the Trois Roches, an extent of two miles and a half, can be ascended by loaded batteaux, but not without some difficulty, as there are several short rapids to pass; some improvement, however, might be made without much expense, by clearing away the large stones which obstruct the passage. The channel is on the north bank during the spring, but on account of the numerous shoals, batteaux ascend the rest of the season on the south bank.

Between Stoddard's  
Island and the  
Trois Roches.

From the Trois Roches to the head of the Long Sault, a distance of three quarters of a mile, there is a continued rapid; the numerous rocks which cover the bed of the river, and the great strength of the current, particularly at the head of the rapid, render the greatest exertions necessary to get up a batteaux, even without her lading: these difficulties might, however, in a great degree be obviated, by taking advantage of the still water between the south shore and opposite island, entering at the dam (E.) (represented in the sketch) by means of locks, an opening having been left in it for this purpose by the proprietor Mr. Hamilton; but the whole of the rapid might be avoided by clearing a channel from (F.) at the Trois Roches, to the still water at (G.) ascending by locks; but as the water finds a passage over the whole of this ground during the spring, the construction of a dam would be necessary from (H.) to the high ground at (I.) in continuation of one begun by Mr. Hamilton; this circumstance, together with the parts that would require excavating; being chiefly rock, would occasion great labour. These works, with what has been said respecting the improvement above the Chûte à Blonde, have been mentioned, as they appear the only means of facilitating the navigation, without incurring the expense, of a Canal; but as the works at the head of the Long Sault, in addition to the objections already stated, would be rendered useless in the event of any accident occurring to the dam (E.) and as it does not appear that the difficulties at Stoddard's Island can be removed, nor that any material improvements can be made at the other rapids, the construction of a Canal on the north side of the river, about five miles and a half in extent, by which the whole of the Long Sault would be avoided, appears the work most to be recommended. This side is preferred; the ground being less rocky than the opposite, and there being a stream running nearly in a parallel direction to the river for about two miles; and as there does not seem any great variation in the level of the ground, there would be no difficulty in procuring the necessary supply of water from the upper part of the river; the only lockage therefore required would be, for the difference of level between the parts of the river into which the Canal would open, which appears by the tables on the Plan to be 47 feet, including five

From the Trois  
Roches to the head  
of the Long Sault.

Correspondence  
relative to the  
Canal Communication in Canada.

£. 4,340.

feet for the parts between the rapids; allowing also 15 feet for the greatest rise in the spring, the total lockage required would be 62 feet: the probable expense therefore of this part of the work, allowing £. 47 per foot rise, would amount to £. 4,340. As there would be some high ground to cut through near the head of the rapid, and probably some embankments to make near the Bois Brulé, as well as clearing the land, &c. the expense of this part of the work would be very considerable; but no accurate estimate could be made, unless the exact course of the Canal was determined upon by sections of the ground and the nature of the soil; but, judging from the general appearance of the country, and the expense of other works of this description, the amount would probably be about £. 11,000, which, with £. 4,340 for lockage, would make a sum of £. 15,340 for the canal; and adding £. 1,200 for the proposed works at the Carillon Rapids, and £. 200 for those at the Châte à Blonde, the whole expense of the improvements would amount to £. 16,740.

J. W. Mann,  
Captain Royal Staff Corps.

No. 14.—TREASURY MINUTE relative to the Communication between  
*Upper and Lower Canada, by means of the Ottawa or Grand-River.*

Copy of Treasury Minute of 25 May 1819.

READ Letter from Mr. Goulburn, of the 23d March last, transmitting copy of a despatch from the Duke of Richmond, with Plans, and a Report from Captain Mann, of the Staff Corps, for the improvement of the communication between Upper and Lower Canada, by means of the Ottawa or Grand River.

Write to Mr. Goulburn, acquainting him, for the information of Earl Bathurst, that My Lords will not object to sanctioning the execution of the several works proposed for the formation of a communication between the provinces of Upper and Lower Canada, by the line of the Ottawa, as detailed in Captain Mann's Report, provided the Colonial Legislatures will take measures for the payment of a moiety of the expense, in which case My Lords will authorize the payment of the Crown's moiety out of Army Extraordinaries.

No. 15.—LETTER from *Henry Goulburn, Esq.* to *George Harrison, Esq.*  
&c. &c. &c.

SIR,

Downing Street, 26th July 1819.

No. 16.

I AM directed by Lord Bathurst to transmit to you the copy of a despatch from his Grace the Duke of Richmond, dated 20th May last, reporting the arrangements which are in progress for improving the Water Communication between Upper and Lower Canada, and I am to request that you will lay the same before the Lords Commissioners of the Treasury, for their information and opinion.

I am, Sir,

Your most obedient servant,  
*Henry Goulburn.*

No. 16.—LETTER from the Duke of *Richmond* to the Right Hon. Earl *Bathurst*,  
&c. &c. &c.

MY LORD,

Quebec, May 20th, 1819.

WITH reference to your despatch, No. 156, April 3d, 1818, to Sir John Sherbrooke, conveying the authority of the Lords Commissioners of His Majesty's Treasury for the payment, from the Army Extraordinaries, of one-half of the expense of constructing a Canal from Montreal to La Chine, I have now the honour to inform your Lordship, that being deeply impressed with the importance of carrying into execution the works necessary for the improvement of the Water communication

communication between the Upper and Lower Provinces, I have not failed to use every exertion to prevail on the Legislature to complete such arrangements for this purpose as more immediately depended on themselves.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

A Bill, containing the provisions necessary for the La Chine Canal, did accordingly pass both Houses during the last Session, and the sum of £.10,000, to be vested in 200 shares of £.500 each, was voted by the House of Assembly. The appropriation of a further sum of £.25,000, and of £.10,000 per annum for the next six years, for the improvement of the navigation of the Ottawa River, passed through two readings without opposition; and, had not circumstances rendered a prorogation necessary, I have no doubt it would have been carried.

The estimate transmitted by Sir John Sherbrooke, to which your Lordship's letter of April 1818 is an answer, having amounted to £.50,000, I have considered myself authorized to appropriate £.25,000 from the Army Extraordinaries to these works; and I have accordingly taken 300 shares of £.50 each (£.15,000) in the La Chine Canal; and having every reason to believe that the vote of the House of Assembly for the Ottawa will be confirmed next year, I shall, unless I receive directions to the contrary, employ the remaining £.10,000 in carrying on the projected improvements on that river; I have accordingly directed Captain Mann, whose survey I transmitted to your Lordship in January last, to proceed with that work, as far as the limited means of his own detachment will allow; and I hope to be able to assist him from time to time, by sending up a certain number of such labourers as we may be able to select from the emigrants, who will probably arrive during the summer, and to whom a few months' immediate employment is an object of great importance, and who may by these means be prevented from passing into the United States.

I have the honour to be, &c.

(signed) *Richmond.*

*P. S.*—I have been the less unwilling to vest these sums in the manner proposed, by taking shares in the La Chine Canal in preference to sinking the money, from the circumstance of the tolls of the locks at the cascades having produced last year nearly £.1,300 after deducting every expense of overseers, &c. &c. &c.

No. 17.—Copy of TREASURY MINUTE, dated 13th August 1819.

MY LORDS resume the consideration of Mr. Goulburn's letter of 20th November 1817, and its enclosures, upon this subject; and read their Minute of the 30th December 1817 thereon, sanctioning the payment of one-half of the expense of this Canal out of the Army Extraordinaries, provided the legislative authorities would make provision for the remaining half thereof.

Write to Mr. Goulburn, acquainting him, for the information of Earl Bathurst, that, as it appears from the Duke of Richmond's despatch, that the sum of £.10,000 has already been voted by the legislature of Canada, and that there is every reason to believe that the sum of £.25,000 and £.10,000 per annum for the next six years will be voted for this service in the next year.

No. 18.—LETTER from *R. Wilmot Horton, Esq.* to *George Harrison, Esq.*  
&c. &c. &c.

SIR,

Downing-street, 10th December 1823.

WITH reference to the communications which have been addressed to you from this department, particularly by Mr. Goulburn's letters of the 20th November 1817 and 23d March 1819, on the subject of improving the Water Communication between Upper and Lower Canada, I am directed by Lord Bathurst to acquaint you with the progress which has been made in carrying this important work into execution, and the necessity of forwarding further instructions to Lord Dalhousie for his guidance.

No. 5 & 10.

In the year 1821 an Act passed the legislature of Lower Canada, appropriating £.35,000 to the La Chine Canal, and granting free passage to all boats in His

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Majesty's service, on condition of an aid of £.10,000 to the above sum, which has accordingly been paid by Lord Dalhousie; and the sum of £.25,000 has been applied to the works of the Grenville Canal on the Ottawa.

Their Lordships are aware that the improvement of the Water Communication is to be effected by two canals; the one at La Chine, near Montreal, and the other in the township of Grenville, on the Ottawa. They must be considered as two distinct works, the former belonging to the civil government of the province, and to be defrayed from provincial funds, the other military, and wholly executed by that branch of His Majesty's service.

The estimates have, from unforeseen difficulties, fallen far short of the expense that will be necessary to complete either work; but as it is generally supposed that the Legislature will grant further aid to the La Chine Canal, Lord Dalhousie recommends that His Majesty's Government should decline further co-operation in it, making however the Grenville Canal a work of annual progress, as part of the military expenditure.

The sum of £.25,000, which has already been expended on the Grenville Canal, covers every item of expense, including rations, &c. The most scrupulous attention has been paid to economy, and the work has been very ably conducted by Captain Du Vernet of the staff corps. It appears, however, that it will require a further sum of £.24,000 to complete it; but Lord Dalhousie states that sum as sufficient, at the rate of £.8,000 per annum for three years.

I am therefore directed by Lord Bathurst to request that you will bring the subject under the early consideration of the Lords Commissioners of the Treasury, and he feels himself justified in earnestly pressing the completion of this work; that the Canal, at no distant period, will largely repay by toll the full interest of its cost; and it is also to be recollected, that in its progress it furnishes employment to many hundred starving emigrants, enabling them to settle lands in the neighbourhood, and that it will eventually greatly advance the settlement of all the country between it and Kingston, which is at present an immense wilderness and forest. It is hardly necessary further to remind their Lordships, that to discontinue the work at this late period, would be to incur a loss of all the money already expended, with the addition of a claim for compensation on the part of those proprietors of land through whose property it has been carried.

I am, Sir,

Your most obedient humble Servant,

*R. Wilmot Horton.*

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No. 19.—TREASURY MINUTE, authorizing the completion of the Works on the Grenville Canal.

Copy of Treasury Minute, dated 9th April 1824.

MY LORDS resume the consideration of Mr. Goulburn's letters of the 20th November 1817, and 23d March and 26th July 1819, upon this subject, and read their Minutes of the 30th December 1817, and 25th May and 13th August 1819, thereon.

Write to Mr. Wilmot Horton, acquainting him, for the information of Earl Bathurst, that My Lords entirely concur in the view taken by his Lordship of the importance of this work, and of its completion within the period stated by the Earl of Dalhousie; and request he will move Earl Bathurst to make such communication to the Earl of Dalhousie as he may deem expedient. Transmit to him also a copy of Lord Dalhousie's letter of the 17th December last, and acquaint him, for the information of Earl Bathurst, that, under the circumstances stated, My Lords have directed their sanction of this expenditure to be conveyed to his Lordship.

Write to the Earl of Dalhousie, acquainting him, in reply to his said letter of 17th December last, that, under the circumstances stated, My Lords are pleased to sanction the expenditure in question.

No. 20.—LETTER from *R. Wilmot Horton, Esq.* to *George Harrison, Esq.*  
&c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

SIR,

Downing-street, 14th May 1824.

I AM directed by Lord Bathurst to transmit to you the copy of a letter from Lieut.-General the Earl of Dalhousie, dated the 3d February last, stating the progress which has been made in improving the Water Communication in Canada, by means of the La Chine and Grenville Canals; and I am to desire that you will lay the same before the Lords Commissioners of the Treasury for their Lordships' information.

No. 21.

I am, Sir,

Your most obedient Servant,

(signed) *R. W. Horton.*

No. 21.—LETTER from *Earl Dalhousie* to *R. Wilmot Horton, Esq.*

&c. &c. &c.

SIR,

Quebec, 3d February 1824.

BY the last mail I had the honour to receive your letter of the 10th November last, covering a memorandum on the Water Communication between Upper and Lower Canada, by the La Chine and Grenville Canals, and requesting such further information on the subject as I may consider necessary.

The memorandum which, agreeably to your request, is herewith returned, is so perfectly clear and correct (except in stating one of the Canals to be in Upper Canada, both being in the Lower Province), that I can add little to it beyond a copy of the Report made by the officer who has been employed on the work during the last summer, which I hope will prove satisfactory to Lord Bathurst.

No. 23.

No. 22.

Capt. Du Vernet,  
Royal Staff Corps.

Upon the whole line of the Grenville Canal, which I went to inspect myself in September last, I found the work admirably executed. The extent is about six miles, generally through a bed of rock lying horizontal, so that the bottom of the Canal is flat and secure, while the sides afford extraordinary facility for disembarking on regular ascending steps.

On the bank is an excellent broad road, or towing-path, which will naturally become the great leading road through that part of the country. One mile remains to be excavated in the present year, and the locks will be commenced. In 1825 I hope and expect to have it laid open for the public use.

Upon the La Chine Canal the works have been carried on with great spirit. In this last summer about *nine* miles of the *twelve* were opened and flooded, with locks completed, of the finest masonry I ever saw; and the remainder will be proceeded upon in 1824.

The Provincial Legislature in 1823 voted 12,000*l.* in addition to the 46,000*l.*; and it is expected that a further vote of 20,000*l.* will be made in this session. But be that or not, there is not a doubt but it will be completed; and I have every reason still to urge that His Majesty's Government will proceed upon the Grenville Canal as a work of the greatest importance, and as one that will ultimately repay the expenditure.

The effects of it are already felt by considerable trade going up the higher districts on the Ottawa, and a steam-boat actually running from the head of the Canal to Hull every second day through the summer.

I have the honour, &c.

(signed) *Dalhousie,*

Commander of the Forces.

No. 22.—REPORT of the Progress made with the *Grenville Canal*,  
for the year 1823.

OWING to the spring having been unusually cold and wet, and that it was late before any number of workmen came to hire themselves on the public works, nearly the whole of the first month, after the detachment went up to Grenville, was occupied in repairs of the tools and materials, and making preparations for commencing with vigour, as soon as a sufficient number of workmen could be collected. The water having been very high this season (within nine inches of what it was last spring), and a long time before the flood subsided, nothing could be done in the low ground at the head of the Canal, until the latter end of July; but the water was at the end of September nearly as low as it was in the autumn of 1819, when it was supposed to be at the lowest it ever is.

The first part begun upon this season, was opposite, at the head of the rapid, to the left of the road leading to the point, the whole of which distance is rock, and required to be cut from seventeen to twenty-two, and in one place about thirty feet in depth. The slopes on each side were taken off this summer, for the whole distance, partly carried to extreme depth, and widened eight feet on the upper part, in order to leave sufficient width for boats to pass near the lock: as soon as it was possible, after the water left the swamps, the parties employed on this spot were taken off, as it was of consequence to get the upper part finished whilst the water was low, upon which every exertion was made; but it could not be completed more than two-thirds of the distance, the part next the road being entirely of solid rock; but, having worked at it to the very last, and taken out a great deal of the soil at the entrance, below the level of the low water, I had just time to finish a dam of framed timber, when the rising of the water and a high wind destroyed the sheet piling at the head of the Canal, and prevented the completion of this entrance; but so much was done, that the remainder can be early got out, whilst the water is warm the next autumn, with dredges: this dam will save the necessity of pumping the water off the finished part, which is of considerable length, and is intended to remain until the lock is built; the short distance between which can, at any time when the water is low, be laid down with little difficulty. At the lower extremity of the Canal, the work was resumed on the land of Allan and Duncan Cameron, and carried on nearly to the fence of Owen Owens, where the second level will run out. A third lock of a six feet lift will be placed the distance of about two hundred yards, almost all of which is brought to the proper depth, except the building stone is found; and for a short distance on Green's lot, from Owen's Farm to the end of the Canal, the ground has a very bad appearance, being covered with large granite rocks the whole distance, the removing of which will be very difficult and expensive. The whole of this distance (a mile and a quarter) and as far as Green's lot, was in forest, and has been cleared of the timber this year, and fenced off on both sides. The lands under cultivation have also, for the greater part, been fenced off, and the whole, from one end to the other, will be so in the spring, after which it will be necessary to have some penalties enacted for pulling down the fences, and turning cattle on the Canal premises, without which it will be impossible that the banks can be kept in order. About 4,500 square feet of stone, of good quality and size, has been already got out and worked; and I am of opinion sufficient may be obtained at this spot for the head lock, and hollow coirs, &c. for the second, for which there is enough square stone lying near it, but not of so good a quality or large as that which has been discovered lower down in the Canal.

Opposite the gulley, on the first lot of Grenville, a wall has been built, to break the force of the water which comes down it in the spring, and being admitted into the Canal; a sluice is built on the opposite side, to allow the surplus of water to escape when the height of the water will admit of it; and another will be required near Green's Rivulet, to be used when this cannot, which it is supposed will very rarely be the case. Besides the quantity of lime which was burnt in 1822, of which I took no account, 1,272 bushels have been made this year, of which 599 have been used; and it appears that 3,952 bushels of charcoal have also been made by men I left at Grenville for the purpose, to be ready on our return next spring. Besides the numerous repairs, 150 new wheel-barrows, fifty hand-barrows, two screw-pumps, one waggon, and two stone carts, a stone guard-house, a bridge, and a variety of other work has been done by the artificers of the detachment.

(signed) *Henry Du Vernet*,  
Capt. Royal Staff Corps.

No. 23.—EXTRACT of a Report to His Grace the Duke of *Wellington* relative to the BRITISH NORTH AMERICAN PROVINCES; by a Commission, of which Major-Gen. Sir *James Carmichael Smyth* was President. Dated 9th Sept. 1825.

### THE RIDEAU CANAL.

THE mouth of the Rideau falls over a precipice thirty feet high into the Ottawa, forming a very beautiful and regular cascade, not unlike a curtain, from whence it has derived its name. This fall may, however, be easily turned, and the mouth of the proposed Canal be made to enter by a small bay a few hundred yards lower down the Ottawa than the mouth of the Rideau.

There appears to be no difficulty whatever with respect to a Canal from the Ottawa to Kingston, by the Rideau River, the Rideau Lake, the Mud Lake, Cranberry Marsh, and Kingston Mill Stream. The whole extent of the communication would be 132 miles. The line has been carefully surveyed, and estimates of the expense have been formed by order of the Provincial Government. The other line mentioned in your Grace's instructions by Kyles Bridge and the Irish Creek, although somewhat shorter, could not be undertaken for want of water.

Three different estimates have been formed for the proposed Canal, varying according to the dimensions that may be adopted. That which amounts to £. 145,000, corresponds, as to the size of the Canal, with those of Grenville and La Chine, and of course would be the one to be selected. The locks are, however, only estimated at fifteen feet broad by eighty feet in length. The length does not so much signify; but it is indispensable that they should have the same breadth, (namely, twenty feet) as the Grenville and La Chine locks. It would be better, indeed, that they should agree exactly: this, of course, would cause an additional expense. We have estimated that £. 24,000 would cover this alteration; making a total for the Water Communication between Kingston and the Ottawa, of £. 169,000.

In compliance with your Grace's commands, we have endeavoured to ascertain what assistance, if any, could be procured from the Provincial Government towards carrying on this important work, whether viewed in a military or a political point of view, into effect. We regret, however, to say, that there does not appear to be the slightest chance of any pecuniary aid from the Province. The settlers are very poor, and the Province of Upper Canada is yet in its infancy. The Province of Lower Canada is much wealthier, and was able to undertake the La Chine Canal, the profits of which were evident, and will amply repay in time both capital and interest. The profits upon the Rideau Canal are more remote, and the Province is not able to advance such a sum of money.

It has occurred to us, that the only possible mode of having the Canal executed will be, for the British Government to undertake it, and to complete the whole of the Water Communication from the St. Ann's Rapids, near Montreal, to Kingston, by the Ottawa and the Rideau, upon the same scale as already has been commenced upon at Grenville. In addition to the £. 60,000 already allotted for that part at Grenville, there would be required the £. 169,000 wanted for the Rideau, and the £. 50,000 which at any rate must be advanced to get the better of the Carillon, Châte à Blondeau, and the St. Ann's Rapids, before any benefit can be derived from the money now expending at Grenville. The whole of this Water Communication would thus cost £. 279,000; but as it would be entirely in the hands of Government, the tolls would of course be collected on account of the Treasury; and in proportion to the rising prosperity and increasing commerce of the Province, the money advanced might be expected to be repaid. Excepting it is undertaken by His Majesty's Government, we are afraid it will never be executed. Companies are forming; and cheap and temporary expedients are likely to be resorted to for improving the navigation of the St. Lawrence, in order to enable the produce from Lake Ontario to be forwarded to Montreal and Quebec with less trouble and risk than at present. The important advantages of such a communication in the rear of the frontier, are not likely to be appreciated by the bulk of the inhabitants of the Province; nor is it probable, that for the attainment of a remote good, they will agree to any tax or immediate pecuniary loss.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 24.—EXTRACT of a REPORT of the Joint Committee appointed to report on the proposed WATER COMMUNICATION in Canada.

THE Joint Committee appointed to confer upon the improvement of the internal navigation of this Province, have had before them the several Reports of the Commissioners appointed under the Provincial Statute 2 Geo IV. c. 2, which they have read with great interest; and especially the third or last Report, accompanied with an able and very judicious letter, addressed by Mr. M' Auley, the President, to Mr. Gordon, one of the Members of the Board, and submitted by the latter to the Committee.

All these papers are subjoined to this Report in an appendix, and the Committee have much satisfaction in calling attention to them, as to documents which are in their opinion highly creditable to the zeal and intelligence of the Commissioners.

With respect to the Estimates in detail, however important it is to ascertain their accuracy, it can scarcely be expected that the Committee can of their own knowledge either verify or discredit them, or in fact that they can do any thing more than express their judgment as to the degree of confidence they appear entitled to from the means which were employed in procuring them.

On this point the Committee are happy to believe there is no ground to discourage a reliance on their general accuracy. On the contrary Mr. Clowes, after the experience the Commissioners have had of him, appears to possess fully their good opinion of his professional knowledge and of his respectable character; and the Committee find no reason to apprehend that the result of his surveys would not be found generally correct, except that as in all similar undertakings of great extent there is a chance that obstacles might present themselves in the progress of the work, which it is not always possible to discover or foresee.

The probability of some obstacles occurring which would enhance the cost, is perhaps too great to admit of its being safely kept out of view in any case; but as this is purely a contingency, and no calculation can possibly be made to meet it, the estimates must necessarily be assumed to be in the main correct, in the absence of any known reason for suspecting their accuracy.

To these Reports the Committee therefore refer, as containing the best, and in truth the only satisfactory information it is in their power to present, as to the means of improving the internal navigation of this province; and indeed in the observations contained in the Reports, so comprehensive a view is taken of the subject, and the public interests involved in it are discussed with so much candour and judgment, that the Committee would unwillingly bespeak attention to any attempt of theirs to reason minutely upon the same points with less advantage of leisure and far less opportunities of knowledge.

After examining these Estimates and Reports, the considerations remaining to be weighed are, the probable influence of the projected improvements upon our security and welfare, the scale on which they should be attempted, the expense at which they can be accomplished, and the means of meeting that expense, the time at which they may and ought to be undertaken, and in what order.

Upon all these points the Commissioners have offered very valuable remarks, and the Committee may, without any censurable failure in their duty, forbear much additional observation of their own, upon points upon which great diversity of opinion will undoubtedly prevail, however much they may be discussed, because they involve considerations so various in their nature, and so combined a view must be taken of the several questions, that it would be vain to pretend to demonstrate satisfactorily the precise conclusion to which the suggestions of the Commissioners ought, under all circumstances, to lead.

That a Canal from Kingston to the Ottawa River, would in the event of a war, not merely diminish beyond measure the charge of our defence, but render its success greatly more certain, admits of no doubt. Happily present appearances indicate no interruption of the good understanding between Great Britain and America; on the contrary they afford a well grounded hope of its permanence, but without bringing probabilities into discussion, it may be affirmed that it would be most imprudent to reckon securely on a very long continuance of peace.

In

In the event of a war protracted as the last, the safety and the saving of transport conducted by such a channel, would, it is believed, fully compensate to the nation the charge of the improvement; and it is most evident, that to give full effect to the sound and liberal policy which has created the military settlements on the Rideau, and introduced, since the war, a loyal population of more than 10,000 souls where there was before no inhabitant, and which is now surmounting, at a considerable expense, the interruption of the navigation of the Ottawa, it is necessary, to perfect the Water Communication, removed from the enemy's frontier, and leading, in truth, from the ocean to Kingston, which is the key to Lake Ontario and the principal military station in the province.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

With respect to the Canal from Kingston to the Ottawa, it remains an important and somewhat difficult question. The comparative expense is on a scale of 7 feet in depth, 40 feet in width at the bottom, and 61 feet in width at the surface of the water, the banks to slope  $1\frac{1}{2}$  foot to 1 foot perpendicular; the locks to be of stone, and 100 feet in length by 22 feet in width, with turning bridges, with 22 feet in the clear, and 10 feet wide: cost, £. 230,785. 14.  $1\frac{1}{2}$ .

On a scale of 5 feet in depth, 28 feet in width at the bottom, and 48 feet in width at the surface of the water; the banks to slope 2 feet to 1 foot perpendicular; the locks to be of stone, and 80 feet in length by 15 in width, with turning bridges, 15 feet in the clear, and 10 feet wide: cost, £. 145,802. 7.  $8\frac{1}{2}$ .

On a scale of 4 feet in depth, 20 feet in width at the bottom and 32 feet in width at the surface of the water, the banks to slope  $1\frac{1}{2}$  feet to 1 foot perpendicular; the locks to be of wood, and 75 feet in length by 10 feet in breadth, with turning bridges, 10 feet in the clear, and 10 feet wide: cost, £. 62,258. 8. 10.

A Canal larger than is necessary to transport with convenience all descriptions of naval and military stores, would, by its greater dimensions, afford, in the opinion of the Committee, no additional security to the Province.

Judging thus, they are inclined to prefer the Plan second in order, being of a Canal five feet in depth.

(signed)

*J. Strachan,*

Chairman of the Committee from the  
Legislative Council.

*Angus Mackintosh.*

(signed)

*J. B. Robinson,*

Chairman of the Committee of the  
House of Assembly.

*W<sup>m</sup> Morris.*

*Ja<sup>s</sup> Gordon.*

6 April 1825.

No. 24. (a.)—REPORT and ESTIMATE of the COMMISSIONERS appointed under the Act for the Improvement of the Internal Navigation of Canada.

To His Excellency Sir *Peregrine Maitland*, Knight Commander of the Most Honourable Military Order of the Bath, Lieutenant Governor of the Province of Upper Canada, Major General commanding His Majesty's Forces therein, &c. &c. &c.

The Commissioners appointed by Your Excellency in conformity to the provisions of an Act passed in the second year of His Majesty's reign, intituled, "An Act to make Provision for the Improvement of the Internal Navigation of this Province,"

Most respectfully Report,

THAT in prosecution of the plans stated in the first Report, submitted at the late Session of the Legislature, the Commissioners this season applied their attention to the route from Lake Ontario by the interior lakes and streams of the River Ottawa; and because no positive direction could be assigned to this survey without more general knowledge of the interior than was at that time in their possession, they found it necessary that the engineer should traverse the country from Kingston to the confluence of the Rideau and Ottawa Rivers, and personally acquire the requisite information respecting its leading features.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Mr. Clowes, the engineer, accompanied by one of the Commissioners and by Mr. Sherwood, the land surveyor, who acted as guide on the occasion, embarked in canoes early in the spring, and proceeded from Kingston up the grand River Cataraguay, and through Cranberry Lake, to the Gananoque River, which are all connected by means of dams erected at the White Fish falls in the township of South Crosby, and at the round tail in Pittsburgh. The exploring party then passed up Jones' falls or rapids, and following up the White Fish branch of the Gananoque through several small lakes, to the carrying place from Mud into Rideau Lake, transported their canoes and baggage from the lower end of the latter into the River Mississippi by the main road leading from Perth to Lanark; from thence they descended to the Ottawa, and returned to Kingston by the Rideau river, Irish creek, and the Gananoque.

The Commissioners had been led to suppose that the Mississippi would afford great facilities for their proposed survey; it is in truth a fine and copious stream taking its rise somewhere in the neighbourhood of Crow River, one of the tributary streams of the Trent, and running in a northerly direction a course of about two hundred miles; on observing, however, its numerous rapids and cascades, as well as the falls at the Chats and Chaudières on the Ottawa, it was evident that the bed of the Mississippi was far too elevated, and that as the lockage to attain and descend from the summit pond would be enormously expensive, no Canal would be practicable in that direction.

The Rideau River seemed to oppose fewer obstacles, and it also presented a shorter course from Kingston to the still water of the Ottawa below the Chaudières Falls; the examination of the Petit Nation River, which was more distant and less promising, though also in contemplation, was postponed until the localities of the Rideau had been fully explored.

The engineer was therefore instructed to commence his surveys near Kingston, and to gain the Rideau (if possible, below the lake of that name) by the most direct line, and the lowest summit he might discover. It was at the same time suggested that he would probably meet with the lowest summit at a place in the township of Kitley, called Plum Hollow, where the waters of the Rideau and Gananoque very closely approach each other.

With these general views for his guidance, the engineer began to explore the level on the 12th day of June, and continued incessantly engaged with it until the 15th day of November, when the severity of the weather and the necessity of reporting on the progress of the survey, put a period to his operation. The result, so far as there was time to proceed this season, is detailed in the following statement furnished by the engineer, and will be further elucidated by the accompanying Maps and Plans.

ESTIMATE, in so far as the Survey has been completed, for a CANAL intended to connect LAKE ONTARIO with the OTTAWA River, of the following Dimensions; viz. seven feet in depth, forty feet in width at the bottom, and sixty-one feet in width at the surface of the water; the banks to slope one foot and a half to one foot perpendicular; the locks to be one hundred feet in length by twenty-two feet in width, with turning bridges twenty-two feet in the clear, and ten feet wide.

	No. of Cubic Yards.	Rate.			
			£.	s.	d.
First and Second miles, from the foot of Bells Island to the proposed place of departure out of Kingston Bay, a distance of about two miles, it will be necessary to clear the channel, several shoals crossing the River.			£.	s.	d.
Clearing the channel, &c. the above distance			300	-	-



Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

ESTIMATE for Canal— <i>continued.</i>		No. of Cubic Yards.	Rate.	£.	s.	d.	£.	s.	d.
Eighth mile runs near the level, all the excavation necessary is in raising the bank on the east side, a high hill nearly the whole distance on the west, the same description of earth continues as in the last mile.									
Cutting	- - - - -	16,157	4d.	269	5	8			
Puddling	- - - - -	4,161	4d.	69	7	-			
Grubbing	- - - - -	-	-	56	-	-			
Fencing	- - - - -	-	-	32	-	-			
							426	12	8
Ninth mile still preserves very nearly the level. It will be requisite to straighten the natural course of the river; the earth excavated is very convenient for raising the banks, &c.									
Cutting	- - - - -	26,270	4d.	437	19	8			
Puddling	- - - - -	8,666	4d.	144	8	8			
Grubbing	- - - - -	-	-	44	-	-			
Fencing	- - - - -	-	-	32	-	-			
							658	8	4
Tenth mile running rather above the level, is of the same description as the last, and little extra cutting will be necessary.									
Cutting	- - - - -	31,804	4d.	397	11	-			
Puddling	- - - - -	9,669	4d.	161	3	-			
Grubbing	- - - - -	-	-	35	-	-			
Fencing	- - - - -	-	-	32	-	-			
							625	14	-
Eleventh mile continues through the same clay excavation, and is nearer the level; the cutting is favourable.									
Cutting	- - - - -	19,626	3d.	245	6	6			
Puddling	- - - - -	4,976	4d.	82	18	8			
Grubbing	- - - - -	-	-	40	-	-			
Fencing	- - - - -	-	-	32	-	-			
							400	5	2
Twelfth mile runs a little above the level, it will be necessary to deepen the bed of the River. The excavation will answer for raising the east bank.									
Cutting	- - - - -	20,537	3d.	256	14	3			
Puddling	- - - - -	7,131	4d.	118	17	-			
Grubbing	- - - - -	-	-	35	-	-			
Fencing	- - - - -	-	-	32	-	-			
							442	11	3
Thirteenth mile; the River taking a serpentine course through the whole of this mile, it is necessary to straighten several curves, the excavation of which consists of a strong blue clay, &c.									
Cutting	- - - - -	15,540	6d.	388	10	-			
Grubbing	- - - - -	-	-	50	-	-			
Fencing	- - - - -	-	-	32	-	-			
							470	10	-
Fourteenth mile consists of the same strong clay, and runs some distance above the level; the River will require to be deepened, the banks dressed and sloped, and a towing-path formed along the same; near the end of this mile stands Lock, No. 6, of 10 feet lift, bottom level of the Canal 40 feet.									
Cutting	- - - - -	24,019	6d.	600	9	6			
Lock, No. 6	- - - - -	-	-	2,366	-	-			
Grubbing	- - - - -	-	-	30	-	-			
Fencing	- - - - -	-	-	32	-	-			
							3,028	9	6
Fifteenth mile; the River running very straight and near the level, little alteration is necessary, the nature of the excavation favourable.									
Cutting	- - - - -	8,595	4d.	143	5	-			
Grubbing	- - - - -	-	-	40	-	-			
Fencing	- - - - -	-	-	32	-	-			
							215	5	-

ESTIMATE for Canal— <i>continued.</i>		N <sup>o</sup> of Cubic Yards.	Rate.	£.	s.	d.	£.	s.	d.	Correspondence relative to the Canal Communi- cation in Canada.
<p>Sixteenth mile; there is a little extra cutting required. The earth answers to the description of the last mile being easy to excavate, in this mile stands Lock, No. 7, of 9 feet lift, bottom level of the Canal, 49 feet.</p>										
Cutting	-	24,766	4d.	412	15	4				
Puddling	-	1,936	4d.	32	5	4				
Lock, No. 7	-	-	-	2,207	-	-				
Grubbing	-	-	-	40	-	-				
Fencing	-	-	-	32	-	-				
							2,724	-	8	
<p>Seventeenth mile, for the first twenty chains runs near the level, and from thence to the end rises above it; at the end of this mile stands Lock, No. 8, an 8 feet lift; bottom level 57 feet, the same uniformity of earth continues.</p>										
Cutting	-	48,159	4d.	802	13	-				
Puddling	-	6,479	4d.	107	19	8				
Lock, No. 8	-	-	-	2,048	-	-				
Grubbing	-	-	-	30	-	-				
Fencing	-	-	-	32	-	-				
							3,020	42	8	
<p>Eighteenth mile, for the first 33 <math>\frac{1}{2}</math> chains the River will require deepening, the banks dressing, &amp;c.; at the end of 34 chains stands Lock, No. 9, of 7 feet lift, bottom level 64 feet, it will be necessary to remove Brewer's Mill, there being high rocks east and west of it; from thence we have a natural Canal 46 chains, requiring only to remove the dead timber out of the River, and to form a towing-path on one side of it.</p>										
Cutting	-	24,376	4d.	406	5	4				
Puddling	-	3,239	4d.	53	19	8				
Lock, No. 9	-	-	-	1,866	-	-				
Grubbing, &c.	-	-	-	100	-	-				
Fencing	-	-	-	32	-	-				
							2,458	5	-	
<p>From eighteenth to twenty-eighth mile, twenty-four and half chains after commencing the nineteenth mile, stands a place called the Round Tail. It is proposed to raise the water at this place, as well as in the Cranberry Lake and the drowned lands, 7 feet perpendicular, by constructing a Lock and waste weir at the head of the Round Tail; and a waste weir at the White Fish Falls. These waste weirs being designed to let off the surplus water and to guard the Canal from the injurious effects of a sudden rise, should be composed of substantial masonry. Lock, No. 10, being a lift of 7 feet 45 decimals, stands at the head of the Round Tail, bottom level 71 feet 45 decimals.</p>										
<p>Very formidable difficulties would be encountered in attempting to cut through the marshy land it is now proposed to drown, and it would be necessary in many places to fill and plank each side of the Canal. The additional expense which would thus be incurred, is calculated not to fall short of £.24,925; on the east side of the Lock should stand a turn Bridge, so that the walls forming the Lock may serve as its abutments, and thus save nearly half the expense of the Bridge if placed on any other part of the Canal:</p>										
Cutting	-	4,000	7d.	116	13	4				
Puddling	-	500	4d.	8	6	8				
Lock, No. 10, waste weir, &c.	-	-	-	2,182	-	-				
Cutting and removing dead timber	-	-	-	760	-	-				
One Bridge	-	-	-	50	-	-				
							3,117	-	-	

Correspondence relative to the Canal Communication in Canada.

ESTIMATE for Canal— <i>continued.</i>		No. of Cubic Yards.	Rate.	£. s. d.		£. s. d.	
<p>Twenty-ninth mile commences at the foot of Jones' Falls, and connects the drowned lands with Davis' Lake. In this mile there is a rise of 60 feet 91½ decimals, requiring six Locks; viz. four of 10 feet lift each, one of 10 feet 50 decimals, and one of 10 feet 41½ decimals; the bottom level of the Canal at the head of the falls is 132 feet 36½ decimals. The situation of each Lock is so managed that double Locks are avoided while a pound is reserved between each, sufficiently wide for vessels to pass each other. It is proposed, from the head of the falls across all the Lakes, as well as their inlets and outlets, to allow 8 feet water in order to guard against evaporation, &amp;c. to the extent of one foot perpendicular. The natural position of the falls being very favourable, no extra cutting will be necessary.</p>							
Cutting rock	- - - -	13,400	3 s.	2,010	- -		
Cutting rock and loam	- - - -	6,857	2 s.	685	14 -		
Puddling	- - - -	4,160	6 d.	104	- -		
Locks, Nos. 11, 12, 13, 14, 15 & 16.	- - - -	- - -	- - -	13,996	- -		
Opening into Davis' Lake	- - - -	- - -	- - -	206	11 6		
Grubbing	- - - -	- - -	- - -	80	- -		
						17,089	5 6
<p>Twenty-ninth to thirty-second mile; the line of the Canal crosses Davis' Lake, and enters Opinicow Lake. At Davis' Mill there is a rise of 7 feet 29 decimals, requiring one Lock of that lift; bottom level 139 feet 65½ decimals, a bridge constructed across the Lock as at the Round Tail, Davis' Lake will be raised 4 feet.</p>							
Cutting rock	- - - -	2,539	3 s.	380	17 -		
Ditto clay	- - - -	352	7 d.	10	5 4		
Ditto ditto	- - - -	3,931	4 d.	65	10 4		
Puddling	- - - -	1,321	4 d.	22	- 4		
Lock, No. 17	- - - -	- - -	- - -	1,866	- -		
One Bridge	- - - -	- - -	- - -	50	- -		
						2,394	13
<p>Thirty-second to thirty-fourth mile; the line of the Canal crosses Opinicow Lake, and enters Indian Lake at Chafey's Mill; there is a rise of 14 feet 45 decimals, requiring two Locks, each with a lift of 7 feet 24½ decimals, a Bridge as at the Round Tail. The water will be raised 4 feet in Opinicow Lake, and 5 feet in Indian and Mud Lakes; the summit pound commences at Chafey's Mill; bottom level of the Canal 154 feet 10½ decimals.</p>							
Cutting rock	- - - -	11,761	2 s.	1,176	2 -		
Ditto clay	- - - -	2,052	8 d.	68	8 -		
Puddling	- - - -	1,000	4 d.	16	13 4		
Locks, No. 18 & 19	- - - -	- - -	- - -	3,732	- -		
One Bridge	- - - -	- - -	- - -	50	- -		
						5,043	3 4
<p>Thirty-fourth to forty-third mile; the line of the Canal passes through Indian Lake up the outlet of Mud Lake and through that Lake to the place of departure into the Rideau, a distance of eight miles. It is proposed to raise the water perpendicular, thereby acquiring at a trifling expense a good and safe navigation, besides placing all those Lakes on a level with Rideau Lake, and forming an extensive summit pound. The 43d mile connecting Mud and Rideau Lakes, occasions some extra excavation as it passes through a summit of 38 feet 32 decimals for a short space, and then falls near the level; the nature of the excavation through the ridge being rock, it is proposed to make the cut in that part 24 feet wide at the bottom, sloping 6 inches to the yard perpendicular, and in the clay excavation to make the cut 22 feet wide at the bottom sloping 1½ feet to 1 foot perpendicular; a bridge will be necessary for which the sides of the rock excavation will form abutments.</p>							
Cutting rock	- - - -	32,187	3 s. 4 d.	5,364	10 -		
Ditto clay	- - - -	195,324	6 d.	4,883	2 -		
Grubbing	- - - -	- - -	- - -	80	- -		
Fencing	- - - -	- - -	- - -	32	- -		
One Bridge	- - - -	- - -	- - -	60	- -		
						10,419	12

ESTIMATE for Canal— <i>continued.</i>	No. of Cubic Yards.	Rate.	£. s. d.			£. s. d.		
			£.	s.	d.	£.	s.	d.
Forty-third to forty-seventh mile; the course of the Canal is down the Rideau Lake to the first or upper narrows, where the navigation is obstructed for a distance of $5\frac{1}{2}$ chains; the excavation through rock at this place, will be 24 feet wide at bottom, in the centre, and 40 feet at each end, a bridge will be necessary as the intended road from Perth to Kingston is to cross at this spot.								
Cutting rock - - - - -	2,988	3s. 4d.	498	-	-			
One Bridge - - - - -			60	-	-			
						558	-	-
Forty-seventh to sixty-fifth mile, the Canal continues down the Rideau Lake and requires no expense. The total length of the summit pound on the line of the Canal is thirty-one miles, exclusive of that part of the Lake which lies westward of the route, and which is estimated at seven miles in length.								
TOTAL						£. 69,783	-	1 $\frac{1}{4}$

Correspondence relative to the Canal Communication in Canada.

Thus it appears that a good and easy navigation 65 miles in length for vessels drawing 6 feet water carrying 120 tons, and capable of braving the weather on Lake Ontario, might be acquired at an expense not exceeding £. 70,000 a sum absolutely insignificant, when compared with the magnitude of the object, for attaining which it would be applied.

In making the foregoing estimate, the engineer has bored the ground wherever excavation would occur to the depth of the bottom level of the Canal, and has thus accurately ascertained the nature of the various strata of earth and rock along the whole line.

As the bed of the River Cataraguay, at Kingston mills, is used for the Canal, it will be necessary at the back of each lock to construct a waste weir 40 feet in width, to protect the work against the dangers of floods; from Kingston mill pond as far as the round tail, the excavation is so favourable for raising the banks, and is besides so easy, that the expense of the Canal between those points is very moderate.

In the eighteenth mile stands Brewer's mill, which should be removed, as a lock would unavoidably occupy its site. The position of every lock as far as Jones' rapids is so judiciously selected, that no rock excavation occurs from Kingston harbour until the line of the Canal reaches the foot of Jones' Rapids, a distance of 28 miles.

A bed of clay throughout separates the lime stone rock on the west from a species of rock resembling granite which runs along the eastern bank: to which fortunate circumstance is to be ascribed the facility and cheapness with which this part of the work may be effected.

From the Round Tail to Jones' Rapids there is a wide extent of low marshy ground naturally inundated every spring. On one part of the western or White Fish branch by the Gananoque, and on another by the superfluous waters of the Loughborough Lake, Dog Lake, &c. the inundation of this tract is rendered permanent to a greater depth by means of dams placed at the Round Tail and the White Fish Falls by the proprietors of mills at those places.

In connecting the Canal at the Round Tail with the Gananoque River, the engineer might either make a cut across the intervening flats, or by dams at the outlets, he might convert them into one extensive lake, comprising Cranberry Lake, and another smaller one in its vicinity. The difficulties attending the former plan are numerous and important, in many places it would be necessary to drive piles and secure the banks of the Canal by planking them, and the excavation would be very troublesome in consequence of having to contend with water and a soft mud extending several yards in depth.

At a moderate calculation it is supposed that the cost of a cut at this place would not be less than £. 3,175. per mile, the distance is about nine miles and a half, of

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

which one mile and a half would be rather favourable. The whole expense is therefore estimated in the aggregate for the nine miles and a half at £. 25,650; by the latter plan the water would be raised to a depth of seven feet over the whole surface of the flats to the foot of Jones' Rapids. The expense of forming waste weirs at the Round Tail and White Fish Falls; clearing the timber from the direct line of the Canal on the flats, would amount to £. 725., and as the difference between the two plans amounts to £. 24,925. the advantages of inundating the tract instead of cutting through it, obtains a decided superiority. The owners of the land would no doubt require compensation for the loss of their property, but its total value in its present state cannot by any mode be estimated to exceed £. 1,500. including the reservations for the crown and clergy, which sum may be added to the estimate.

The twenty-ninth mile connects the drowned lands with Davis' or West Lake, and embraces Jones' Rapids where the Gananoque descends 60 feet 91  $\frac{1}{4}$  decimals over a narrow rocky channel, confined within precipitous banks of great elevation, which retire at intervals more or less from the bed of the stream; although the expense of this will be great, it is far less than any other route to the east or west of it. A certain rise in the line of the Canal was inevitably to be encountered; and no place could be discovered for this purpose presenting fewer obstructions than that in question. In fixing the situation of the six locks which are here required, occasion is taken to provide a reservoir between each, varying from one to four chains in width, and forming a pound sufficiently spacious for vessels coming in opposite directions to pass each other.

By dams at the outlets of the several lakes between Jones' Rapids and the Rideau, the water is raised to the required depth of the Canal without inundating much land of any value. From the peculiar formation of the country, all the good land lies high, and marshy lands principally are covered by means of the proposed dams. The difficulties attending rock excavation are exhibited by the estimate for the cut between Mud and Rideau Lakes, where a ridge of rock occurs for a short space, and hence a fair conjecture may be formed of the expense which would be incurred in deepening the bed of the lakes by removing, not merely sand bars, but shoals of rock remarkably solid and difficult to be blasted.

Such an enterprize would indeed be nearly impracticable, and if attempted would occasion an incalculable waste of money; by means of dams every obstacle is overcome, and the water is raised to a proper depth at a trifling expense.

The rock at the Indian carrying place has alone prevented the Rideau and Mud Lakes from uniting without the aid of art. In cutting through this rock, Indian, Mud, Rideau and Clear Lakes are placed on the same level, and this constitutes a magnificent summit pound thirty-one miles in length on the course of the Canal, at an elevation of 154 feet 10  $\frac{1}{4}$  decimals above Lake Ontario. In addition, there are several extensive lakes lying west of the line on the same level or above it, besides an arm of the Rideau Lake itself, which stretches off in a south-westerly direction. There can therefore be no cause to dread a want of water, for with the most extensive trade which can be anticipated, the summit pound would still remain an inexhaustible reservoir during the most arid seasons.

In the proposed cut between Mud and Rideau Lakes the width of the Canal is reduced, where rock excavation occurs, to 24 feet at the bottom and 43 feet at the top water line, which produces a saving of expense without the risk of any inconvenience to trade at a future day.

By the plan of the bridges, of which, owing to the nature of the country, six only would, for a length of time, be required, the engineer has ingeniously effected additional savings; for he makes the side walls of the locks supply the place of abutments.

The form of the bridges, which are intended to admit vessels with mast and standing rigging, perhaps renders the plan more feasible on the proposed Canal than on such as do not afford similar advantages to the craft which ply on their waters. A circumstance which may not be unworthy of remark is, that on the whole route, so far as the survey has been completed, *i. e.* on a line of 65 miles, neither embankment or culvert is required, and it is questionable whether this fact has a parallel in Canal surveying. Though the plain reason of this singularity is, that the natural course of the waters has been studiously adhered to; it nevertheless illustrates

illustrates the uncommon facilities of the route more amply than the most laboured arguments or abstract calculations.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

It will be observed, that the original idea of passing through Plum Hollow, founded on a presumption that the lowest summit would be found in that quarter, and adopted also on account of that place, lying nearly in a direct line from Kingston to the mouth of the Rideau, was abandoned, on its being ascertained that Plum Hollow, which appears low to the eye from its position in the neighbourhood of elevated ridges, was actually 156 feet 49  $\frac{1}{4}$  decimals higher than Lake Ontario, and consequently 2 feet 39 decimals above the bottom level of the present summit pound. There were other difficulties to be surmounted on this route; to supply the summit level, a feeder would have been required 10 miles in length from the big bay in the Rideau Lake, the construction of which would be a serious affair, as an intervening summit of limestone, 36 feet above the level, would have occasioned a heavy expenditure of money. The summit pound itself would not have extended beyond a few hundred yards, while the cost incurred for supplying it with water, would have tripled that of the route by Jones' Rapids and the lakes. Besides these objections to the route by Plum Hollow, two summits would have been requisite on that line. The flats between the Round Tail and the White-Fish Falls would have become the first summit, from which there would have been a descent by two locks at White Fish Falls into one of the Gananoque Lakes, called Henderson's or East Lake. From thence the route would have led through the Bastard Lakes to the second summit at Plum Hollow, and have reached the River Rideau by way of Irish Lake and Creek.

The line of the Canal is undoubtedly lengthened about 20 miles by abandoning this course and assuming the more circuitous one by the lakes; but the great saving of expense in the latter, and the benefit which would be derived from it by the rising settlements near the Rideau Lake, added to various other considerations, more than outweigh the disadvantages of increased length.

From the rugged and broken nature of those parts of Pittsburgh and South Crosby through which the various levels were conducted, from the numberless rocky eminences, marshes, bogs, &c. every where encountered, and in the scanty information to be gained in any other way than by personal examination of a tract of country which still remains almost in its primeval state, there unavoidably resulted much delay and occasional perplexity.

It was desirable to select the nearest, most advantageous and easiest course for the contemplated Canal, and for attaining this end every lake, ravine and marsh required to be minutely explored. The field books of the engineer will more clearly exhibit the difficulties against which he was obliged to contend in executing this part of his duty, as well as the numerous routes which, after being pursued for some time with ardent hope, led only to disappointment.

On giving up the route by Plum Hollow, the engineer endeavoured to avoid the expensive work at Jones' Rapids, by discovering, if possible, an easier way of encountering the rise to the summit at some point westward of those rapids. With this view Loughborough, August and September Lakes were examined, on the supposition that they might be connected with the Opinicon, which lies above Davis' Lake; but Loughborough Lake was found to be elevated 177 feet 37  $\frac{1}{4}$  decimals above the level of Lake Ontario, and 23 feet 27 decimals higher than the summit pound. Another level, through Dog, Troy, and Traverse Lakes, to Davis' Lake, failed, as a rocky summit of 70 feet above the level, presented an impassable barrier between the two latter lakes. Various other attempts of a similar description proved equally abortive, and it became eventually necessary to return to the western branch of the River Gananoque, and devise the best means of surmounting the impediments at Jones' Rapids; much time was thus unavoidably consumed in examining routes which proved to be impracticable; and as no part of the country could be left unexplored which afforded the slightest hope of a lower summit and greater facilities, the unremitting labours of the engineer and his party, during a season unusually favourable, were insufficient to determine the whole line of the Canal from Kingston to its junction with the Ottawa.

The distance from the point of departure in Kingston harbour to Chafey's Mills, at the outlet from Indian Lake, is about 34 miles; in addition to which there is a navigation, created by means of the cuts at the Rideau carrying place, and the

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

upper narrows, of 31 miles, forming a total of 65 miles of navigation surveyed and estimated. The distances here computed, it may be remarked, are not perfectly correct, as several of the lakes, which were never accurately surveyed, could not be conveniently measured during summer; this operation was therefore deferred until the ice should afford an opportunity of accomplishing it with greater facility, accuracy and dispatch, and the land-surveyor is now engaged in its execution.

From the lower end of Rideau Lake, where the summit pound terminates, to the foot of the Chaudières Falls in the township of Nepean, the distance, by following the windings of the Rideau River, is about 60 miles, which will probably make the total length of the Canal, from Lake Ontario to the River Ottawa, about 125 miles.

Owing to the causes already adverted to, the line of the Canal through the last 60 miles could not be established this year. By dint of exertion, however, the engineer carried a level down to the Ottawa River, at the village of Sherwood, below the Chaudières, and ascertained the descent from the summit level to be 268 feet 33 $\frac{1}{4}$  decimals; this fall, when added to 154 feet 10 $\frac{1}{2}$  decimals, the rise from Lake Ontario to the summit level, makes an aggregate of 422 feet 44 decimals, for which no fewer than 45 locks will be required.

The difficulties which may occur in that part of the line of the Canal which remains to be laid down, are not supposed to be important, and will not probably occupy much more than three months next season. The expense of locks for the descent is certain and inevitable, and the chief care of the engineer will be required in selecting favourable ground and avoiding rock excavation. It is hoped that about 20 miles of the Rideau River, which, for that distance, is still and sufficiently deep, may be taken into the line of the Canal; and, should this be found practicable, a material reduction may thus be effected in the general estimates.

On a review of the summer's operations, the Commissioners have every reason to be gratified with their result, and they respectfully beg leave to bring under notice the benefit which has been derived from the long experience and professional ability of their chief engineer, Mr. Samuel Clowes, aided as he was by the zeal and assiduity of his assistant, Mr. James Clowes, and of the land-surveyor, Mr. Reuben Sherwood.

The accounts herewith submitted will explain the amount of disbursements during the year, which have been directed by the most rigid economy, consistent with the objects of the commission.

Should the duration of the Statute under which the Commissioners have acted be extended, an additional grant will be required for the purpose of completing the interior survey now in progress, as the arduous nature of the operations prevented its entire completion this season, according to the original expectations of the Board.

It would also be proper to carry into effect the plan for exploring the River St. Lawrence below Prescott, adverted to in the first Report, in the event of the determination made by the arbitrators last summer on this important subject not being sanctioned by the legislatures of the two Provinces.

It is therefore hoped that the same enlightened patriotism which originally suggested the Canal surveys, will watch over them until they shall be perfected, and until the capabilities of the country for internal improvements, vast and noble as they are, shall have been fully investigated and made known.

The Commissioners, before concluding, conceive it incumbent on them to state their regret, that this Report was not presented at an earlier period of the present Session of Parliament, no exertion was spared for that purpose, but the calculation necessary in framing the Estimates demanded considerable time, and the engineer could not be suddenly withdrawn from his levels without great inconvenience.

All which is humbly submitted,

(signed) *John Macaulay.*

*Charles Jones.*

*James Gordon.*

*Robert Nichol.*

York, 20th December 1823.

SIR,  
To *John Macaulay*, Esquire, President, Canal Commission.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

HEREWITH you will receive separate Estimates for connecting Lakes Ontario and Burlington by a Canal of 12 feet deep water, 32 feet wide bottom; one of 14 feet deep water, 39 feet wide bottom; one of 18 feet deep water, 45 feet wide bottom; and one of 23 feet deep water, 60 feet wide bottom. The width of each Canal is the narrowest space between piers for a bridge through which His Majesty's ships and vessels, drawing the depths of water above mentioned on Lake Ontario, could pass with safety, which gives the width of the bottom of the several Canals.

Where excavation is necessary, the banks of each are calculated to slope  $1\frac{1}{2}$  feet to 1 foot perpendicular. In order to have made a true estimate, the beach between Lake Ontario and the pond in front of Mr. Brant's house, and also the gravel bank between the said pond and Burlington Lake ought to have been bored, and thereby the nature of the earth accurately ascertained, as well for estimating the excavation between the lakes, as for driving the piles for piers in the lakes.

In consequence of this work not having been done, I have supposed it to consist of sand, gravel, clay and soft slate stone, agreeable to the particulars marked upon the Map.

The following Specification shows the particulars from whence arises the aggregate of each Estimate.

#### SPECIFICATION.

EACH pier, for the distance of 100 yards from the beach into Lake Ontario, to consist of two rows of piles, each pile to be driven 6 feet deep, the water varying from 1 to 5 feet deep. The next 100 yards, (making 200 yards from the beach into Lake Ontario), to consist of two rows of piles, and each pile to be driven 7 feet deep, the water varying from 5 to 7 feet deep. The next 100 yards, (making 300 yards from the beach into Lake Ontario), to consist of three rows of piles, each pile to be driven 8 feet deep, the water varying from 7 to 9 feet deep. The next 60 yards (making 360 yards from the beach into Lake Ontario), to consist of three rows of piles, each pile to be driven ten feet deep, the water varying from 9 to 12 feet deep, 360 yards being the shortest distance from the beach into Lake Ontario, and the length of piers required for the first or 12 feet deep Canal.

From thence to 14 feet deep water, is a distance of 140 yards, (making 500 yards from the beach into Lake Ontario), the pier to consist of three rows of piles, each pile to be driven 12 feet deep, 500 yards being the shortest distance from the beach into Lake Ontario, to 14 feet deep water, and the length of piers required for the second or 14 feet deep Canal.

Thence 170 yards from 14 to 18 feet deep water, (making 670 yards from the beach into Lake Ontario to 18 feet deep water) to consist of three rows of piles, each pile to be driven 12 feet deep, 670 yards being the shortest distance from the beach to 18 feet deep water into Lake Ontario, and the length of the piers required for the third or 18 feet deep Canal.

Each pile for the first 200 yards, from the beach into Lake Ontario, to measure 1 foot diameter 6 feet from the bottom end of the pile. Thence 160 yards, (making 360 yards from the beach into Lake Ontario,) to measure 13 inches diameter 9 feet from the bottom end of the pile. Thence 140 yards, (making 500 yards from the beach into Lake Ontario), to measure 14 inches diameter 12 feet from the bottom end of the pile. Thence 170 yards, (making 670 yards from the beach into Lake Ontario), to measure 15 inches diameter 12 feet from the bottom end of the pile; each pile to be shod with wrought or cast-iron, a strong iron hoop to be fitted on the end of each pile while driving, to prevent the same from splitting; and afterwards to be removed.

Between each pile to measure 2 feet in the clear, lineal measure, and 4 feet from outside to outside where there are two rows of piles, and 5 feet from outside to outside where there are three rows of piles, each pile in the first and second row to be grooved on each side, 3 inches wide and 2 inches deep, to admit a pile plank from the top of the pile to 1 foot below the depth of water in which they stand, the piers in Lake Ontario to stand 5 feet above water level, between the piers in

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

the first and second row to have a pile plank 2 feet 4 inches wide and 3 inches thick, a sil plank, the vacant space between the piles to be filled with earth free from large stones, to form a puddle from the breach to the end in Lake Ontario; behind each pier loose stone to be thrown in such quantities as to be 3 feet wide at the top of each pier, forming its own slope; part of the excavation to be thrown at the back of the said stone, to form a bank of 3 feet wide finding its own slope, making the piers in Lake Ontario 11 feet wide, 5 feet above water level, and thereby forming one solid mass.

A bunting piece 12 inches deep and 9 inches thick, to be fixed at water level the whole length of the pier, circling 6 inches from the bottom to 3 inches thick at the top, and fastened with spike nails 15 inches long, of half-inch square iron, one to every pile or 3 feet asunder, above which, to the top of the said piers, as well as across the top, to be planked with 3-inch planks and fastened with 5-inch spike nails on every pile, and round the end of each pier the piles to be fastened together with cramps of 1½-inch square iron.

The excavation between the piers to be allowed to slope 1½ feet to 1 foot perpendicular, exclusive of a beam on each side of the top of the said excavation of 2 feet wide, to guard and strengthen the piles against any underset arising from easterly gales, which makes the width of the surface of water for the 12-foot Canal, 72 feet wide; for the 14-foot Canal, 85 feet wide; for the 18-foot Canal, 103 feet wide; and for the 23-foot Canal, 133 feet wide; which may be seen by a reference to the Map.

In the excavation through the beach, between Lake Ontario and the pond where the road is, it will be necessary to have a single turn bridge for the 12-foot canal, or a double one for the 14 and 18-foot canals; the abutments for each to be composed of masonry 6 feet thick in the centre and 4 feet thick in the wing walls, the whole to be of good sound stone properly bedded, jointed, and set in lime mortar, and the part facing the Canal well hammered or dressed, and no course or layer of stone less than 12 inches thick, and the top course or layer, called coping stone, to be 2 feet thick, and each stone to be 3 feet long, the wing walls circling round, so as to be at the end of the same width as the piers and centre, agreeably to the dimensions of the said depths; it will be necessary on the south side of the Canal, to extend a pier from the east end of the pond westward, 130 yards long to 12 feet deep water in the pond opposite Mr. Brant's house, for the 12-foot Canal, the north shore forming a pier on its own side.

An additional length of pier on the south side will be required of 150 yards for the 14-foot Canal, and of 300 yards for the 18-foot Canal—the north shore still forming its own pier; this pier to consist of two rows of piles, and to be made in every respect the same as the first 100 yards from the beach into Lake Ontario.

The top excavation between Lake Ontario and the pond to have a berm of 6 feet wide on each side at the height of the piers, or 5 feet above water level, so that the piers in Lake Ontario, as well as the excavation across the beach, and the pier opposite Mr. Brant's house, the bridge, &c. may have a uniform appearance.

At the head of the said pond, where the gravel bank commences, from 12 feet deep water in the pond to 12 feet deep water in Burlington Lake, is a distance of 360 yards; from 14 feet deep water in the pond to 14 feet deep water in Burlington lake, is a distance of 400 yards; from 18 feet deep water in the pond to 18 feet deep water in Burlington Lake, is a distance of 520 yards.

Commencing in the head of the pond at 12 feet deep water with two piers, each pier for the distance of 75 yards, to consist of two rows of piles to be driven 8 feet deep, the water varying from 12 to 3 feet deep; thence crossing the gravel bank to 4 feet deep water in Burlington Lake, a distance of 100 yards (making 175 yards,) to be driven 6 feet deep; thence from 4 to 8 feet deep water in Burlington Lake, a distance of 125 yards, (making 300 yards,) piles to be driven 8 feet; thence from 8 to 12 feet deep water in Burlington Lake, a distance of 60 yards, (making 360 yards), piles to be driven 10 feet deep; these piers to be finished in every respect the same as the first 100 yards from the beach into Lake Ontario, except that they are to stand 4 in lieu of 5 feet above the surface of the water.

From

From 12 to 14 feet deep water in the pond and Burlington Lake, to be finished with three rows of piles, the same as in Lake Ontario, exclusive of standing 4 in lieu of 5 feet above water level. From 14 feet to 18 feet deep water in the pond and Burlington Lake, to be completed as in Lake Ontario, except standing 4 in lieu of 5 feet above water level. The width between the piers at the Burlington end of the work, to correspond, in every respect, with those of Lake Ontario as shown on the Map. By a reference to the Map it will be seen, that the 23-foot Canal will be formed at the least possible expense, 1,430 yards south of the other proposed route for minor cuts, or 440 yards north of the present bridge crossing the outlet.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

From 2 feet deep water in Lake Ontario, to 4 feet deep water in Burlington Lake, is a distance of 567 yards, the piers for this distance to consist of 2 rows of piles, each pile to be driven 6 feet deep. From 4 feet deep water in Burlington Lake to 12, a distance of 212 yards, the piers to consist of two rows of piles driven 8 feet deep; thence from 12 feet deep water to 23, a distance of 198 yards, to consist of 3 rows of piles driven 12 feet deep.

From 2 to 6 feet deep water in Lake Ontario, a distance of 100 yards, to consist of 2 rows of piles, driven 7 feet deep. From 6 to 12 feet deep water, a distance of 200 yards, to consist of 3 rows of piles, driven 12 feet deep.

The piers, excavation, bridges, &c. to be finished in every respect as specified in the minor Canals.

From 23 feet deep water in Burlington Lake to 23 feet deep water in Lake Ontario, is a distance of 1,650 yards, as may be seen on reference to the Map.

## ESTIMATES.

Depth of Water in feet.	Width of Bottom, in feet.	Width of Surface, in feet.	TOTAL AMOUNT.		
			£.	s.	d.
12	32	72	7,910	18	1
14	39	85	12,984	13	10
18	45	103	20,975	19	9
23	60	133	48,227	2	4

The above estimates are founded on manual labour, &c. as at the present time.

Good able and skilful labourers are allowed 2s. 6d. per day.

Mechanics from 3s. to 5s. per day.

Materials are calculated at prices current at the present time.

The contractor to find all machinery for driving piles, pumping water, schow, boats, tools and utensils of every description at his own expense, only to be allowed to procure whatever timber may be wanted for piers, bridge, machinery, &c. on government land in the vicinity of the Canal. No other timber to be used for piers, &c. than cedar, pine and white oak.

I am, Sir,

Your obedient servant,

(signed) *Sam. Clowes,*  
Civil Engineer.

Kingston, 29th November 1823.

*P. S.*—The estimate delivered last winter to the honourable Board of Commissioners, as mentioned in their first Report to connect Burlington Lake with Ontario, was from necessity founded on information (since found to be rather defective), the weather at that time did not permit the marine surveyor to ascertain the distance from the beach into Lakes Ontario and Burlington, to the depth of water required, and this circumstance will account for the difference in the estimates.

*S. C.*

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Supplementary REPORT of the Commissioners appointed by his Excellency the Lieutenant Governor, in conformity to the provisions of an Act passed in the second year of His Majesty's reign, intituled, "An Act to make provisions for the Improvement of the Internal Navigation of this Province."

THE Commissioners of the Internal Navigation beg leave to submit to your Excellency certain Plans and Estimates for the construction of a safe and commodious Harbour at Burlington Bay, on different scales of magnitude, to which is appended the correspondence on the subject with His Majesty's naval Commissioner in Canada.

It is considered unnecessary to offer any observations on the importance of a harbour at the head of the lake, and the advantages which might accrue from a joint application to the same purpose of the late provincial appropriation, and such aid as the Lords Commissioners of the Admiralty might be induced to authorize.

It was the intention of the Board to have examined, in the course of the season, the nature of the ground at Burlington Beach, by boring to the requisite depth, and also to have completed the upper survey by fixing on the course of the feeder, as that work could not be performed last year; the full occupation given the engineer on the lower route, did not, however, leave any time for the accomplishment of this object.

York, 20th December 1823.

(signed) *John Macaulay.*  
*Charles Jones.*  
*James Gordon.*  
*Robert Nichol.*

No. 25—LETTER from *R. Byham, Esq.* to *R. W. Horton, Esq.*  
&c. &c. &c.

SIR,

Office of Ordnance, 3d April 1826.

BY command of the Lieutenant-General and Board, I have the honour to transmit to you the enclosed letter dated 22d *ultimo*, from General Mann, with accompanying papers, relating to the Rideau Canal proposed to be constructed in Canada; and I am to request you will submit the same to Earl Bathurst, the first convenient opportunity, apprising his Lordship that the Lieutenant-General and Board think it right to submit the papers to him before they prepare the instructions for Lieutenant-Colonel By of the corps of Royal Engineers, who is under orders to proceed to Canada, to superintend the construction of the Canal. I am further to state, that so soon as the Lieutenant-General and Board shall receive these papers back again, with any additions or observations which Earl Bathurst shall think proper to make thereon, the Lieutenant-General and Board will direct the proper instructions, grounded on the papers, to be prepared for Lieutenant-Colonel By; but they prefer postponing the preparation of such instructions until they are favoured with any observations Earl Bathurst may be desirous of making hereon.

I have, &c.  
(signed) *R. Byham.*

No. 26.—MEMORANDA from Major-General Sir *James Carmichael Smyth*,  
to General *Mann*, &c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

14th March 1826.

THE following Memoranda relative to the proposed Water Communication between the Ottawa River and the Town of Kingston, upon Lake Ontario, contain every thing that has occurred to me as in my power to communicate which may be serviceable to Lieut.-Colonel *By*.

1.—THE object is, to form an uninterrupted Water Communication from Lake Ontario to the Ottawa River. As this undertaking is part of a system, of which the La Chine Canal and the Grenville Canal form portions, the absolute necessity of making the locks of this new Canal the same length and breadth as those already constructed and constructing upon the two Canals alluded to, cannot be too strongly impressed upon Lieut.-Colonel *By*. The locks must be 108 feet in length, and 20 feet in breadth.

2.—Strong representations will be made to Lieut.-Colonel *By* by many respectable inhabitants and several of the principal merchants, recommending the Canal to be conducted by Kyles Bridge, as being the nearest line, and requiring only a very short land-carriage; others will propose the Gapanoquée River, instead of Kingston, as the most convenient termination of the Canal on Lake Ontario. In a point of view, these considerations might be worth attending to: as it is, however, an uninterrupted Water Communication between the Ottawa and Lake Ontario the Government have in view, and the circulation of gun-boats between Montreal and Kingston, that line only which will ensure these advantages must be adopted. The Canal must end at Kingston. The Canal will have to be conducted by the Rideau River, the Rideau Lake, the Mud Lake, Cranberry Marsh, and Kingston Mill-Stream.

3.—Lieut.-Colonel *By* is recommended to procure at Quebec, at the Commanding Engineer's Office, a copy of Lieutenant *Jebb's* Report upon the subject, as also a copy of his sketch of the ground: he will find both these papers very clear and satisfactory; he will, however, derive more detailed information from the Report of the Parliamentary Commissioners of Upper Canada, of the 5th February last, addressed to Sir *Peregrine Maitland*, and giving cover to three estimates for forming the Canal under consideration, drawn up by a very able practical civil engineer, Mr. *Samuel Clowes*, from actual survey and measurement. A copy of this Report, and of these estimates, Lieut.-Colonel *By* will be able to procure upon application at the proper office at York, and doubtless they will afford him very great assistance.

4.—The Americans have published, collected together in one octavo volume, all the periodical Reports of their Commissioners employed in carrying on their great Western Canal. I beg leave to suggest to Lieut.-Colonel *By* to procure this book from New York, as containing a great deal of valuable information: he will see the nature of the difficulties he will have to contend with, the great quantities of water (much more than in Europe) which, at the breaking up of the frost, will be apt to injure the Canal, if not guarded against by culverts and waste weirs; some interesting and instructive details as to the mode of excavating the Canal, and constructing such dams as were necessary; and, generally, many matters which may be of service upon the present occasion.

5.—I recommend Lieut.-Colonel *By* to go over the works of the La Chine Canal in company with the Commissioners of the Parliament of Lower Canada, under whose superintendence this truly valuable and magnificent undertaking (for a young country) has been constructed: he will find every thing here extremely well executed, and in a much more substantial manner than the American Canal, and will derive every information as to the price and cost of materials, workmanship and labour.

*Mem. 6.* The Board conceive, that as the measure has, to a certain extent, been agreed to by Parliament, there is no objection to proceed with the work, without waiting each year for the notification of the Building Grant: as, however, the vote is to be taken in the Colonial Estimate, refer the point to Earl Bathurst.

The Board concurs entirely.

6.—I am of opinion that it will be found more economical and more expeditious to execute the greater part, if not the whole, of the proposed Rideau Canal by contract. There will be no difficulty in finding contractors for the excavation. When the line is once traced and decided upon, the execution may be given out to contractors, allotting different lengths to different individuals, according to the means, and what they may be willing to agree for. I would ever contract under careful specifications for the lock, flood-gates and other particulars. The Americans made all their Western Canal by contract. The La Chine Canal has been contracted under agreements. Government would avoid the formation of an expensive establishment, which otherwise will be required. The labourers on the Grenville Canal are fed by the Commissariat have tents issued for their use, and have medical attendance; if the Ordnance hire artificers and work-people, and attempt to construct the Rideau Canal by day-work, they will be obliged to incur the same expense, and the establishment absolutely necessary to superintend such a considerable undertaking will be very numerous. I strongly recommend the execution of the work by contract in preference; the termination of the work at a fixed period may, in that case, be looked forward to. Three or four additional engineer officers, and the same number of intelligent clerks of works, will be all that will be required for the Rideau Canal, and whose services will be subsequently available for other operations: whereas, if it is attempted to execute this work by day-work, a large establishment will, in the first instance, require to be formed, and the termination of the Canal at any given period cannot be looked forward to with the same certainty. The only inconvenience attending the execution of the work by contract, that I am aware of, is, that, in that case, the whole of the cost must be asked for from Parliament at once, as the contractor must be at liberty to commence as early in the season as circumstances will permit, without waiting for the passing of an annual grant. He must be enabled to arrange for the feeding and lodging of his work-people for one or two years before; which he could not do if a fresh contract is to be entered into each season.

*Mem. 7.* Refer this to the Colonial Department. Col. By may take out a copy of the Defence Act, by which land required for the Public Service was bought by Government. The principle of which, under certain modifications, might be applicable to the land required in Canada. The Board also desire to draw Col. By's attention to the necessity of

taking a sufficiency of land on such points of the Canal nearest to Kingston which, from their proximity to Lake Ontario, might require Martello Towers or Batteries to protect the embankments and works from being destroyed by the landing an enemy for that purpose. Any such works are distinct subjects, and must be reserved for ulterior consideration; but, in securing the land on the banks of the projected Canal, the possibility of such a necessity must not be lost sight of. As to the mode of drawing the money required for these services, it is suggested that the account should be carried on as a Supplementary Ordnance Account; the necessary sum to be drawn from the Military Chest by the Ordnance Storekeeper: the Military Chest to be credited with the sum voted by Parliament in the Colonial Estimate: the Ordnance Department to render each year to the Colonial Department an account of the sum so expended and drawn out of the Military Chest, with an Estimate of the sum required for the succeeding year.

7.—Lieut.-Colonel By will require a letter from the Colonial Office to the Governor General of Canada, and a more detailed one to the Lieut.-Governor of Upper Canada. He will require such assistance only from Lord Dalhousie as to be put in communication with the Commissioners of the La Chine Canal; but he will want from Sir Peregrine Maitland and the legislature of Upper Canada their aid in giving him possession of the land through which the proposed Canal is to be conducted. The sooner the subject of the land is arranged between the Colonial Office and the Government of Upper Canada the better. The moment the determination of Government to execute this canal is known, land which is at present waste and useless will rise in value. All preliminary arrangements upon this subject cannot too soon be made.

(signed)

*J. Carmichael Smyth,*

M. General.

No. 27.—LETTER from *R. W. Horton*, Esq. to *W. Griffin*, Esq.  
&c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

SIR,

Downing-street, 18th April 1826.

I HAVE laid before Lord Bathurst your letter of the 3d instant, with the accompanying papers relating to the Rideau Canal, proposed to be constructed in Canada; and I am directed by his Lordship to acquaint you, for the information of the Lieutenant General and Board of Ordnance, that his Lordship has no observations to make on the instructions to be given to Lieut.-Colonel By, except to express his anxious hope that every exertion will be made to proceed in this important work with all possible dispatch; and his Lordship is of opinion, that it will be proper to authorize the contractor to commence as early in the season as circumstances will permit, without waiting for the passing of the annual grant. Lord Bathurst will direct letters to be prepared to the Governor General, and the Lieutenant Governor of Upper Canada, desiring them to afford every aid and assistance in procuring the land which may be selected by Lieut.-Colonel By for the Canal; and his Lordship feels confident that every support and facility will be given to that officer by the local government.

I am, Sir, &c.

(signed)

*R. W. Horton.*

No. 28.—LETTER from Major-General *Sir J. Carmichael Smyth*  
to General *Mann*, &c. &c. &c.

SIR,

Nutwood Ryegate, 17 August 1826.

IN obedience to your orders, as communicated to me by Lieut.-Colonel Ellicombe, in his letter of the 11th instant, forwarding to me, at the same time, a copy of His Grace the Master General's Minute of the preceding day, on the subject of the probable amount of the money which may be required in the ensuing year for the service of the Canals or internal Water Communications now carrying on in the Canadas, I beg leave, with the utmost respect, to offer the following observations.

The money granted last year by Parliament towards the Canadian Canals, was £. 15,000; of this sum, £. 10,000 was allotted to that part of the Water Communication between Montreal and Kingston, upon the Ottawa, under the charge of Staff Corps; and Lieut.-Colonel By was permitted to expend the remaining £. 5,000 in carrying into effect the necessary preliminary measures upon the Rideau, and in the neighbourhood of Kingston, according to the best of his judgment. The whole of the estimate for the Rideau is £. 169,000. If we deduct the £. 5,000 Lieut.-Colonel By may be supposed to have expended, there will remain £. 164,000; and if this amount is divided by 5, (being the number of years the operation will probably require,) it appears that £. 32,800 is the sum which ought to be demanded for the service of next summer towards the Rideau Canal; with a view to its being completed in 1831. I take the liberty respectfully to remark, that whatever may be the amount it may be determined upon to apply for, it is of the utmost consequence that Lieut.-Colonel By should have the most early notice, in order that he may make his arrangements accordingly.

The sum allotted last year to that part of the proposed communication which is on the Ottawa, it has already been stated was £. 10,000. This was merely according to what has hitherto usually been given since the commencement of the work, and at which rate the Staff Corps cannot complete their part (including the Châte à Blondeau, the Carillon, and the St. Anne's Rapids) before the end of 1832, even supposing no unforeseen obstacles present themselves. As they have now another company employed upon this duty they have the means of greater exertion; and as it is evident the whole of the Water Communication between Montreal and Kingston should be completed at the same time, if possible, it seems that it would be advisable to augment the annual grant for this part of the undertaking, and that it might with advantage be made £. 15,000 instead of £. 10,000.

His Grace the Master General, in the latter part of his Minute, having alluded to the Welland or Niagara Canal upon the Niagara frontier, I beg leave to observe that this Canal is carrying on (as more fully stated at page 50 of the Report of the Commission of which I had the honour to be president) by a private company under the sanction of the Provincial Legislature. The estimated expense is £. 147,240.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

It is understood that the Company look forward to some assistance from His Majesty's Government, in consequence of the advantage which will accrue to the Government in the saving of expense of forwarding stores to Lake Erie, and the upper part of the province. In the case of La Chine Canal (which was executed by the authorities of Lower Canada) His Majesty's Government gave £. 12,000, or about 1-9th of the money required, upon condition of all boats and vessels with Government stores being allowed to pass duty free, or without any lockage being demanded. I take the liberty, with the utmost respect, to remark, on the subject of the Welland or Niagara Canal, that it appears to me it will be necessary that some similar agreement should be entered into with the proprietors, and be clearly understood before any money is advanced. This is of course an arrangement which will be attended to by the Colonial Office, through the Lieut.-Governor of Upper Canada. Should His Majesty's Government deem it advisable to afford the same assistance towards the Niagara Canal as was done towards that of La Chine, the 1-9th of the estimated sum will be £. 16,360. It may be perhaps advisable here to repeat the observations contained in page 50 of the Report above alluded to, respecting the dimension of the locks.

In any agreement with the proprietors, too much caution cannot be observed on this point. In return for whatever money may be advanced by Government, the proprietors of the Canal ought to be required not only to allow all Government boats and vessels, or other boats or vessels when employed carrying Government stores, to make use of the Canal without paying any duty, but also engage to construct the Canals (or rather the locks of the Canals) at least 22 feet broad. The £. 16,360 might also be paid only by yearly or other periodical instalments, in proportion to the progress of the work. If divided by five, it would be £. 3,432 per annum for the five years the work it is estimated will be in hand.

If the foregoing observations are correct, it would appear that the following sums will be required to be expended in the Canadas, during the ensuing summer, upon the proposed Water Communications; *viz.*

1st. On the Rideau Canal, under the superintendance of Lieut.-Colonel By	£. 32,800
2d. On the rapids of the Ottawa by the Staff Corps	15,000
3d. Toward the Niagara or Welland Canal, carried on by a company	3,432
	<u>£. 51,232</u>

I have, &c.  
(signed) *J. Carmichael Smyth,*  
Major-General.

No. 29.—LETTER from *R. Byham, Esq.* to *R. W. Horton, Esq.*  
&c. &c. &c.

SIR,

Office of Ordnance, 15th Jan. 1827.

THE Master-General and Board having had under their consideration the inclosed letter, dated the 1st instant, from the Inspector General of Fortifications, with the accompanying correspondence relating to the several works recommended by the Engineer Commissioners to be undertaken in the Canadas,—

I have the honour, by direction of his Grace and the Board, to refer the Papers to you, to be laid before Earl Bathurst, and to request that you will state to his Lordship, that the Master-General and Board consider it very desirable that no time should be lost in issuing directions for the purchase of the land required for the line of the Canals.

I am at the same time directed to observe, that as soon as the Papers shall be returned by his Lordship, the Master General and Board will give orders respecting all the other points mentioned in the correspondence; and I am to add, that his Grace has not heard from Lord Dalhousie relative to the building at La Chine.

I have, &c.  
(signed) *R. Byham.*

No. 30.—LETTER from General *Mann* to *R. Byham*, Esquire, &c. &c. &c.  
with BOARD'S Order thereon.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

SIR, 84 Pall Mall, 1 Jan. 1827.

8th January 1827.

I INCLOSE herewith, for the consideration of the Master General and Board, a letter of Colonel Durnford, dated Quebec, 10th November last, with accompanying correspondence on the subject of the several works recommended by the Engineer Commissioners to be undertaken in the Canadas, showing what steps have been taken by the Commanding Engineer, with the concurrence of the Commander of the Forces, to carry into effect the orders and instructions of the Master-General and Board, upon the several points adverted to.

The subject which seems most immediately to call for attention, is the want of some official communication from the Colonial Office to the governments of the provinces of Upper and Lower Canada; without this (however they may be disposed to facilitate the operations of the Engineer Department, under the instructions of the Master-General and Board of Ordnance) no progress can be made in entering upon the lands through which the Rideau Canal is intended to pass, nor can any other steps be taken towards the possession of other grounds that have been pointed out as necessary for the works in contemplation to be constructed. Moreover, it is found that delay may tend to advance the value of the lands required.

I am, &c.

(signed) *Gother Mann*.

Ordered to be sent to the Master-General, and that his Grace be apprized that the Board have communicated, from time to time, with the Secretary of State for the Colonial Department, on all the steps as they have proceeded, respecting the projected works in Canada; and Mr. Wilmot Horton has stated in his letter of the 18th April last, "that Lord Bathurst would communicate with the Governor-General and Lieut.-Governor of Upper Canada, and would desire them to afford every aid and assistance in procuring the land which Lieut.-Colonel By might select for the Rideau Canal."

(signed) *H. H.*

No. 31.—LETTER from Colonel *Durnford* to Major-General *Darling*,  
&c. &c. &c.

SIR,

Royal Engineer Office, Quebec, 14th October 1826.

AS I rely on his Lordship the Commander of the Forces having received the expected communications from the Secretary of State for forwarding the views of his Grace the Master-General and Honourable Board of Ordnance respecting the prosecution of the Rideau Canal, I have the honour to enclose, for the information of his Lordship, a copy of the instructions I propose sending to Lieut.-Colonel By, that no time may be lost in proceeding on the important work alluded to.

Should I be mistaken as to the receipt of the communications from the Secretary of State, I can only trust that his Lordship, having before him copies of all the orders of his Grace and the Board that have been forwarded for the guidance of Lieut.-Colonel By, will be pleased to sanction his proceeding to carry the same into immediate effect, and make such communications to his Excellency Sir P. Maitland, as well as to enable him also to afford facility as to the compensation of ground which will be required for the Rideau Canal, so as to prevent the possibility of their being considered in the light of illegal intruders on the property they are required to survey and take sections of.

I have, &c.

(signed) *E. W. Durnford*,  
Col. Com<sup>d</sup> Rl. Eng<sup>t</sup>, Canada.

## CORRESPONDENCE RELATIVE TO

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 32.—LETTER from Colonel *Durnford* to Lieut-Colonel *By*,  
&c. &c. &c.

SIR, Royal Engineer Office, Quebec, 14th Oct. 1826.

IN addition to the communications, written and personal, that I have had the honour of holding with you respecting the service that you are entrusted with, I have now to request that as soon as you have made all the observations on the nature of the ground, and approaches to the River Rideau near the Falls, that you will proceed to wait on his Excellency Sir P. Maitland, introducing to his notice the letters that his Lordship the Commander of the Forces was pleased to give you when we met you at Hull.

When at Kingston you will inspect the ground near the mills where it is proposed the Canal should terminate, and in case you judge that the services of Captain Bolton, now he appears to be getting better, can be more essential to you at Kingston than at Montreal, you will of course call his attention thereto either immediately or early in the spring.

I have, &c.

(signed) *E. W. Durnford*,  
Col. Com<sup>d</sup> Rl. Eng<sup>r</sup>, Canada.

No. 33.—LETTER from Major-General *Darling* to Colonel *Durnford*,  
&c. &c. &c.

SIR, Military Secretary's Office, Quebec, 25th Oct. 1826.

I HAVE the honour to acknowledge the receipt of your letter of the 14th inst. submitting copies of the instructions which you propose sending to Lieut.-Colonel *By*, for his guidance in the prosecution of the several works intrusted to him by his Grace the Master-General of the Ordnance, on the Report of the Commissioners of Royal Engineers.

Although the Commander of the Forces has not received the expected communication from His Majesty's Secretary of State, authorizing the important services alluded to, his Lordship will, nevertheless, sanction your proceeding with the arrangements for carrying into effect the orders of the Master-General and Board, as contained in the documents accompanying your letter of the 7th September.

To this end I have received his command to express his entire approbation of the instructions before mentioned, which, together with the documents accompanying them, as well as those with your letters of the 14th, 16th and 19th instant, I have had the honour to submit to his Lordship.

A communication will be made to Major-General Sir P. Maitland, agreeably to the desire expressed in your letter of the 14th, requesting his Lordship to afford every facility depending upon his authority, to the officer charged with the execution of the Rideau Canal in Upper Canada, so as to prevent him, or the person employed under him, from meeting with opposition or difficulties in the occupation of such ground as it may be necessary for them to enter upon, in making the requisite surveys, sections, &c.

I have, &c.

(signed) *H. C. Darling*,  
Mil<sup>y</sup> Sec<sup>y</sup>.

No. 34.—LETTER from *R. W. Horton*, Esq. to *R. Byham*, Esq.  
&c. &c. &c.

SIR, Downing-street, 31st Jan. 1827.

I HAVE laid before the Lord Bathurst your letter of the 15th inst. with the accompanying correspondence, relating to the work recommended by the Engineer Commissioners to be undertaken in the Canadas, and I am directed to acquaint you, for the information of his Grace the Master-General and Board of Ordnance, that his Lordship has instructed Lord Dalhousie to take the necessary steps for the purchase of the land required in Upper and Lower Canada for the line of the Canals.

I am, &c.

(signed) *R. W. Horton*.

No. 35.—LETTER from Lieut.-Colonel *By* to General *Mann*, &c. &c. &c.

SIR,

Rideau Canal, 1st November 1827.

I HAVE the honour to transmit, for the information of his Lordship the Master-General and Right Honourable and honourable Board, my Report and Estimate, with Plans of the various works indispensably necessary to form a Navigable Communication with five feet depth of water from the Ottawa to Kingston; and although I have commenced the building of three locks agreeable to my instructions, on the same scale as those of the Grenville and La Chine Canal, yet as these Canals have nothing to do with the down trade of the country, as already explained in former letters, I cannot refrain from hoping, that when the Plans and Estimate are examined, and the nature of this Water Communication thoroughly understood, that I shall receive orders to construct the large lock of 150 feet long by fifty wide, with five feet depth of water; as these locks would pass steam-boats of sufficient size to navigate the lakes, and also the spars from 120 to 130 feet long required for the Royal Navy, which those of La Chine Canal cannot do, they being only 108 feet by twenty wide. I further beg to observe, that as the melting of the snow in the spring of the year rises the water in the Ottawa River from twenty-two to twenty-four feet perpendicular, and in the Rideau River from thirteen to fifteen feet, it is evident that these torrents must have washed away from the banks all substances that can be removed, and therefore the idea of the paddles of steam-boats injuring such banks is quite erroneous, particularly as the proposed Canal will only retain the water to the height of five feet.

The accompanying Plans will show the very little excavation required, and that being chiefly rock, there can be no part of the banks but what may be rendered perfectly secure from injury. His Excellency the Earl of Dalhousie, Commander of the Forces, having suggested the necessity of my sending an officer with my Plans and Estimate, to insure their arrival in time to lay before Parliament, I have ordered Lieutenant Pooley, Royal Engineers, to be the bearer of these Papers. He having been with me at the commencement of the work, and just returned with me from examining the various works on the whole line, can give the fullest information, and explain whatever I may in the hurry of business have omitted. Lieutenant Pooley is an excellent officer, and has shown great perseverance and zeal in this service. I further beg to state, that from the progress already made at the various works, I feel convinced that on the 12th of August 1830, I shall have completed this magnificent Water Communication from the Ottawa to Kingston; but to enable me to do this, I shall require about £. 100,000 each year for positive disbursements on the spot, and have marked on the Plan where the four Companies of Royal Sappers and Miners could be employed to great advantage, should I be favoured with the assistance of two more Companies, in addition to the two already arrived. See PLAN, No. 5.

I have the honour to be, Sir,

Your most obedient humble servant,

(signed) *John By*,

Lieut.-Colonel Roy<sup>t</sup> Eng<sup>rs</sup> Com<sup>rs</sup>, Rideau Canal.

SECTION, No. 1.	£.	s.	d.	£.	s.	d.
Entrance Bay and Canal Valley, Ottawa river	58,889	4	8			
Works between the head of the eight Locks and )						
Dow's great Swamp	15,880	17	—			
In Dow's great Swamp	6,474	17	9			
From Dow's great Swamp to the Hog's Back	21,017	3	—			
Hog's Back	27,022	16	6			
From Hog's Back to Black Rapids	360	12	—			
Black Rapids	9,831	15	11			
Long-Island Rapids	19,540	11	—			
Long-Island's Still Water	650	—	—			
Contingent Expenses	11,049	7	11			
				170,723	5	9
SECTION, No. 2. Burret's Rapids	—	—	—	10,657	18	—
No. 3. Nicholson's Rapids	—	—	—	9,996	6	—
No. 4. Clow's Quarry	—	—	—	9,189	—	1 1/2
No. 5. Merrick's Rapids	—	—	—	15,696	8	6 1/2
Carried forward	—	—	£.	216,262	18	7

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

		£.	s.	d.
Brought forward		216,262	18	7
SECTION, No. 6.	Maitland's Rapids	5,242	14	8 ½
-	No. 7. Edmund's Rapids	6,868	1	1
-	No. 8. Phillip's Bay	6,172	-	9 ½
-	No. 9. Old Sly's Rapids	10,768	10	10 ½
-	No. 10. Smith's Falls	18,193	7	7 ½
-	No. 11. First Rapids	10,165	15	4 ½
-	No. 12. Oliver's Ferry	100	-	-
-	No. 13. Narrows Rideau Lake	409	10	-
-	No. 14. Isthmus Rideau Lake	13,639	3	-
-	No. 15. Isthmus Indian Lake	17,331	13	10 ½
-	No. 16. Davis' Rapids	8,417	16	7 ½
-	No. 17. Jones' Falls	34,154	15	2 ½
-	No. 18. Cranberry Marsh and Round Tail	1,409	-	- ½
-	No. 19. Brewer's Upper Mill	15,036	10	4 ½
-	No. 20. Brewer's Lower Mill	10,268	8	- ½
-	No. 21. Billidore's Rifts	10,872	2	5 ¾
-	No. 22. Jack's Rifts	19,155	1	7 ¾
-	No. 23. Kingston Mills	21,161	18	2
	Contingent account	3,000	-	-
	One-tenth of the whole amount of the Estimate	42,862	18	10
	Barracks, hospital, &c.	3,351	14	-
TOTAL EXPENSE		£. 474,844	1	2 ½

No. 36.—LETTER from the Marquis of Anglesey to the Right honourable  
*W. Huskisson, &c. &c. &c.*

SIR,

Uxbridge House, 26th Jan. 1828.

I ENCLOSE the copy of the Report of the Committee of Engineers which assembled to examine into the merits of the Plans and Estimates furnished by Lieut.-Colonel By, of the Royal Engineers, and of that adopted by the Commission of which Sir James Smyth was president. The Report of the Committee appears to be so full and explicit upon the several points to which their attention was directed, that it is unnecessary for me to make any observation, except that it should be understood that in the estimates and calculation of the expense of the Canal, there is no provision for superintendence. No exact sum can be stated, as it will depend upon the time the work will be in hand, as the expense will be proportionably lessened by the celerity with which the work can be carried on. The annual expense at present sanctioned is £. 3,850.

The suggestion of wooden locks thrown out by the Committee, is I think quite inadmissible; but I am by means of opinion that the consideration of the enlarged locks (perhaps not to the extent proposed by Lieut.-Colonel By) ought to be given up. On the contrary, I think it is a subject which ought to be fully discussed and considered in all its bearings, not only with reference to the defence of the country, but as connected with its trade and revenue.

Believe me, &c.

(signed)

*Anglesey.*

No. 37.—LETTER from Major-General Bryce to General Mann,  
&c. &c. &c.

SIR,

84, Pall Mall, 23d Jan. 1828.

I HAVE the honour of submitting herewith the Report of the Committee of Engineers, of which I am President, on the Rideau Navigation, conformably with your orders of the 4th inst.

It will be observed, that Major-General Sir James Smyth has expressed his dissent from the rest of the Committee on Lieut.-Colonel By's proposition for enlarging the locks.

Lest the observations of Sir James Smyth, on the question of enlarged locks on the Rideau Canal, should lead to an erroneous view of the opinion of the remaining Members of the Committee, it is thought necessary by them to observe, that they have not, nor did they intend to recommend the adoption of wooden locks in preference

ference to stone, but have merely stated, that should imperative financial considerations render the adoption of wooden locks at present expedient, the measure would be attended with the incidental convenience of affording an opportunity hereafter of adopting whatever size of lock should be then best adapted to existing circumstances; and the remaining Members of the Committee have also to observe, that they did not conceive themselves called on by their instructions to offer any opinion regarding the annual expenditure to be made on this Navigation during its progress.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

I have, &c.

(signed) *Alex. Bryce,*  
M<sup>r</sup>-Gen<sup>l</sup> and President.

No. 38.—REPORT of the COMMITTEE of ENGINEERS on the Plans and Estimates for the construction of the Rideau Canal.

SIR,

84, Pall Mall, 22 Jan. 1828.

IN obedience to your orders of the 4th instant, we have carefully examined the Plans and Estimates for the construction of the Rideau Canal in Upper Canada, together with the several documents on the subject, which have been laid before us; and having also obtained such other information within our reach as we deemed expedient, we now respectfully submit our Report, commencing with the first head of our instructions, by which we are required, "To give our opinion upon the Plan proposed by Lieut.-Colonel By, of effecting the Water Communication from the Ottawa to Kingston, in all its details," especially as to the practicability, economy and safety of the dams, which the Lieut.-Colonel proposes throwing across the River, and thus rendering the small falls into still water.

The general tracing of the Water Communication between the Ottawa River and Kingston, adopted by Lieut.-Colonel By, is that which appears to have been contemplated by the Commission of Engineers, of which a survey and estimate had been prepared by Mr. Clowes (a civil engineer) for the Legislature of Upper Canada; the only material variation in the two lines appears to be near the entrance on the Ottawa, which Lieut.-Colonel By proposes to form above the mouth of the Rideau River, whilst the civil engineer proposed the entrance below.

The reasons Lieut.-Colonel By has given for preferring the entrance above appear to us well founded, as the small bay in which he has placed the entrance is better sheltered than it would be below; the ascent from the Ottawa to the Rideau is easier, being partly through a ravine, and the distance is somewhat shorter; there is also a difference in the direction of the two lines between Barrel's Rapids and Merrick's Mills, where Mr. Clowes has proposed to carry his Canal through six miles and a half of cultivated land; whilst Lieut.-Colonel By carries his Canal on the opposite bank of the river for one mile and a half, where the land is waste; for the remainder of the distance he proposes raising the water in the river by dams, by which means he will avoid the purchase of much valuable land (but which is not estimated by Mr. Clowes) and very considerable cutting in rock, and we therefore think that Lieut.-Colonel By's line here is the preferable; and also being by comparison of the two estimates, the most economical. These observations are all that seem to us necessary to be made in this plan, on the proposed trace of Lieut.-Colonel By's line of communication.

With regard to the dams proposed by Lieut.-Colonel By for raising the water in the rapids, to render the Rideau navigable, we would observe that this is by no means a novel expedient, having been much practised both in the old and new hemispheres, under the more usual denomination of waste weirs; the principle and use however is the same, but we have not learnt that any have been constructed so high as Lieut.-Colonel By has proposed at the Hog's Back, and at Jone's Falls, those being 45 feet and 48 respectively. The Americans have one of 28 feet in height on the upper part of the Hudson, above Albany, where the river is from 250 to 300 yards wide, which is about twice the width of the Rideau, where Lieut.-Col. By's first dam is proposed; Mr. Clowes also, in his project, has availed himself of the use of waste weirs or dams to raise the water on the rapids, though he has not carried this expedient to the same extent as Lieut.-Colonel By, the former having only 10 dams across the river, varying from three to seven feet in height, whilst Lieut.-Colonel By has 20 of different heights, from eight feet to 48. As a general

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

principle there does not appear to us to be any objection to the use of high dams, which is not also applicable to low, both obstructing the navigation of the river (and there are already existing several mill-dams on the Rideau), but the failure of a high dam would occasion so much expense in its repair, and so long an interruption to the navigation, that we think they should only be used where local circumstances render it absolutely necessary, more especially as two low dams may in most cases be made to produce the effect of one high one, and would be cheaper in the construction.

Of the two highest dams Lieut.-Colonel By has proposed, one is across the Rideau at the Hog's Back, which is 45 feet high and 400 feet in length, the second at Jones' Falls on the Cataraqui, which is 48 feet in height and 140 feet in length; the sites are near quarries from which the stone to be used in their construction may be easily conveyed. The banks of the river are favourable, and their construction enables him to place the necessary locks together, instead of in two or more divisions, which would lead to additional expense in the number of lock keepers, quarters, &c.

As every thing depends on these high dams being so constructed as to resist the great pressure of water to which they would be subjected, we have attentively considered the two sections which Lieut.-Colonel By has proposed for these two dams, which differ considerably in their proportions; and we decidedly prefer the second design, which we recommend to be adopted, also (with the requisite modification for the difference in height) at the Hog's Back.

We learn from Lieut. Pooley, that the dam at the Hog's Back was begun before he left the country, and would probably be raised to the height of 10 or 12 feet before the winter sets in, which will afford grounds for forming an opinion as to the ultimate success. Should any doubt arise, we would recommend that the dam should be finished only to half the proposed height, and a second dam formed, where necessary, in advance, or recourse had to cutting. This of course would occasion an alteration in the disposition of the locks, as it would be necessary to advance a corresponding portion of them, and in the case of the Hog's Back, a little additional expense in forming fresh excavations for the locks to be so advanced; and here we would also recommend that the upper portion of locks at this point should not be commenced until the dam was carried to the intended height (whatever that may ultimately be), and no reason seen to doubt its durability.

We are of opinion that means will be obtained to float timber over the dams without injury, and we are informed that the right to all the rivers in Upper Canada is specially reserved to the Crown, with a way or communication on both banks; should this opinion and information prove correct, no well-grounded cause of complaint against the dams would exist.

With regard to the expense of the dams proposed by Lieut.-Colonel By, as compared with the cutting of a Canal to attain the same object, we are not possessed of sufficient information, as Lieut.-Colonel By, though he has given in each instance the length of cutting to be saved, has not given the depth of cutting, nor more than a general description of the nature of the ground, neither has Mr. Clowes given any sections of this cutting in these parts; but having well considered the information and data we could obtain as to the comparative economy of each, we are induced to believe it will preponderate in favour of dams. It would no doubt be satisfactory, before proceeding with more than those dams now in progress, to have a calculation of the expense of cutting at each point where dams are proposed in lieu thereof, founded on sections of the ground, and of borings to ascertain its nature.

We come now to the second head of our Instructions:

“To give an opinion and report upon the amount and upon all the details of expense of the Estimate transmitted by Lieut.-Colonel By, and whether any less expensive mode of effecting the object in view can be devised.”

For the above purpose we have very carefully examined and analyzed every part of Lieut.-Colonel By's estimate that would be compared with the surveys of the ground, and the designs he has furnished for the various works, and though there are some considerable differences in various items between our calculations and Lieut.-Colonel By's, sometimes in excess and at others in diminution, we consider the estimate on the whole to have been formed with much care and accuracy.

We

We have drawn out in Paper (A.) which accompanies this Report, a list of those items where we were enabled to enter into a comparison, and in which our calculations differ from the estimate either in excess or diminution, by which it will be seen that our calculation is on all these items £.7,607. 1. 11. less than Lieut.-Colonel By's; but as the principal discrepancies are found in the cuttings and embankments, where we frequently have not sufficiently numerous sections to show all the accidents of the ground, we would not recommend this difference to be deducted from the amount of the estimate.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

We have carefully examined the design for the locks on which Lieut.-Colonel By's estimate is grounded, which seem in general to be judiciously and carefully formed; but observing that the side walls of the eleven locks contracted for, which are on an average 18 feet in height, are proposed to be six feet six inches thick at top and eight feet at bottom, and although we are aware that these walls will necessarily have to support the pressure of the earth whilst in a green state, and that allowance must also be made for the effect of severe frost on the masonry, still we are induced to be of opinion, that a reduction of one foot in the thickness of these walls might safely be made, which could create a saving of one-eighth of the masonry of these locks. We have no sections of the remaining locks to enable us to decide if their side walls will admit of similar diminution of thickness; but we are led to think, from the quantity of masonry in the different items of the estimate, that such will be found to be the case; and we recommend this important point for consideration on the spot, with a Report, accompanied by the fullest documents necessary for its decision.

With regard to that part of our instructions wherein we are required "To report whether any less expensive mode of effecting the objects in view can be devised," we are unable to point out decidedly any reduction, except that which might arise from lessening the thickness of his side walls, on which we hope that a saving to a considerable amount may be effected, together with a saving of about £.9,000, which we are of opinion might be made in the items of the estimate, for cutting a straight channel for the Cataraqui River, through the marsh above Kingston, as it appears that the navigation here might be sufficiently improved for present purposes, by cutting off some of the principal elbows of the river, although a little time will be lost in the longer channel; and here it should be observed, that we cannot suggest any alterations in consequence of the judicious arrangements of Lieut.-Colonel By, planning that his heaviest works, as far as hitherto designed, should be so placed as to have stone near at hand; that he has obtained contracts by public competition for the first eleven locks, and the other constructions of masonry at the entrance of the Canal, not exceeding 1 s. 1 1/4 d. per cubic foot, which is about one-fifth less than the estimated price.

Now, although there may be some grounds for apprehending, that as the works advance into the unsettled and little explored parts of the line, the expense of procuring provisions for the workmen, and transporting of materials may occasion an increase of the contract prices, yet we have reason to hope that by a continuance of the preparatory measures above described, the prices will be but little augmented; and may, in cases where quarries are very favourably situated, be even diminished. We therefore think that although Lieut.-Colonel By may have been right in estimating the masonry at his valuation of 1 s. 5 d. per cubic foot, the average of the contract prices may be expected not to exceed 1 s. 2 d., and a saving in the execution of one-sixth of the estimate for masonry be expected under the head of price.

The prices in Lieut.-Colonel By's estimate for digging in the various kinds of soil, and in rock, and for clearing ground, fences, bridges, &c. appear to us, on the whole, to be moderate; that at £. 15. 15. per acre for grubbing (the total of which amounts to £. 3,038. 18. 6.) appeared at first sight to be very high, but on considering the nature of the work, and the care with which it must be done, we were less surprized to learn that the lowest tender received by the Commissary General, at public competition, for this service, amounted to the sum stated in the estimate.

This seems to be the proper stage of our Report for offering some remarks on the plan and estimate of Mr. Clowes, the civil engineer, for this navigation, and which we apprehend we are called upon to consider in the first article of your instructions.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No general plan, or particular places of locks or other works, are furnished by Mr. Clowes, nor any prices for his masonry or carpenters' work, nor any sections or borings to ascertain the nature of the soil, and extent of his cuttings in earth and rock; a gross sum or quantity is taken for each as they occur on his line, but from what we have already shown, we do not think the lockage can be executed in a more economical manner than that which we have suggested, and which will be about as much as the total of Mr. Clowes's estimate for the whole navigation, and which conclusion we are confirmed in by the much greater proportionate expenditure on the La Chine Canal. With regard to the estimate for cutting 25 miles of canal, which he proposes to form, as we have no sections or borings of the ground, we cannot speak decidedly; but there seems reason for concluding that the quantities and nature of the cuttings are greatly under-rated. Mr. Clowes also has omitted in his estimate to provide for many services absolutely necessary in the execution of his project, besides the total omission of any per-centage for contingencies, which, in Lieut.-Colonel By's estimate amount, at the usual rate of one-tenth, to £. 42,862. 18. 10.

On the whole we are of opinion, that after allowing Mr. Clowes much credit for skill and industry in exploring and marking the best general line for effecting this Water Communication, under many difficulties occasioned by the state of the country, and with probably little professional assistance, his estimate for executing the necessary work is quite inadequate, and with his report, are rather calculated to show the practicability of the measure, than to give an accurate calculation of the expense of effecting it. This conclusion, we think, will appear well founded, on a careful consideration of the numerous plans, prepared with great labour and attention by Lieut.-Colonel By, and his officers, and which were all necessary before any satisfactory design or estimate for the Canal could have been made. The only item in Lieut.-Colonel By's estimate, of the necessity of which we are not yet sufficiently informed, is the construction of a bridge (at the expense of nearly £. 3,000) across the Ottawa, in the vicinity of the entrance and principal works on the Canal. The motive is stated to have been to induce the contractors to undertake the works on lower terms than they otherwise would have done, by opening an easy communication with the only settlement in that part of the country, from which their supplies of provisions, and many articles of materials, could be obtained at less expense than otherwise would have been incurred; and it seems not unreasonable to conclude, that the measure has had the effect of lowering the contract prices considerably. But a full report in all its bearings on this subject seems required, embracing also the consideration of the means of making the bridge repay part of its expense, by levying a toll on all passengers and materials, excepting those employed on the Canal.

On the question, whether a less expensive mode of effecting this navigation can be devised? we have already stated all the saving which we think can with safety be made, in Lieut.-Colonel By's Plan; but a mode might be found of keeping down the present expense of the undertaking (though it certainly would not be ultimately economical), by executing those locks of the Canal not yet begun, in wood instead of masonry. Eleven locks in masonry are understood to be in progress; the remaining thirty-six might therefore be of wood. We cannot in this country calculate with much accuracy the expense of this construction, but see reason to believe, from the best information we can procure of the prices of timber and workmanship in Canada, that the expense would not exceed one-third that of masonry. We are of opinion, however, that nothing but weighty financial considerations would sanction the adoption of wooden locks, which could only be considered a temporary expedient.

On the question of the docks of enlarged dimensions, proposed by Lieut.-Colonel By, on which we are, by the third head of our instructions, desired to report, the Lieut.-Colonel has suggested the considerable advantage, as regards both commerce and military operations, which would accrue from enlarging the locks of the Rideau Navigation from 20 to 50 feet, leaving the depth as at present, five feet. This, he says, could be effected at an expense of £. 50,000, to which has to be added about £. 3,000 for widening the locks already begun. We do not, however, see any immediate advantage likely to be derived from this partial measure, sufficient to justify the expense above stated; but, should well-grounded reasons exist for expecting that at a future period an extended steam navigation from Lake Ontario to Quebec may not be beyond the financial means of the two countries to execute, then

then we think this proposition of Lieut.-Colonel By's deserving of consideration; as we are of opinion, that a general steam communication would be attended with great military advantages, and we apprehend if the whole line of the Rideau Canal should now be executed with twenty feet locks in masonry, this would in all probability preclude that enlargement hereafter, which would render the large steam-boats of the St. Lawrence available for Lake Ontario and the Ottawa. And here we may observe, that the expedient we suggested for effecting a present saving, by executing the remaining twenty feet locks in wood, would also have the advantage of leaving open for future decision this important question of the enlarged steam navigation, as the construction of thirty-six locks could only be temporary, to be replaced hereafter by locks in stone, of whatever dimensions should then be found most eligible.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

The following Statement shows what we suppose would be the expense of the different contractions previously considered.

Lieut.-Colonel By's Estimate for the Rideau Communication; locks in stone	£. 474,844. 1. 2 ½.
Ditto - modified by this Committee, and the cost of the masonry reduced to the price already contracted for	£. 407,531. 4. 3 ½.
Ditto - if the remaining 36 locks be executed in wood	£. 330,118. 7. 2 ½.

In obedience to the last article of our instructions, to report whether Lieut.-Colonel By has not "lost sight entirely of the plan and estimate for the work, having the same object in view which the late Master-General and Board contemplated, when they ordered Lieut.-Colonel By to execute the service, viz. the plan and estimate framed by a civil engineer in the country, and in an addition of £. 24,000 sterling, by the committee of engineers, of which Sir James Smyth was president, being to provide £. 500. in addition for each lock, in order to make them of the same size with those of the La Chine Canal, but that he has not distinctly reported that he has done so, much less accounted for his doing so, excepting verbally through Lieutenant Pooley; and whether Lieut.-Colonel By, was not repeatedly referred to those plans and estimates, and positively ordered to adhere to them,"—We have to state, that Lieut.-Colonel By appears to have adhered generally to the line of country pointed out in his instructions, but has deviated from the tracing intended by the civil engineer's estimate, to which he was referred, in the places already mentioned, in all which the Lieut.-Colonel appears to have been guided by a desire to effect the object in the most judicious and beneficial manner. We also find, that he has strictly followed the dimensions of the Canal and locks which were proposed by the Commission of Engineers, and ordered by the Master-General to be executed. With respect to the estimate framed by the civil engineer, and augmented by the sum of £. 24,000 by the Commission of Engineers, we are of opinion that Lieut.-Colonel By did not lose sight of it; as he reported, on the 6th December 1826, "That he had great doubt whether the work could be performed for £. 169,000; but that he could not venture to give a decided opinion on the subject, until he had well examined the whole line." We have already offered our opinion on the inadequacy of that amount, and it does not appear to us that detailed estimates founded on accurate measurements and levels could be prepared and transmitted until the second summer.

The documents referred for our consideration, are returned with this Report.

We have, &c.

(signed) *Alexander Bryce, M. Gen<sup>l</sup>, Pres<sup>t</sup>.*  
*John T. Jones, Colonel.*  
*Edward Fanshawe, L<sup>t</sup> Col. Roy<sup>l</sup> Eng<sup>s</sup>.*

THERE is one subject in this Report in which, from local knowledge, I cannot agree with the other members of the Committee, and that is, relative to the adoption of wooden locks upon the thirty-six remaining locks of the Rideau Canal, upon the principle of leaving open the question of, whether the locks are to be employed, or to continue at twenty feet in breadth, for future discussion.

The augmentation of the Rideau locks, without the whole series of Canals and locks from Montreal to the Rideau were similarly enlarged, would afford no military advantage whatever; and the idea of making an uninterrupted steam navigation

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

from the St. Lawrence, by either the north or south sides of Montreal Island, the Ottawa and the Rideau, appears to me too gigantic and expensive an undertaking even seriously to be thought of. I would certainly prefer going on upon our present plan, with locks and masonry of the present dimensions, at whatever rate of yearly expenditure it may be convenient to His Majesty's Government to allow, having recourse only to the wooden locks in the event of the probability of hostilities rendering the early completion of the work necessary.

(signed) *J. Carmichael Smyth, M. Gen<sup>l</sup>.*

January 22d, 1828.

No. 39.—LETTER from *R. W. Hay, Esq.* to *R. Byham, Esq.*  
&c. &c. &c.

SIR,

Downing-street, 25th Feb. 1828.

WITH reference to my letter of this day's date, transmitting the copy of an Order of the Committee of the House of Commons, for information relative to the public works projected or begun in the Canadas, I am directed by Mr. Secretary Huskisson to acquaint you, for the information of the Master General and Board of Ordnance, that it is his intention to submit to Parliament an Estimate for the sum of £. 41,000, on account of the Rideau Canal, without pledging Government as to the amount to be required for this service another year; and he will also submit an Estimate for £. 15,000 on account of the Grenville Canal, and Chûte à Blondeau, Carillon and St. Ann's Rapids.

I am, &c.

(signed) *R. W. Hay.*

No. 40.—LETTER from the Right Hon. *W. Huskisson* to the  
Master General of the Ordnance, &c. &c. &c.

MY LORD,

Downing-street, 14th March 1828.

I HAVE the honour to acknowledge the receipt of your Lordship's letter of the 21st ult. referring to two letters which had been addressed to me by your predecessor, on the subject of the Water Communication in Canada, and the proposed Military Works for the defence of Kingston.

Having attentively perused the Report of the Committee of Engineers, appointed to examine into the merits of the Plans and Estimates furnished by Lieut.-Colonel By, and that adopted by the Commission, of which Sir James Smyth was President; I do not concur in the opinion of that officer, that no advantage is likely to result from enlarging the locks of the Rideau Canal, without the whole series of locks on the Water Communication from Montreal to Kingston was similarly enlarged. It appears to me, that very considerable military and commercial advantages would accrue from enlarging the locks of the Rideau Navigation from twenty to fifty feet, and if the Committee shall concur in the opinion of Lieut.-Colonel By, that this important object can be effected at an additional expense of £. 50,000, with a further charge of £. 3,000 for widening the locks already begun, it will, I think, be advisable to leave to their discretion to authorize Lieut.-Colonel By to proceed with the construction of the locks, either to the increased dimension of fifty feet, or of any intermediate size between twenty and fifty, which may appear to them more expedient.

With regard to the amount of annual expenditure to be incurred on this work I propose to defer coming to any decision, until the Report of the Board of Officers who are to investigate the subject in Canada, has been received, and submitted to the consideration of His Majesty's Government; and it is therefore intended to confine the Estimate for 1828 to the same amount which was voted by Parliament last year.

On the subject of the Works at Kingston, I will avail myself of an early opportunity of expressing my opinion in a separate letter.

I have, &c.

(signed) *W. Huskisson.*

No. 41.—LETTER from Lord *Beresford* to the Right Hon. *William Huskisson*,  
&c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

SIR,

Office of Ordnance, 17th March 1828.

I HAVE had the honour to receive your letter of the 14th instant, and in consequence I propose sending immediately to Canada Lieut.-Colonels Fanshawe and Lewis, of the Royal Engineers, to be members of the Commission, of which Lieut.-General Sir James Kempt is to be the President: I will therefore request of you to favour me with a copy of the Instructions you propose giving to that officer, whom I conclude you will order to proceed from Halifax to Canada without delay; and it may be well to inform him, that the two officers named with him to form the Commission go from hence *via* Liverpool to New York, as at this season of the year the most expeditious route to arrive at their destination in Canada.

Adverting to that part of your letter which limits the expenditure on the construction of the Rideau Canal to the same amount as was voted by Parliament for the last year, I beg to call your attention to a Report from Lieut.-Colonel By, which has come to me since I received your letter, and which I annex hereto. By this you will see, that Lieut.-Colonel By could not have been made acquainted with the intended limitation of expenditure for this year in sufficient time to prevent his making the contracts he therein communicates to have been completed; those contracts having been made, and the contractors in all probability having made their arrangements, and even commenced operations, we can only be liberated from those engagements (I speak of those made 1st February last) by very onerous concessions, which would be a dead loss; and you will see that the contracts formerly made are in full execution, and that on these the expenses from 1st November 1827 to 22d January 1828 (less than three months) is £. 28,614. 7. 2., and these apparently not the best months for working. The expenses on the new contracts must be added to this, when you will see how little way the £. 41,000 you propose this year will go towards defraying the now inevitable expenses, whatever may be determined on, that is, whether you stop those contracts or go on with them. In short, it is obvious that Lieut.-Colonel By has laid down work for this year that will take about a third of the sum he estimated for the whole, or about £. 140,000. (taking into consideration what has been already expended); as the contracts go to complete the whole in three years from January last.

(A.)

There is certainly no time to be lost in coming to a decision on this important question.

I have, &c.

(signed) *Beresford*.

No. 42.—LETTER from the Right Hon. *W. Huskisson* to Lord *Beresford*,  
&c. &c. &c.

MY LORD,

Downing-street, 26th March 1828.

I HAVE received your letter of the 17th instant, announcing your intention of sending to Canada Lieut.-Colonels Fanshawe and Lewis, of the Royal Engineers, to be employed as members of the Commission of which Sir James Kempt is to be President.

I am happy to find that no time will be lost in dispatching these officers to their destination; and I enclose, for your information, a copy of the Instructions which it is proposed to send out by the next packet to Lieut.-General Sir James Kempt, whose zeal and activity will no doubt lead him to repair, with as little delay as possible, to the appointed place of rendezvous.

The Report on the Rideau Canal which your Lordship has transmitted, proves clearly, that the completion of that important work, upon a scale of sufficient magnitude to render it available for the objects in view, cannot be carried into effect without a greater outlay than was at first anticipated, and that the original Survey and Report of the Civil Engineer employed in Canada were either founded on very erroneous notions of the difficulty and expense of the undertaking, or, as it has since been intimated, made out from the reprehensible motive of endeavouring to benefit the Colony, by embarking His Majesty's Government in this undertaking, upon the faith of an estimate which the author of it considered to be fallacious and inadequate

25 March 1828.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

quate: Although I cannot but regret that Lieut.-Colonel By should have felt himself at liberty, before his increased Estimates had been considered and approved by the Board of Ordnance, to conclude contracts for carrying on the work on the present very extensive scale, and have entered into engagements involving so large an expenditure of the public money, without waiting for specific authority from the department at home; yet so many reasons appear to combine in favour of the plan of Water Communication, which he has recommended, that I am not disposed to withhold the sanction of the Government to the prosecution of the work, on the scale recommended by him, provided the Commission to be employed in the investigation of this subject should, after careful survey and examination, concur in the expediency of the measures proposed, and in the steps which have been taken by Lieut.-Colonel By, for the furtherance of this great work.

It is the opinion of all those in this country who are most competent to decide upon such matters, that the national advantages which are held out by adapting the Canal to the reception of steam boats, which can only be done by increasing the dimensions of the locks, will far counterbalance the additional expense to be incurred for this object, and, both in a military and commercial point of view, the facility of communication which will be afforded by the introduction of vessels not dependent for their progress upon the ordinary process of towing from the banks (a practice indeed which, in many parts of the line, could not be resorted to), is so important a consideration, as would alone fully justify the increased expenditure for the locks; and I am therefore desirous that your Lordship should call the particular attention of the engineer officers to Lieut.-Colonel By's suggestion, that the locks should be constructed of the increased dimensions of fifty feet; and if they concur with him in opinion that this object can be effected for an additional expense of £. 50,000, and £. 3,000 (or no material increase to that sum) for the alteration of the locks already in progress, that they should authorize Lieut.-Colonel By to proceed in the construction of the locks, either of the dimensions of fifty feet, or of any intermediate size, as stated in my letter of the 14th instant.

The expense of the undertaking, as now estimated by Lieut.-Colonel By, amounts to £. 527,844, of which, as only £. 46,000 has already been voted in the years 1826 and 1827, £. 481,844 remains to be provided for. It is evident, therefore, that the sum which your Lordship proposes should be applied for this year, viz. £. 140,000, instead of £. 41,000, as originally intended, will not be at a sufficient rate to complete the work within the next three years, as was at first contemplated. I do not, however, propose to apply to Parliament this year for a larger sum in the whole than £. 120,000. I understand that £. 100,000 will cover all the contracts into which Lieut.-Colonel By has entered, and which must either be continued, or given up at a very heavy pecuniary loss; and it appears that up to December 1827, the sum of £. 61,000 has been expended on the work, although £. 46,000 only has been voted by Parliament, leaving a deficiency of £. 15,000 to be provided for. It will be a matter for future consideration, in what annual proportion application shall be made to Parliament hereafter for the sum required to complete the undertaking.

In framing the instructions which it will be necessary for you to issue for the guidance of the engineer officers whom you have selected for this duty, you will, of course, take care fully to impress upon their minds the importance of the object for which they are sent out, both as regards future defence and facility of communication, points so nearly connected with the safety and prosperity of His Majesty's Canadian possessions, and also as regards the unexpected increase to the original Estimate, into which it is proper that the most complete investigation should take place on the spot by persons competent to judge in such matters. You will for this purpose instruct Lieut.-Colonels Fanshawe and Lewis, on their arrival at Montreal, to enter on a most careful examination of the Plans and Estimates sent home by Lieut.-Colonel By, as compared with those of others who have been employed in conjunction with him, with a view to ascertaining how far they have been suggested and prepared with a proper regard to the great interests of the colony, to the local circumstances of the country, and, above all, with a due attention to that economy of the public money, which is in all cases so necessary, but especially in the prosecution of works of so expensive a character.

These are the chief points upon which, as far as I am competent to offer an opinion, it will be necessary for your Lordship to instruct the officers who are destined

£. 527,844.  
£. 46,000.  
£. 481,844.  
£. 140,000.  
£. 41,000.

£. 120,000.  
£. 100,000.

£. 61,000.  
£. 46,000.  
£. 15,000.

destined for this service, upon all matters of professional detail: it will be for your department to issue such instructions as may be considered expedient, with a view to the more complete fulfilment of the important object in view.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

I have, &c.

(signed) *W. Huskisson.*

No. 43.—COPY of INSTRUCTIONS for the COMMITTEE appointed to assemble in *Canada* upon matters relating to the *Rideau Canal*.

84, Pall Mall, 27th March 1828.

1.—THE Committee will personally examine and consider upon the spot the Plan and Estimate, amounting to £.474,844, as prepared by Lieut.-Colonel By, in all its details; and if they find that it is practicable and calculated to give at all times a secure Water Communication between the Ottawa and Kingston, when the waters shall be open; and that it has been prepared with a proper regard to the great interest of the colony, to the local circumstances of the country, and, above all, with a due attention to that economy of the public money which is in all cases so necessary, especially in the prosecution of works of so expensive a character; they will authorize him to continue to execute his plan, laying out upon the work a sum not exceeding £.105,000 in the course of 1828, exclusive of the expenditure already incurred, which Lieut.-Colonel By has reported to be £.61,000 to the end of last year.

2.—The Committee to pay particular attention to the detail of the contracts entered into by Lieut.-Colonel By, and to ascertain whether the bridges, roads and other expensive works constructed by Lieut.-Colonel By, are of importance, and have been, and are likely to be, of use in lowering prices in the negotiation and conclusion of the contracts already entered into, and those which may be entered into hereafter.

3.—The Committee will also report upon the mode in which the public money has been expended, with a view to the most economical completion of the work, consistent with its effectiveness and durability.

4.—As very considerable military and commercial advantages will accrue by adapting the Canal to the reception of steam-boats, which can only be done by increasing the dimensions of the locks, the Committee are authorized, if they concur with Lieut.-Colonel By, that the locks can be enlarged from 20 to 50 feet in breadth, and 150 feet in length, and that this important object can be effected for an additional expense of £.50,000, with a further charge of £.3,000 for widening the locks already begun, (or no material increase to those sums); they will authorize Lieut.-Colonel By to proceed with the construction of the locks to those dimensions; but not to exceed the proposed expenditure for 1828.

5.—The Committee are furnished with Copies of the following Documents for their information and guidance:

1. Copy of the Report of the Committee which assembled in England upon Lieut.-Colonel By's Plan and Estimate.
2. Mr. Clowe's printed Estimate.
3. Plan of the Locks as proposed by Lieut.-Colonel By.
4. General Plan of the Line of the Canal as proposed by Lieutenant-Colonel By.
5. General Plan of the Line of the Canal as proposed by Mr. Clowes.
6. Copy of Lieut.-Colonel By's Estimate for the Canal, amounting to £.474,844.
7. Copy of Lieut.-Colonel By's last Report.

6.—With reference to the fourth paragraph, the Committee, although they will at the present abide by the Plan laid down, with the addition of the fifty feet locks, if approved by them, will nevertheless hold in view, that at some future period the Canal may be deepened or widened, so as to allow vessels drawing seven or eight feet water to navigate.

By order of the Master General and Board,

(signed) *R. Byham*, Secretary.

H

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 44.—LETTER from *R. W. Hay*, Esq. to *G. R. Dawson*, Esq.  
&c. &c. &c.

SIR,

Downing-street, 9th April 1828.

I AM directed by Mr. Secretary Huskisson to transmit to you an extract of a letter from the Master General of the Ordnance, stating, that by accounts recently received from Lieut.-Colonel By, the officer who is employed in constructing the Rideau Canal, it appears that he has entered into very extensive contracts for work to be completed in the present year; and that the Estimate of £. 41,000, which has been submitted to Parliament for this service, would be altogether inadequate to meet the engagements into which Lieut.-Colonel By has entered. Under the circumstances, therefore, which are stated by Lord Beresford, Mr. Huskisson requests that you will submit to the consideration of the Lords Commissioners of the Treasury the propriety of applying to Parliament for a Grant of £. 120,000 on account of the Rideau Canal in the present year; and if their Lordships concur in this opinion, Mr. Huskisson will direct a Supplementary Estimate to be prepared for an additional sum of £. 79,000 for this service.

I am, &c.

(signed) *R. W. Hay*.

[For the Extract referred to in this Letter, see that part of Lord Beresford's Letter of 17th March 1828, marked (A.) in margin; page 51.]

No. 45.—TREASURY MINUTE, authorizing additional Estimate for Works  
on Rideau Canal.

Copy of Treasury Minute, dated 27th June 1828.

MY LORDS read the Letter of Mr. Hay of the 9th of April, in which he states, by desire of the Secretary of State for the Colonial Department, that upon communication with the Master General of the Ordnance, he has found, that such extensive contracts have been made by Lieut.-Colonel By, in Canada, for work in constructing the Rideau Canal, that the Estimate of £. 41,000, which has been submitted to Parliament for this service for 1828, would be altogether inadequate to meet the engagements into which Lieut.-Colonel By had entered, at a time when he could not have been made acquainted with the intended limitation of the expenditure for this year; and upon which grounds the Secretary of State recommends, that an additional Estimate should be submitted to Parliament during the present Session, in order to procure a Grant of £. 120,000 for this service, which it is calculated will be sufficient to meet the expenditure which will be incurred under the engagements made by Lieut.-Colonel By.

My Lords have before them the Estimate which has already been submitted to Parliament during the present Session, the amount of which is £. 41,000.

My Lords, under the circumstances stated by the Secretary of State, are of opinion, that it will be proper to propose to Parliament a Grant during the present Session of £. 120,000 for this service for the year 1828.

Let an Estimate for £. 120,000 be prepared and submitted to Parliament, together with copies of the Papers on which My Lords have been pleased to make this order. My Lords will propose the Grant of £. 120,000 upon the Estimate now submitted.

Acquaint Mr. Hay, for the information of the Secretary of State, with the directions given.

No. 46.—DESPATCH from Lieut.-General Sir *James Kempt* to the  
Right Hon. *William Huskisson*, &c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

SIR,

Kingston, Upper Canada, June 28, 1828.

YOUR confidential communication of the 5th of January last (received on the 3d of March) having apprized me that a call would shortly be made upon me to proceed to Canada, to act as President of a Commission to be assembled in that country upon matters relating to the Rideau Canal, I had the honour of replying to that communication on the 14th of March, and of acknowledging on the 14th of May the receipt of your official despatches of the 6th and 25th of March, informing you at the same time that it was my intention to embark for Canada the moment the navigation of the St. Lawrence was sufficiently open, to meet Lieut.-Colonels Fanshawe and Lewis, the other members of the Commission, of which you had been pleased to appoint me the President.

Fogs, contrary winds, and an unusually backward season, prevented my reaching Quebec before the 12th of June, and I proceeded to Montreal on the following day, where I found Lieut.-Colonels Fanshawe and Lewis, they having previously arrived from England by the way of New York.

I naturally expected to have received from you detailed Instructions for the guidance of the Commission of which you were pleased to nominate me the President; and although no such instructions accompanied your despatch of the 25th March, yet I entertained no doubt of their having been prepared, and that it was your intention to furnish me with them, having observed in your letter to Lord Beresford (a copy of which you sent me) the following paragraph:

“ I enclose, for your information, a copy of the Instructions which it is proposed to send out by the next packet to Lieut.-General Sir James Kempt.”

On my mentioning to Lieut.-Colonels Fanshawe and Lewis that I had not received any specific instructions from you for the guidance of the Commission, the former officer put into my hands a letter addressed to himself by the acting Brigade-Major of the Royal Engineers in London, accompanied by two Papers, signed by the Secretary of the Board of Ordnance, headed, “ Instructions for the Committee appointed to assemble in Canada upon matters relating to the Rideau Canal; ” and, that the public service might not be impeded by any scrupulous adherence to forms on my part, I did not hesitate a moment, in the absence of instructions from you, to act upon those which Lieut.-Colonel Fanshawe had received from the Board of Ordnance.

The Committee accordingly proceeded to a personal examination upon the spot of the Plans and Estimates prepared by Lieut.-Colonel By, and of the Contracts entered into: and having accomplished this, and gone over the whole line of the intended navigation, minutely inspecting the works in progress at the different stations, I have the honour to transmit to you the enclosed Report, which I hope may prove satisfactory to you.

In the Instructions which Lieut.-Colonel Fanshawe received from the Board of Ordnance, the Committee are directed to report upon other matters unconnected with the subject of the Rideau Canal; but, conceiving my mission to this country to be confined to this great undertaking, and my presence being urgently required in my own government, it is my intention to return to Nova Scotia without delay.

I have, however, put Lieut.-Colonels Fanshawe and Lewis in possession of my sentiments on several points, which they will report upon to the Board of Ordnance; and they will be able, I feel persuaded, when they return to England, personally to afford the most satisfactory information on every subject referred to them.

I have the honour to be, Sir,

Your most obedient, humble Servant,

*James Kempt.*

Correspondence  
relative to the  
Canal Communica-  
tion in Canada.

No. 47.—REPORT of the COMMITTEE appointed to assemble in *Canada*  
upon matters relating to the *Rideau Canal*.

Kingston, 28 June 1828.

First Article  
of Instructions.

Plan and Estimate  
examined.

THE Committee have personally examined and considered, upon the spot, the Plan and Estimate, amounting to £.474,844, as prepared by Lieut.-Colonel By for the Rideau Canal, so far as the details could be produced, the uncleared state of a great part of the country, and the nature of so difficult a work would admit; and although, in some instances, from the extensive line to be selected and traced through a thickly wooded country, some errors were discovered, and Lieut. Colonel By himself had

previously had occasion to make some alterations in the arrangement of the locks and dams, the Committee are of opinion, that the Rideau Navigation is practicable; and, from the inquiries and investigations made with reference to the usual height of the waters in the dry seasons, that it is calculated to give at all times a secure Water Communication between the Ottawa and Kingston, when the waters are open.

The judgment which has been evinced in the selection of the positions for the several Canal Works, will, the Committee have no doubt, render them suitable to the interests of the colony, and applicable to the local circumstances of the country, whether in peace or war.

The Committee having attentively gone through the whole Canal line, have every reason to believe that the personal and zealous exertions of Lieut.-Colonel By materially tended to produce that competition which best ensures a due economy of the public money in the formation of contracts. The disappointed expectations of some individuals, and the incompetency of others, have doubtless excited some dissatisfaction; but, from the arrangements which it is proposed should be followed up in the superintendence, so far as the means of the department will admit, and a careful attention to the execution as well as measurements of the work, the Committee trust a corresponding regard to beneficial economy will prevail throughout the whole progress.

The enclosed copy of a letter (A.), left with Lieut.-Colonel By, will explain the ideas of the Committee upon this head, and also regarding such parts of the construction as they felt it their duty to offer an opinion upon.

This Duplicate Report has been furnished by Lieut.-Colonel Fanshawe, the original sent by Lieut.-General Kempt. to the Secretary of State; but, as that has not yet been received, I have thought it right not to lose any time in giving the Master General all the information I am possessed of.

10th Sept. 1828. G. M.

N. 10th.

17th Sept. 1828.

As it appears that the original of this Report has not been received at the Colonial Office, let this be sent to Sir George Murray, as the sooner the whole of this Report is considered by him and by the Treasury, the better, that it may be decided what annual sum, beginning with 1829, will be allowed for the carrying on of this work; and though the Ordnance Department has nothing to do with that part of this navigation carrying on in the Ottawa, yet he may remark that no doubt can exist that the locks on that part of the navigation ought to be equal to those still higher up.

B.

Can Lieut.-Colonels Fanshawe and Lewis suggest any further means of superintendence advantageous to the object in view, that the Ordnance Department can provide?

B.

Second Article.

Contracts exam-  
ined.

Roads of Commu-  
nication.

The detail of the Contracts entered into by the Commissariat, upon specifications given to the parties by Lieut.-Colonel By, have been particularly examined; and the specifications appear to be drawn up with care and perspicuity.

The Roads which have been made through the woods at different parts of the line, were indispensably necessary for the communications, and to facilitate the superintendence of the department. And although the Committee cannot speak specifically as to the precise effect or benefit to the execution of the work, produced by the Chaudière Bridge, there appears no doubt that the prospect of such a communication between the small settlement of Hull, on the left bank of the Ottawa, and the wild uncleared country near the entrance of the Rideau, produced in some degree a stimulus and inducement to individuals to enter into the work.

The question of their construction was previously referred to, and approved by, the Commander of the Forces. Moreover, these bridges will eventually be of essential importance in facilitating the settlement of the adjacent country.

The

The Committee have inquired into the mode in which the public money has been expended, with a view to the most economical completion of the work, and have paid particular attention to the circumstances under which this work has thus far advanced, in a country which, two years since, was, with very little exception, a complete wilderness. Although in fixed stations, with organized establishments, a more uniform system of regularity would have prevailed, they have every reason to believe that economy has not been heedlessly lost sight of by Lieut.-Colonel By; and that he has, in accordance with what he believed to be the spirit of his instructions, pushed forward the work, and excited a degree of exertion throughout the department, which few individuals would have accomplished.

Third Article.

Economy of the Works inquired into.

Before entering upon the question of enlarging the Locks, as adverted to in the fourth and sixth Articles of Instructions, the Committee beg to describe the general state in which they found the existing navigation of the Ottawa and Rideau between Montreal and Kingston.

Fourth and Sixth Articles.

Enlargement of the Locks.

This line may be divided into two portions: 128 miles from Montreal by the Ottawa to By Town, at the entrance of the Rideau; and 154 miles by the Rideau River and Lake Navigation from By Town to Kingston.

The *first* commences with La Chine Canal at Montreal, extending nine miles, and is complete for vessels not exceeding twenty feet beam, and five feet depth of water. This is a provincial work.

At the junction of the Ottawa and St. Lawrence, at the western extremity of Montreal Island, are St. Ann's Rapids, and the Vaudricral Passage, separated by the Isle de Perrôt, and not navigable for vessels of the above draft in dry seasons. But from hence, for a distance of twenty-seven miles to the foot of Carillon Rapids, such vessels may be used.

The Carillon Rapids are not navigable, and will require a Canal  $1\frac{1}{2}$  mile long, with two locks.

The Chûte à Blondeau is a short Rapid, intermediate between the Carillon and Grenville, which will also require a Canal, and one lock.

At the foot of the Long Saût of the Ottawa commences the Grenville Canal, now executing by the Staff Corps, originally intended for vessels of twenty feet beam, and four feet draft of water, but will admit of six feet water. Three out of six locks intended for the Grenville Canal, and nearly all its excavation, are completed.

This distance of interrupted navigation, from the foot of the Carillon to the head of the Long Saût, is about twelve miles:—from hence, to the entrance of the Rideau Navigation, is a distance of sixty-four miles, having occasional shoals, with not more than five feet water in dry seasons.

The *second* part of the Back Water Communication commences at Entrance Bay; from whence, to Rideau Lake, a distance of eighty-three miles, with a lockage of 283 feet, the river is capable of, and the Estimate is calculated for, a depth of water of five feet.

In one part of the Rideau Lake, at the Narrows, it is intended to deepen four feet six inches, to ensure the five feet at all seasons. This Lake is the summit pond for the supply of both arms of the Rideau line. To regulate and control the water in wet seasons, the surplus will be let off by a waste weir, with sluices at White-Fish Falls, leading to the Gannonnoqui River and the St. Lawrence, eastward of Kingston.

From Rideau Lake to Kingston, a distance of thirty-nine miles, and a descent of 154 feet, five feet depth of water only has been contemplated; and even to obtain this, a small portion of Kingston water must be deepened three feet.

It would be unnecessary to detail the particular portions executed of each work; but upon the Rideau line to the summit pond, one-sixth of the work generally may be considered accomplished.

On the Lakes which are to form the summit pond, about one-seventh of the work is done; and from thence to Kingston one-eighth appears done.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Contracts are entered into for four-fifths of the navigation from the Ottawa to Kingston; and such preparations made for the progress of the work, that, although the amount of expenditure will greatly exceed that contemplated in the Instructions, the Committee had *no alternative*, but either to suspend their sanction for the further advance, and thereby involve Government in a certain loss for detention and breach of contract, or to authorize Lieut.-Colonel By to proceed upon what they consider the most practicable means of adapting this navigation for all probable naval and military purposes, and for the commercial uses of the Upper Country, with a view also to the uniformity of the whole Back Water Communication.

The nature of the navigation will not admit of towing-paths, except for certain short distances: it therefore appears, that for all operations of war, some certain means must be adopted of propelling vessels; and steam-boats, either for towing or transport, seem to be the only alternative; whilst for commercial purposes individuals may either avail themselves of the same certain means, or trust to their sails and sweeps.

The Committee see no advantage in locks of fifty feet width, without a corresponding depth of water; and to obtain that, a further increased probable expense of nearly £ 250,000, in deepening a great portion of the line (as the banks will not admit of increased inundation), is estimated by Lieut.-Colonel By, besides an alteration of the Grenville Canal, an enlarged scale of construction for Châte à Blondeau, Carillon and St. Ann's; and eventually (with permission of the Province), an alteration of La Chine, or the opening the navigation by the river, on the north side of the island of Montreal.

And here the Committee must explain with respect to Lieut.-Colonel By's small comparative increase of £.53,000 upon his original Estimate of £.474,844, for the purpose of enlarging the locks from twenty to fifty feet, that the latter sum embraces the substance of masonry and gates, as well as the dimensions of La Chine Canal; whilst the Lieut.-Colonel proposed in the fifty feet lock to reduce the thickness of the side walls to the usual dimensions, proportioned to the resistance that is required; to alter the construction of the sluices and the position of the gates; moreover, the extra cutting had been originally provided for, as Lieut.-Colonel By had thought it necessary to open the Canal part for the passage of timber rafts; and this service is already executing in many parts of the line.

The original Estimate did not comprehend the expense of the Civil and Military Establishment required for the service of the Rideau Canal during its progress, nor the remuneration of individuals for the removal of mills, &c. and for land on the banks of the Catarqui, which will be inundated. These expenses are included in a letter from Lieut.-Colonel By, dated the 26th inst. which states his total contemplated expenditure for the Rideau Canal, with fifty feet locks, upon his own construction, at £.599,176. 2. 9½, and that the work would be completed in the year 1831.

Scale of Navigation  
proposed by the  
Committee.

After a careful consideration of all the circumstances attending this very great undertaking, and a most anxious desire not unnecessarily to involve the Mother Country further into an extent of expenditure little contemplated in the outset, at the same time not to sacrifice any large portion of the expenses already incurred or engaged for by specific contracts, the Committee recommend that the whole Back Water Communication should be completed, with five feet depth of water; and the locks uniformly adapted for the passage of steam-boats 30 feet wide over the paddle boxes, and for spars 108 feet long), besides ample space for working the gates.

The usual traffic of the St. Lawrence is in Durham boats, two of which would easily pass a lock of the above dimensions at a time.

A steam-boat 30 feet wide and 108 feet long, with a thirty-two horse-power, would tow at least two Durham boats from four to five miles an hour in the still water obtained by the dams.

Steamers of this size are best adapted for, and are nearly similar to, those now plying on the Ottawa; and are equal to some of the smaller boats now on the St. Lawrence, between Quebec and Montreal. The Committee also think that longer boats would be inconvenient in some parts of the Rideau Navigation. So that  
without

without establishing a different description of boat for each part of the line, those now in use, viz. the small steamers and the Durham boats, would be available for the whole, and might be taken up for ordinary occasions in ample numbers for military movements, and for the transport of naval stores.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

The Committee have attentively viewed the practicability of transposing such of the Locks as are contemplated in front of the Rideau Navigation, as adverted to in the First Article of Additional Instructions; but although it would be feasible, the selection of their intended sites was generally pointed out by the nature of the ground; and the transposition would, in the opinion of the Committee, be attended with an expense greatly beyond any advantage which a careful examination of the country, and a consideration of the degree of protection which such an alteration might afford.

First Additional  
Instruction.

Transposition of  
the Locks.

The river itself is the navigation, and the top of each dam will be a ford; therefore, as no natural impediment would exist, the only means of protecting the artificial works from demolition by an enemy, will eventually be by works of defence, or by a corps of observation.

The country between the Rideau and the St. Lawrence is now but partially settled, and the remainder thick wood; so that the military features cannot be accurately reconnoitred: the Committee therefore recommend only at present such a construction of the lock-houses (which will serve as a rendezvous for the Militia) as will secure protection against small numbers, until the general settlement of the country will identify the preservation of the navigation with the property and interests of the neighbouring inhabitants, will assist in the general defence, and will point out clearly the expediency, nature and situation for more important works.

Second Article of  
Additional In-  
structions.

Present Protection  
of the Artificial  
Works.

The Committee have directed Lieut.-Colonel By's attention to this point, with a view to securing at once such portions of land along the line as may appear calculated for defensive occupation.

The Central Depot between Montreal and Kingston, the Committee think should be at By Town, at the entrance of the Rideau Navigation, where the ground is peculiarly favourable for defence, and the situation affords great facility in embarking and disembarking men and stores.

Sixth Additional  
Instruction.

Situation for a  
Central Depot.

Lieut.-Colonel By has been desired to cause an accurate survey of the position for the depot to be made, together with a valuation of whatever land may be required in addition to the part already reserved.

By the copy of the letter (A.) left with Lieut.-Colonel By, it will be seen, that the Committee have authorized his proceeding with the work on the scale and construction, and under regulations which appeared to them expedient, to an extent of expenditure not exceeding £. 105,000 for the year 1828, in compliance with the First Article of Instructions. They now beg to annex Lieutenant-Colonel By's account of the probable total expense of the Navigation, amounting to £. 576,757. 14. 9½, but which, according to the calculations of the Committee, will be reduced to £. 558,000; and this sum they have every reason to believe will be found ample to meet any probable contingency that may occur. They also beg to repeat, that it includes the charge for the Military and Civil Establishment to the year 1831, amounting to £. 60,614, and the probable remuneration to individuals for loss of property, estimated at £. 10,662.

No. 48.

£. 576,757. 14. 9½.

(signed) *Jas. Kempt*, Lieut.-General.  
*Edw. Fanshawe*, Lieut.-Col. Royal Engineers.  
*G. G. Lewis*, Lieut.-Col. Royal Engineers.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 48.—LETTER (A.) from the COMMITTEE to Lieut.-Colonel By,  
&c. &c. &c.

SIR,

Kingston, 28th June 1828.

THE Committee appointed to assemble in Canada respecting the Rideau Canal having gone through the line of navigation, and examined the nature and construction of the works proposed by you, the extent of the contracts entered into, the mode adopted for the prosecution of the work; and certain individuals having preferred claims which, if just, it is desirable should be liquidated as soon as possible, desire to call your attention to, and request your compliance with, the following observations:—

17 September 1828.  
The Master General considers these Instructions to Lieut.-Colonel By judicious.

The account of monies expended upon the Rideau Canal up to the 23d January 1828, transmitted to England by you, states the amount at £.61,236. — 6d. The Committee are instructed to authorize you to lay out upon the work in the year 1828 the sum of £.105,000, under the following restrictions; and we beg to caution you, in the clearest manner, against undertaking any further works until those already in progress are sufficiently advanced to enable you to appropriate funds for other parts.

You will be pleased to understand that, in the first place, you are to deduct from the £.105,000 your expenditure from the 23d January 1828 up to the present period. Secondly, We have to request you will, on the 30th of this month, discharge every just claim on the Department, according to the terms of contract, and upon the most careful measurement and examination by the certifying officers. The balance remaining out of the £.105,000, after the payments above described, will be the sum you are authorized to expend in the following manner during the year 1828:

The navigation is to be carried on between the Ottawa and Kingston upon a continuous depth of water of five feet at the lowest seasons, calculating the Kingston waters at present as four feet above the lowest level.

The locks are to be capable of containing a steam-boat thirty feet wide over the paddle boxes, and 108 feet long, clear of opening the gates.

The Committee cannot, upon so extensive a line, authorize any deviation from the original mode of placing the sluices, or the position of the gates; but they concur with you in reducing the thickness of the masonry in the side walls, as shown in your Section of 1st December 1827.

With respect to the construction of the dams, the Committee recommend the greatest attention to the abutments, and that the upper surface be formed of joggled masonry, as shown in the Section for Jones's Fall-dam sent to England by you, and approved by the Committee which assembled in London.

The Committee concur in the advantage of the alteration proposed by you as regards the arrangement of the locks between Dow's Great Swamp and the Hog's Back, the inundation of the swamp itself, and the concentration of four locks at Kingston Mills, to obtain an uninterrupted navigation up to Brewer's Lower Mills, provided the existing contracts are of a nature to authorize such a deviation from the original Plan.

You are requested to favour the Committee with the amount that will be required for the total expense of the Rideau Navigation upon the above scale and construction.

The Committee are aware, that in an undertaking of the nature of the Rideau Navigation, through an uncleared country, it has not been possible, with the means at your command, and the expedition which has been used, to practise that degree of regularity and vigilant superintendence by executive professional officers which is indispensable, and can alone, in its further progress, ensure a proper economy of the public money, consistent with the effectiveness and durability of the work; but they beg particularly to impress upon you their opinion, that the military officers, and the professional civilians of the department under your orders, should be immediately dislocated throughout the works in progress in such a manner as to secure for every part of the line at least a daily inspection, with such more constant superintendence as will ensure the most substantial and creditable execution of the very important

important work which has been committed to your charge, and that each officer should keep a full and complete diary of the progress, reporting in abstract to you weekly.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

The Committee cannot sufficiently recommend the most careful scrutiny and examination by the executive officers under your authority of all claims by contractors or others employed by Government, with a desire to do strict justice, and to satisfy individuals that such a feeling is consistent with your own wishes and the due progress of the work.

The Committee are of opinion, that, especially in a work of such magnitude, where officers are liable to removal, and many individuals concerned, all check of time, and all measurements of work or material, should be entered in a book kept as a public record, signed by the certifying officers whenever measurements are made, and assented to at least weekly by the signature of the claimant.

An abstract from this book, transmitted quarterly to By Town, will enable you to order corresponding payments, agreeably to the terms of contract.

We have to call your attention to the expediency of constructing the lock-masters' houses in such a manner, and in such situations, as that they will become defensible guard-houses, and a protection to the locks and dams at the several stations; and that you should submit to the proper authorities the reservation or purchase of such land at each station as appears best adapted for military works.

The Committee have already recommended an accurate survey of the ground about By Town; and we request you to annex to it the valuation of whatever additional land, beyond the present reserve, as will be required for a depot for 5,000 men.

We have, &c.

(signed) *J. Kempt*, Lieut.-General.  
*Edw. Fanshawe*, Lieut.-Colonel Royal Engineers.  
*G. G. Lewis*, Lieut.-Colonel Royal Engineers.

No. 49. —LETTER from Lieut.-Colonel *Fanshawe* to General *Mam*,  
&c. &c. &c.

SIR,

Kingston, 30th June 1828.

MY letter of the 14th May will have announced to you the arrival of Lieut.-Colonel Lewis and myself at Montreal; and by my subsequent communication to Lieut.-Colonel Ellicombe (14th June), you will have been informed of Lieut.-General Sir James Kempt's arrival, as President of the Committee on matters relating to the Rideau Canal. The Instructions received from the Master General and Board were put into his hands; and we have since accompanied the General through the line of navigation; and examined into all matters connected with that undertaking, as pointed out by the Instructions.

I now beg to transmit for your information, and that of the Master General, a copy of the Report of the Committee upon the Rideau Canal, together with its enclosed copy of a letter addressed by us to Lieut.-Colonel By, dated the 28th instant.

You will perceive, that the Committee have authorized the construction of a thirty-feet wide lock, with five feet water; a greater depth could not be gained but at a very great increase of expense; and even to obtain the five feet, parts of the Rideau Lake and the Kingston Waters will require a considerable sum; but the service had been contemplated in Lieut.-Colonel By's original Estimate.

The Committee did not think the navigation calculated for larger vessels than the proposed locks will admit.

The Lieut.-Colonel has already, by letter, dated 10th instant, informed you, that the subsistence and military expense of the two companies of Sappers, is not provided for in the Rideau Estimate; other parts of the establishment, and remuneration to individuals for the loss of property, such as mills which will be destroyed, and land flooded by the navigation; have in like manner to be added; so that the

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

total probable expenditure as now proposed, will amount to £. 558,000. And if our proceedings are approved, it will be desirable that Lieut.-Colonel By should, as soon as possible, be informed of the rate of annual expenditure which he may calculate upon. He wishes, if the Grants can be made, that the work should be completed in the year 1831.

Lieut.-General Sir James Kempt returns immediately to his government, having completed the Canal question.

Lieut.-Colonel Lewis and myself will proceed with the duties prescribed in the other parts of the Master General's Instructions, which are already in an advanced state, and shall return to England so soon as they are accomplished.

I have the honour to be, Sir,

Your most obedient, humble Servant,

*Edw. Fanshawe,*

Lieut.-Colonel Royal Engineers.

No. 50.—LETTER from *R. Byham*, Esq. to *R. W. Hay*, Esq.  
&c. &c. &c.

SIR,

Office of Ordnance, 29th September 1828.

THE Master General and Board having had under consideration the enclosed letter from Lieut.-Colonel Fanshawe, conveying a copy of the Report of the Committee appointed to assemble in Canada, upon matters relating to the Rideau Canal, I have the honour, by command of the Master General and Board, to transmit the same, with his Lordship's Minutes of 17th instant annexed, for the information of Secretary Sir George Murray.

I have, &c.

(signed) *R. Byham.*

No. 51.—LETTER from *R. W. Hay*, Esq. to *R. Byham*, Esq.  
&c. &c. &c.

SIR,

Downing-street, 22d October 1828.

I HAVE laid before Secretary Sir George Murray your letter of the 29th ult. enclosing a Copy of the Report of the Committee appointed to assemble in Canada upon matters relating to the Rideau Canal; and I am directed to acquaint you, that, previous to expressing any opinion upon the subject, Sir George Murray is desirous that a comparative Estimate should be made out, showing the difference between the expense of completing the Back Water Communication upon the same scale as to the depth of the Canal, and the size of the locks, as the La Chine Canal, and that of completing it upon the scale proposed by the Committee; and I am to request that you will submit this suggestion for the early consideration and decision of the Master General and Board of Ordnance.

I am, &c.

(signed) *R. W. Hay.*

No. 52.—LETTER from *R. Byham*, Esq. to *R. W. Hay*, Esq.  
&c. &c. &c.

SIR,

Office of Ordnance, 7th November 1828.

HAVING submitted to the Master General and Board your letter of the 22d ult. respecting the Rideau Canal, and signifying the desire of Secretary Sir George Murray, that a comparative Estimate should be made out, showing the difference between the expense of completing the Back Water Communication, upon the same scale as to the depth of the Canal, and the size of the locks, as the La Chine Canal, and that of completing it upon the scale proposed by the Committee; I am directed, to transmit herewith a Copy of a Report from Lieut.-Colonel Fanshawe, with a Minute thereon from General Mann, accompanied by the comparative statement therein adverted to; and the Master General and Board request you will submit the same to Sir George Murray, in reference to your letter above-mentioned.

I have, &c.

(signed) *R. Byham.*

No. 53.—LETTER from Lieut.-Colonel *Fanshawe* to General *Mann*,  
&c. &c. &c. with Minute thereon.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

SIR,

Harwich.  
28th October 1828.

1. I HAVE to acknowledge the receipt of your Minute of the 27th instant, directing me to furnish the information required by the Secretary of State for the Colonies in the enclosed letter of the 22d, respecting the Back Water Communication between Kingston and Montreal.

2. I have drawn up the accompanying Comparative Statement, grounded upon the different Estimates which have been framed by the executive officers from actual levels, and; so far as it goes, I hope it is tolerably correct.

3. But, as regards the continuation of the navigation from the Lake of the two Mountains on the Ottawa to the St. Lawrence, either by Rivière des Prairies, on the north side of Montreal, or by St. Ann's Rapids and La Chine, I beg to state, that no accurate survey or levels for the purpose of ascertaining the exact expense have been taken.

4. The ground was visited, to ascertain the practicability of either line, and the general levels of the banks; but until very careful sections are taken, I cannot venture to offer detailed Estimates.

5. As a comparative statement, I should think that a Canal to pass St. Ann's Rapids would, on the scale of La Chine, cost £. 25,000; and on the Committee scale, that the expense would be nearly £. 40,000.

6. La Chine Canal is a provincial work; it is at present calculated for Durham boats, and it has a towing path; therefore, although the proposed steam tow-boat could not pass these locks, there need be no trans-shipment of stores. The laden boats might pass, and be taken in tow by another steamer after getting through this piece of Canal; consequently the enlargement of the La Chine would, to a certain extent, be optional.

7. And here I take the liberty to remark, that my own opinion is much in favour of making the continuous line of Back Water Communication pass from Quebec to the Upper Provinces, by Rivière des Prairies, on the north side of Montreal Island, avoiding both St. Ann's and La Chine

I have, &c.

(signed) *Edward Fanshawe*,

Lieut.-Colonel Royal Engineers.

Forwarded to the Board for their information and orders, in reference to their Minute of the 24th instant, on the enclosed letter from the Colonial Office. In forming any comparison of the expense of the Canal and Locks of this Water Communication upon a large scale, with the dimensions of the La Chine Canal, it is now merely as concerns the Rideau a matter of information, but not to control any decision; because the Rideau Canal is now carrying on upon the large scale that the Committee last sent to Canada have been authorized to order to be executed; therefore no alteration can be now made with respect to that part of the work, the Estimate of which must stand as it does at £. 558,000; the other portion of the Back Water Communication is shown in the enclosed Abstract, furnished by Lieut.-Colonel Fanshawe, with the exception of St. Ann's, which in this letter he has assumed to be £. 40,000 for the large scale, and £. 25,000 for the La Chine dimensions.

G. M.

31st October 1828.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 54.—COMPARATIVE STATEMENT, by Lieut.-Colonel *Fanshawe*.

COMPARATIVE STATEMENT, showing the probable difference between the Expense of completing the BACK WATER COMMUNICATION between *Kingston* and *Montreal*, upon the same Scale, as to the depth of the Canal, and the size of the Locks, as the *La Chine* Canal, and that of completing it upon the Scale proposed by the Committee's Report of 28th June 1828.

	On La Chine Scale.	Committee Scale.	
	£.	£.	
From Kingston to the Ottawa	* 516,309	558,000	In progress on Committee Scale.
Grenville Canal	18,000	59,100	Commenced for only four feet water; since enlarged.
Chûte à Blondeau Canal	8,800	12,540	Not commenced.
Carillon	55,863	105,000	ditto.
St. Ann's	No detailed Estimate formed; the ground not being purchased, or the levels taken.		
La Chine			Provincial work.

\* Lieut.-Colonel By's Estimate would make this amount to £. 576,121; but the proposed reduction in the substance of the masonry and gates, will reduce the amount to the sum above stated.

(signed) *Edward Fanshawe*,  
Lieut.-Colonel Royal Engineers.

No. 55.—LETTER from *R. W. Hay*, Esq. to the Hon. *J. Stewart*, &c. &c. &c.

SIR,

Downing-street, 22 November 1828.

I AM directed by Secretary Sir George Murray to transmit to you the copy of a letter from the Secretary to the Ordnance, enclosing the Report of the Committee appointed to assemble in Canada upon matters relating to the Rideau Canal. I also enclose a Memorandum, showing the sums which remain to be provided to complete the Rideau and Grenville Canals, according to the Estimates of the Committee; and I am to request that you will lay the same before the Lords Commissioners of the Treasury, acquainting their Lordships that it is very desirable that Lieut.-Colonel By should be enabled to complete the work in 1831; and I am to request that you will communicate to me their Lordships' decision as to the amount of the Estimate to be submitted to Parliament.

I am, &c.

(signed) *R. W. Hay*.

Memorandum:—

RIDEAU CANAL:		£.
Total estimated expense	- - - - -	558,000
Deduct granted in 1826, 1827 and 1828	- - - - -	166,000
Remains to be provided	£.	392,000

GRENVILLE CANAL:		£.
Total estimated expense	- - - - -	59,000
Chûte à Blondeau	- - - - -	12,540
Carillon	- - - - -	105,000
St. Ann's (no estimate received).	- - - - -	
Deduct already granted	- - - - -	176,640
Remains to be provided	£.	96,640

29 Sept. 1828.

No. 56.—TREASURY MINUTE as to further Estimates towards completing the Rideau and Grenville Canals.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Copy of the Treasury Minute of 23d December 1828.

READ Letter from Mr. Hay, dated 22d November, transmitting Copy of one from the Secretary of the Ordnance, with the Report of the Committee appointed to assemble in Canada upon matters relating to the Rideau Canal; together with a Memorandum, showing the sums which remain to be provided to complete the Rideau and Grenville Canals, according to the Estimate of the Committee;—and Mr. Hay at the same time states, by direction of Secretary Sir George Murray, that it is very desirable that Lieut.-Colonel By should be enabled to complete the work in 1831;—and Mr. Hay requests to be favoured with the decision of My Lords as to the amount of the Estimate to be submitted to Parliament.

Acquaint Mr. Hay, that My Lords approve of the application of the sums mentioned in his letter for the further prosecution of those works in the ensuing year; viz.—

For the Rideau Canal	-	-	-	£.130,666.	13.	4.
Grenville Canal	-	-	-	32,233.	6.	8.

and that their Lordships will give the necessary directions that Estimates for the same should be prepared and laid before Parliament.

No. 57.—LETTER from *R. Byham, Esq.* to *R. W. Hay, Esq.*  
&c. &c. &c.

SIR,

Office of Ordnance, 12th January 1829.

THE Master General and Board having had before them a Report, dated the 20th November last, from Lieut.-Colonel By, upon matters relating to the Rideau Canal, and the Funds which will be required in the prosecution of the work;—

I have the honour to transmit herewith a Copy of the said Report, for the information of Secretary Sir George Murray; and, adverting to Lieut.-Colonel By's statement of the sums which will be required for completing the Canal in the period of time originally calculated by the Duke of Wellington, the Master General, and Board, beg to represent the very great importance of Lieut.-Colonel By being informed as early as possible of the amount intended to be allowed him for expenditure on the work in the present year; and they recommend that the amount he applies for (viz. £.137,000) may be granted.

I am at the same time directed to state, that the Master General and Board propose, if Sir George Murray sees no objection, to sanction the tolls for crossing the bridges, as proposed by Lieut.-Colonel By.

I have, &c.

(signed) *R. Byham.*

No. 58.—REPORT upon Matters relating to the Rideau Canal.

Lieut.-Colonel *By* to General *Mann*, &c. &c. &c.

SIR,

Royal Engineers' Office, Rideau Canal,  
20th November 1828.

I HAVE the honour of transmitting, for the information of his Lordship the Master General and Right Honourable and Honourable Board of Ordnance, the Progress Report of Works and Expenditure on the Rideau Canal from its commencement on the 21st September 1826 to the 1st November 1828, at which date I had expended £.141,313. 15. 5 $\frac{1}{2}$ .; and between the 1st and 20th instant, I have paid £.12,003. 5. 11 $\frac{1}{2}$ , making my total disbursement £.153,317. 1. 5 $\frac{1}{2}$ ., which leaves a balance of only £.12,582. 18. 6 $\frac{1}{2}$ ., of which I suppose £.5,000 is due to the various contractors, as we never advance the full value on the cut stone until it is measured in the wall; and I have the satisfaction to state, that although my

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

operations have been much retarded by the restricting of my expenditure in the commencement of the present year to £. 41,000, until the Committee, on 29th June, authorized my expending £. 105,000, and the sickness among my men and officers, which created a sad stagnation in the works; yet, taking these unexpected events into consideration, there has been an astonishing quantity of work performed, as fully detailed in the accompanying Report. The line of bridges erected across Ottawa at the Chaudière Falls is completed; and although the great Kettle Bridge was destroyed by the chains breaking, on 2d April last, it has been rebuilt, and that service completed at an excess of only £. 372. 14. 4 $\frac{1}{2}$ . on the original Estimate. The traffick appearing very great, I have ordered a toll-house and gates to be erected, and the following notice to be fixed at the gate; and conceive the tolls will produce at least £. 100 currency per year, which will be paid, as collected into the military chest, until I receive instructions on that subject:—

“ THESE Bridges across the Chaudière Falls, having been built at the  
“ expense of His Majesty’s Ordnance, Orders are given, That no person  
“ whatever shall be permitted to pass, until they have paid one Penny; one  
“ Penny also to be paid for every horse, mare, gelding, ox, cow, calf, sheep,  
“ lamb and pig; and Two-pence for every waggon, sleigh or carriage, until  
“ the pleasure of His Majesty’s Ordnance is known.

(signed) “ John By,  
“ L’ Col’ Roy’ Eng’.”

I have succeeded in making the mound across Dow’s Great Swamp water tight, which places beyond all doubt the practicability of converting that unhealthy swamp into a fine sheet of water, and does away with the original idea of forming an aqueduct in the centre of the said mound, and a considerable saving will be made in consequence. I have also succeeded in raising the Rideau River at the Hog’s Back twenty-seven feet perpendicular, and am now busily employed in carrying on that work in thickening the base, and completing the arch key-work across the river, which was injured by the spring floods carrying away the temporary dam; and I have every reason to hope by that time next year to have the water raised to the required height of forty-five feet, as at present I have met with nothing to create a doubt of the practicability of the plan; and if I am allowed to expend £. 137,215. 11. 10 $\frac{1}{4}$ . per annum in 1829, 1830 and 1831, I am confident the whole of the proposed works will be completed by the 12th August 1831; but I shall require the assistance of six officers of royal engineers, in addition to those I have now the honour of commanding, to ensure the masonry and other works being well executed.

I have, &c.

(signed) John By,  
Lieut.-Colonel Royal Engineers.

No. 59.—LETTER from R. W. Hay, Esq. to R. Byham, Esq.

&c. &c. &c.

SIR,

Downing-street, 16 January 1829.

I HAVE laid before Secretary Sir George Murray your letter of the 12th instant, and I am directed to acquaint you, in reply, that the Lords Commissioners of the Treasury have sanctioned the expenditure of £. 130,666. 13. 4. on the Rideau Canal, and £. 32,213. 6. 8. on the Grenville Canal for the year 1829; and a communication to that effect was made to the Commander of the Forces in Canada by the American mail of the present month.

With respect to the proposed Tolls on the Bridges across the Chaudière Falls, Sir George Murray is not aware of any objection to levying the Tolls, provided it can be done without infringing on any provincial law.

I am, &c.

(signed) R. W. Hay.

No. 60.—LETTER from Sir *James Kempt* to the Right Hon. Sir *George Murray*,  
&c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

SIR,

Quebec, 12th February 1829.

IN submitting for the approval of His Majesty's Government the accompanying Estimate for the completion of the Grenville Canal (No. 1.), Plans and Estimates of the Canals proposed to overcome the obstructions to the navigation of the Ottawa at the Châte à Blondeau (No. 2), and Carillon Rapids (No. 3), I beg to call your attention to the despatch upon the Canals at Grenville and Châte à Blondeau, addressed by the Earl of Dalhousie to Mr. Huskisson on the 30th January 1828, a copy of which is herewith enclosed.

No. 61.

No. 62.

No. 63.

No. 64.

The Grenville Canal is about six miles in length: it is now navigable, on the original scale, to within half a mile of its lower or western extremity, and the excavation is nearly completed along its whole extent.

It was originally intended that the locks on this Canal should have been of similar dimensions with those of the Canal at La Chine (108 feet long by twenty in breadth), and suited only to the navigation of Durham boats, and other small craft. But in the summer of 1828, the Committee, of which I was President, directed the locks which had not been commenced, and those which admitted at that period of the necessary alterations, should be constructed on the enlarged scale (134 feet long, or 110 feet clear of the gates, and thirty-four feet wide), to correspond with the locks of the Rideau Canal, and adapted to the navigation of steam-boats thirty-three feet broad across the paddle-boxes.

The three upper locks have been finished on the original scale; the pits of the two next are nearly completed on the enlarged scale; and those of the two lower (on the same scale) are in an advanced state. Major Du Vernet, commanding the Royal Staff Corps, reports, that, with the means he now possesses, the Canal cannot be completed before the spring of 1830.

The sum already expended on the Grenville Canal, you will perceive, by the accompanying Statement (No. 5.), amounts to £.113,920 sterling; and the Estimate for its completion (No. 1) is £.21,000 sterling, giving an aggregate amount of £.134,920 sterling, exclusive of a considerable quantity of stores and tools supplied by the Barrack and Store-keeper General's Department, the amount of which cannot now be ascertained. To overcome the obstruction at the Châte à Blondeau, a Canal of 700 feet in length, with one lock, will be required.

No. 67.  
No. 61.

The soil through which the Canal will pass being of a very rocky description, and the excavation in consequence very expensive, it is proposed to form the Canal of a somewhat diminished breadth, from which, as its extent is so small, it is supposed that no inconvenience can arise. The estimated expense for the completion of this Canal is £. 11,580 sterling.

The Canal projected at the Carillon Rapids is a much more considerable operation than that at Châte à Blondeau, extending two miles and 228 yards, generally traversing a rocky and difficult soil.

The formation of this Canal upon the full dimensions (seventy-five feet wide at the surface of the water), through a soil of that character, would greatly increase its expense; it is therefore proposed to form it also of a reduced breadth, though of sufficient width throughout to admit of the passage of a steam-boat of the largest class frequenting this navigation, with two "lay-bys, or passing places," for those boats.

Major Du Vernet is of opinion, that those reduced dimensions will answer every purpose of this Canal; and, by placing the lock-houses on elevated situations, signals might, if necessary, be made to prevent boats from encountering each other in the narrow parts of the Canal.

Upon this Canal two locks will be required, and its estimated expense is £.58,000 sterling.

To increase the breadth of the Canal along its whole extent to the full dimensions (seventy-five feet), would cause an augmentation of the Estimate to the amount of £. 23,500 sterling.

The locks of the Canals proposed at the Châte à Blondeau and Carillon Rapids,

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

you will perceive by the Estimates, are of the same dimensions with those on the Rideau Canal, and calculated for the navigation of steam-boats of thirty-three feet across the paddle-boxes. Major Du Vernet is of opinion that they cannot be completed in less than three seasons with the means now under his control. Those means he considers insufficient to supply the military overseers required to superintend operations on so extensive a scale: with a view, therefore, to accelerate their completion, but more especially the excavations, he recommends that they should be executed by contract under the general superintendence of the Royal Staff Corps; and though he is not aware whether this system would tend to increase or diminish the estimated expense of the Canals, I beg most strongly to concur in the propriety of this recommendation.

The completion of those three Canals will obviate every impediment to the navigation from the Rapids of St. Anne, on the St. Lawrence, to the mouth of the Rideau Canal: until they, and a Canal to turn the Rapids at St. Anne, are finished, the great advantages which the Rideau Canal will yield to the defence, and to the commercial and agricultural interests, of the Canadas cannot be obtained; and as they severally form component parts of the great system of internal navigation which Great Britain has undertaken for the benefit of these colonies, and upon which their defence so materially depends, I beg most earnestly to recommend, that the completion of the Grenville, Chute à Blondeau and Carillon Canals may be authorized with all the expedition of which circumstances admit.

The ground in the vicinity of the St. Ann's Rapids I have directed to be surveyed when the season permits, and a Plan and Estimate of the Work required to obviate the interruption they present to the navigation of the St. Lawrence to be prepared by Major Du Vernet, which, when received, I shall submit for your consideration; and in the course of the ensuing summer I trust I may be enabled to adopt a similar proceeding with respect to the Water Communication *in rear* of the Island of Montreal, which I consider a most important part of the back navigation of this country.

I have, &c.

(signed) *James Kempt.*

No. 61.—ESTIMATE of the probable Amount of Sums required to complete the Works at *Grenville.*

	£.	s.	d.
Excavation from the mouth of the Canal to the Regulating Lock 500 yards, 2 feet deep and 33 feet wide, 3,666 cubic yards	549	18	-
Making a Dam to effect the same	50	-	-
Completing the Pier, &c.	50	-	-
Completing the 4 Lock-houses	50	-	-
Fourth and Fifth Locks:			
Excavating 596 yards of rock in 5th Lock Pit, at 3s. per yard	89	8	-
Excavating 1,191 yards of rock and earth in 4th Lock Pit, at 2s. per yard	119	2	-
Ashler wanting for the 4th and 5th Locks, to make up the quantity required, 7,549 feet, at 3s.	1,132	7	-
Ditto - of coping 350 running feet	200	-	-
80 Square feet of pavement	80	-	-
Sixth and Seventh Locks:			
5,657 Yards of rock to be excavated in Lower River Lock Pit, at 4s.	1,131	8	-
2,580 Yards for 6th Lock Pit, at 4s.	516	-	-
Ashler wanting to complete 10,463 feet, at 3s.	1,569	9	-
900 Feet of coping pavement, hollow coirns, and sills for the two Locks; if they must be got from the Hawkesbury Quarry, it is supposed will cost about	1,800	-	-
A Coffe-dam in the river at Greece's Point	150	-	-
Pumping out the water, and keeping the space dry during the excavation	100	-	-
Excavation about 2,000 feet of rock out of the bed of the river within the dam	310	-	-
5,623 Feet of oak timber, at 1s. 6d. per foot; to construct the 12 Lock-gates	421	14	6
Carried forward	£.	8,319	6 6

	£.	s.	d.	Correspondence relative to the Canal Communi- cation in Canada.
Brought forward - - -	£.	8,319	6 6	
150 Barrels of cement, at 30s. per barrel - - -		225	- -	
Cedar post for scaffolding - - -		18	- -	
Machinery for raising sluices, anchor-plates, gudgeons, racks, &c. for swing-bars, and other cast-iron works for the four Locks, estimated at -		543	3 -	
Iron, steel, and other stores required, estimated at - - -		472	11 1	
7,000 Bushels of charcoal, at 6s. per bushel - - -		175	- -	
700 Cords of hemlock for burning lime, at 4s. per cord - - -		140	- -	
5 Chaldrons of coals, at 32s. per chaldron, exclusive of transport -		8	- -	
Work of two pair of sawyers - - -		360	- -	
8 Blacksmiths, 5s. per diem, 312 days - - -		624	- -	
10 Carpenters, at 5s. 6d. ditto - - ditto - - -		858	- -	
10 Stonecutters, at 5s. 6d. day-work, 166 ditto - - -		456	10 -	
50 Builders, at 5s. 6d. ditto - - ditto - - -		2,282	10 -	
200 Labourers attending builders, at 2s. 6d. per diem - - -		4,150	- -	
50 Labourers raising rough stone for backing - - -		1,037	10 -	
8 Lime-burners, at 3s. 166 days - - -		199	4 -	
12 Men boating sand - - -		249	- -	
9,274 Rations on Sundays for the above number of men, at 6d. per ration - - -		231	17 -	
20 Hired horses, 166 days, 5s. each - - -		830	- -	
Forage for 10 public horses, at 1s. 3d. 365 days - - -		228	2 6	
Probable expense of hire of oxen - - -		50	- -	
Probable expense of transport - - -		100	- -	
10 Per cent. Contingencies - - -		2,155	15 4 ½	
Salary of the Clerk of Works per annum - - -		136	- -	
Wages and rations for Master Carpenters - - -		146	- -	
Charge of Mr. Mears for the use of the quarry - - -		100	- -	
Remuneration to Allen Cameron for his quarry, supposed about -		50	- -	
Ditto to Stothers, supposed - - -		50	- -	
For permission to take clay for puddling dams - - -		20	- -	
<b>TOTAL - - -</b>	<b>£.</b>	<b>24,216</b>	<b>6 5 ½</b>	
Equal to in sterling - - -	<b>£.</b>	<b>20,987</b>	<b>9 7 ½</b>	

Montreal, }  
Dec. 22, 1828. }

(signed) *Henry Du Vernet,*  
Major Royal Staff Corps.

No. 62.—ESTIMATE of the probable Expense of making a CANAL and LOCK at *Chûte à Blondeau* for Steam-boat Navigation.

THE Locks 33 feet wide, 110 feet long, clear of the gates; lift, four feet; walls of the Lock 26 feet above the lower sill. The Canal 33 feet wide at the bottom; slopes equal to one-fourth of the height; length, including the Lock, 700 feet; to carry five feet of water.

EXCAVATION :		£.	s.	d.
For Lock-pit - 13,602	} 28,299 cubic yards, at 3s. 6d.			
For Canal - 14,697				
		4,952	6	6
MASONRY :		£.	s.	d.
15,575 Feet of ashler, at 3s. - - -		2,336	5	-
1,207 Bushels of lime, at 9d. - - -		45	5	3
24,174 ditto of sand, at 4d. - - -		402	18	-
80 Barrels of cement - - -		120	-	-
Collecting and piling 1,231 toises of rough stone for backing, at 2s. 6d. - - -		153	17	6
Building, including labour - - -		1,409	13	-
Allow for coping, hollow coins, sills, & - - -		1,200	-	-
		<b>£.</b>	<b>5,667</b>	<b>18 9</b>
Carried forward - - -		<b>£.</b>	<b>10,620</b>	<b>5 3</b>

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

		£.	d.
Brought forward - - -		10,620	5 3
<b>CARPENTRY :</b>			
Timber, sawing and carpentry for the Lock-gates -	-	492	17 6
Paint, pitch, tar, oakum, grease, &c. and baulking	-	88	- -
	£.	580	17 6
<b>IRON and SMITHS' WORK:</b>			
Collars Ls Ts, bolts, &c. as per former Estimate -	-	255	- -
Extra 800 lbs. of iron for bolting the sills, at 1s. 6d. } per pound - - - - -	-	20	- -
	£.	275	- -
<b>MACHINERY, CAST-IRON WORK, &amp;c.</b>			
4 Racks and pinions - - - - -	-	75	- -
4 Cast-iron clamps - - - - -	-	14	13 -
4 Gudgeon slips and crasses - - - - -	-	19	4 -
32 Brasses on heel posts - - - - -	-	9	2 -
4 Rack-bams and capstans - - - - -	-	50	- -
4 Cast-iron rollers and ways - - - - -	-	20	- -
	£.	187	19 -
Building a Lock-house - - - - -	-	173	- -
Coffer-dams and pumping - - - - -	-	300	- -
Fencing - - - - -	-	6	- -
		12,143	1 9
Add 10 per cent. for Contingencies - - - - -	-	1,214	6 2
	TOTAL, Currency - - - £.	13,357	7 11
Equal to, in sterling - - - - -	£. 11,576.	8.	2 1/2.
	(signed)	<i>Henry Du Vernet.</i>	

#### *Chûte à Blondeau.*

*Memorandum.*—The excavation at this place is entirely in rock, and the average depth upwards of twenty-two feet; but from the circumstances of its appearing to lie in horizontal strata with joints, I conceive the blocks may be removed without much blasting, which has induced me to estimate for it lower than usual for rock to twelve-feet depth, being generally from 4s. to 4s. 9d. per cubic yard.

There is to be seen in the bank beds of a hard and brittle description of limestone, which has been tried, and is considered unfit for other purposes than backing, upon which I have calculated. At present I have no knowledge of any good quarry in the immediate neighbourhood; but do not reckon upon any particular difficulty rendering the expense of stone higher than that employed in the lower locks at Grenville.

From the numerous fissures in the rock, and nearness of the river, I am apprehensive it will be impossible to excavate below the level of the water in the spring, which may occasion some delay.

(signed) *Henry Du Vernet.*

Montreal, Jan. 29, 1829.

No. 63.—ESTIMATE of the probable Expense of making a CANAL at the Carillon Rapids for Steam-boat Navigation.

Correspondence relative to the Canal Communication in Canada.

THE Locks 33 feet wide, 110 feet clear of the opening of the gates. The length of the Canal 2 miles, 228 yards; width of the Canal at the bottom equal to the width of the Locks, with a slope of 45° for the banks, and two passing places or lay-bys.

A Regulating Lock, walls twenty-one feet in height; and a Lock at the end, of a ten-feet lift, same height of walls.

EXCAVATION :		£.	s.	d.	£.	s.	d.
Rocks and earth to be excavated from the entrance to the situation of the proposed Regulating Lock, distance 1,000 yards, 98,000 cubic yards, at 2s. 6d.	}	12,250	-	-			
Remaining distance 2,748 yards, 217,916 cubic yards, at 3s.		32,687	8	-			
A passing-place 200 feet long, 80 feet surface of water, at 1,100 yards from the regulating Lock, 3,288 cubic yards, at 3s.	}	493	4	-			
A similar passing-place at the swamp, in the lowest ground, 1,928 cubic yards, at 1s. 6d.		144	12	-			
Lowering the Towing-path at the Rocky Bridge, to bring it to 12 feet above the bottom of the Canal, average depth 9 feet 6 wide, 1,380 length, 2,760 cubic yards, at 3s.	}	414	-	-			
Extra excavation for pit of the regulating Lock, 1,793 cubic yards, at 3s.		268	19	-			
Extra excavation for Lock at the lower entrance, 4,818 yards, at 3s.	}	722	14	-			
Total for Excavation		46,980	17	-	46,980	17	-
MASONRY for the REGULATING LOCK :							
14,087 feet of ashler - - - - - at 3s.		2,113	1	-			
11,043 bushels of lime - - - - - at 9d.		414	2	3			
22,086 ditto of sand - - - - - at 4d.		368	2	-			
74 barrels of cement - - - - - at 30s.		111	-	-			
1,017 toises of backing stone, collecting and piling, at 5s.		254	5	-			
Building, including labour - - - - -		1,288	5	-			
Allow for coping, hollow quoins - - - - -		1,000	-	-			
	£.	5,548	15	3	5,548	15	3
CARPENTRY :							
Timber, sawing and carpentry for the Regulating Lock-gates	}	319	16	6			
Paint, pitch, tar, oakum, grease and caulking		82	9	5			
	£.	402	5	11	402	5	11
Iron and Smiths' work		265	-	-	265	-	-
Machinery for Sluices		167	19	-	167	19	-
For the LOWER LOCK :							
Masonry, as above		5,548	13	3			
Carpentry, &c.		381	7	9			
Smiths' Work		221	13	4			
Machinery for Sluices		167	19	-			
	£.	6,319	15	4	6,319	15	4
2 Lock-houses, at £. 173 each					346		
Dams, &c.					300		
New Road as proposed, 2 1/2 miles					500		
Fencing 2 miles 228 yards, at 2s. per pannel of 14 feet					80	6	3
					60,910	18	9
Add 10 per cent. for Contingencies					6,091	1	10 1/2
TOTAL, Currency				£.	67,002	-	7 1/2
Equal to in Sterling				£.	58,068	8	6 1/2

(signed) Henry Du Vernet.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

*Carillon Rapids.*

*Memorandum*.—IN estimating the expense of the Excavation, I have been guided by the general appearance of the ground, not from any trials; and I conceive at least two-thirds will prove to be in rock at the ridge; at the lower end it is so to the surface; and the average height for 460 yards is upwards of 21 feet. From where the Regulating Lock is proposed to be placed downwards, for 1,500 yards it is a thick swampy wood, and in its present state it is difficult to form an opinion of the depth of earth.

In the bank near the first Lock, there is lime-stone, which appears to be fit for building; I have also observed similar stone in the ridge, at the lower end, and have calculated upon the excavation supplying the rough stone for backing for the Locks.

(signed) *Henry Du Vernet.*

No. 64.—LETTER from the Earl of *Dalhousie* to the Right Hon. *W. Huskisson*, &c. &c. &c.

SIR,

Quebec, 30th January 1828.

IN submitting to you the subject of the Papers which I have now the honour to enclose, I must refer you to a former correspondence with Earl Bathurst and Mr. Horton, relative to the Grenville Canal on the Ottawa, with which the present project is materially connected, as that work would be incomplete; indeed not materially useful, unless two other rapids, lower down the river, are overcome by two smaller works or canals. The Grenville Canal is now nearly completed; and it becomes necessary that I submit to your consideration the accompanying Plans for the further progress on the next part of it, the Châte à Blondeau.

The whole of this important public work has been carried on from the beginning under the officers of the Royal Staff Corps, and the science they have shown does them all great honour. The expense has been authorized from time to time by His Majesty's Government through Earl Bathurst. I have now, therefore, only to submit the Plan and Reports prepared by the officer of the Staff Corps conducting the work, and to recommend, in the most earnest manner, that instructions be given to me to proceed in this second branch of the Grenville Canal.

I have, &c.

(signed) *Dalhousie.*

No. 65.—LETTER from Major *Du Vernet* to Major-General *Darling*, &c. &c. &c.

SIR,

Montreal, December 26, 1827.

CONCERNING the Châte à Blondeau and Carrillon Rapids to be included in the improvements to be made of the navigation of the Ottawa River, I have several times, in the course of the last summer, been at the first-mentioned place, with a view to ascertain what is necessary to be done there; and having had a Plan and Levels taken of the ground, and observed the rise and fall of the water, it appears to me that the navigation may be improved in the two ways pointed out in the Plan which I have the honour to transmit to you for the information of his Lordship the Commander of the Forces. An objection to the dam is, that it will obstruct the ice: in point of expense, they will be about equal.

In the year 1823 I made a Report on the Carillon Rapids, which, together with a sketch, has been laid before his Lordship; further observation might give rise to some small alteration in the projected line of Canal, the water having fallen lower than I was at that time aware of. If any thing is to be done at these places, as almost the entire of the excavation will be in solid rock, it may be desirable to commence as early as possible.

I have, &c.

(signed) *Henry Du Vernet.*

28 November 1822.  
30 February 1824.

*Chûte à Blondeau.*Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

THE obstruction to the navigation of the Ottawa is here caused by a bar of rock crossing the stream, to which it presents a nearly perpendicular face, in a diagonal direction (nearly east and west), the water falling as over a rolling dam. The banks of the river in its neighbourhood are every where formed of solid rock. The most favourable situation for the construction of a Canal being on the north-west shore, where the upper part of a strait, formed by a small island lying on, and nearly at the eastern extremity of, the bar, affords a deep and secure channel immediately above the rapid, and where the bank is little more than of a sufficient height to protect the works from the effects of the spring-floods. This is the situation shown in the accompanying Plan, where two descriptions of works suggest themselves as eligible; one, a direct cut, taking the line D. E., a section on which is given with the Plan, as the middle of the excavation, with a lock, near the lower end, as shown by the red dotted lines on the Plan; the other, a lock in the same situation, communicating at the upper end with the river, at the nearest point the space necessary for the navigation would admit of, disposing of the materials furnished by the excavation (which are very suitable for the purpose) in forming a dam across the channel, by which the water would be kept up to the same height as at D., and the safety of the navigation greatly increased by the rapid in the channel being entirely done away with.

The space between F. and G. marks the head of the excavation, and the lines G. H. I. K. the base of the proposed dam, according to this second project.

The entire excavation will in either case be through a hard clay-stone rock, lying in large oblong blocks, in beds of various thicknesses (from two feet to ten inches), the strata nearly horizontal, with joints diagonal to line of cutting D. E. Those parts of it that have been tried by the stonecutters have been found, from hardness and brittleness, to be unfit for other purposes in building than backing a rubble-work; this circumstance will tend materially to increase the expense of construction of a lock, if built in the same manner as those of the Grenville line, no better description of stone being to be met with nearer than the quarry to Hawkesbury. From the shortness of its extent, it will not be required that the cut should be made wider than the lock-gates: no tow-path will be necessary, nor, from the nature of the banks, will a greater slope be advisable or requisite than that which will be unavoidable in their formation.

Agreeable to these premises, allowing one foot six inches for the fall of the surface in dry seasons below the point it stood at when the levels, soundings, &c. were taken, four feet below that surface for the navigation, one-fourth of the depth for the unavoidable slope of the banks, and for a lock-pit 165 feet by 40, with a rise of four feet, the quantity of excavation required for the longer cut on D. E. will be about 16,230 cubic yards.

For the cutting, entering at F. G., deepening the channel in front of the entrance, &c. 12,850 cubic yards.

To form a dam seventy feet in width, at the base fifteen feet high, with a ten-feet causeway along the top, 250 feet in length, will require a quantity of 5,500 yards of material.

In consequence of the great rise of water during the spring-floods, it will be necessary to raise the walls of the lock to a height of twenty-four feet above the lower sill; the rise of water below the fall corresponding with that above, no pressure of water greater than that occasioned by the fall of four feet, need be provided against. This equally applies to the lock-gates and the dam across the channel.

(signed) *Henry Du Vernet.*

No. 66.—LETTER from Major *Du Vernet* to Major General *Darling*,  
&c. &c. &c.

SIR,

Montreal, January 10, 1828.

I HAVE the honour to acknowledge the receipt of your letter of the 5th instant, and, in reply, have to acquaint you, that my reason for not giving an Estimate, with a Report, on the *Chûte à Blondeau*, was, that so much depends on where the stone for the lock is procured, and how the rock to be excavated turns out, that I was fearful of not being within moderate bounds in stating the probable expense.

The Regulating Lock at Grenville is nearly of the same size; but what it has cost I cannot say, without going to Grenville, and examining the pay-lists and other

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

expenses, and even then I do not think I could find out exactly its cost. Captain Read, who had the immediate superintendence of its building, is of opinion, as well as myself, that it cannot be reckoned at less than £. 4,000.

There is no stone, that I have been able to discover, that will answer for the coins, sills, &c. except that at Mr. Mears' quarry, although I have searched during the last autumn in all directions; and the stone at the Chûte à Blondeau is pronounced by the stone-masons too hard to cut for ashler, all of which must therefore be brought from where I am now procuring it for the lower Locks of the Grenville Canal; and the expense of the transport will be very heavy, but in some degree compensated for by the backing being got immediately on the spot. In the spring, the distance to the Hawkesbury quarry is between nine and ten miles, and the sand must be brought about fourteen miles. So much depends on circumstances, that similar works may cost double in one situation what they would in another. If nicety is not required, and I may be allowed to state the expense of the Lock at £. 4,000, the excavation for the line D. E. 16,230 cubic yards of rock, at 5s. per yard, £. 4,057. 10., the Estimate will be £. 8,057. 10.

For the second project, the Lock is the same, and the least excavation 12,850 cubic yards, costing £. 3,212. 10., the difference, £. 845, reckoning upon the rock supplied from the excavation, I conceive will be barely adequate to the expense of the dam. It is therefore my opinion that the line D. E. is preferable, as being less liable to accidents, and perhaps will prove to be the least expensive.

If this statement should not be satisfactory, on receiving your answer I will return to Grenville, and collect what further information I may be able with respect to the expense of the Lock.

The rate at which I have estimated for the excavation, may appear high, when compared with the other works of this description; but, taking into consideration the depth of the cutting, and the nature of the rock in which it is to be entirely carried, I do not consider the price I have stated as being more than it will cost in execution.

If any thing is to be done at the Carillon Rapids, I should like to be allowed to clear the projected line, as it is difficult to form any opinion of the ground whilst covered with trees. The expense will be about £. 50, according to my former Estimate, but might not cost so much at present.

I can undertake to carry on both works at the same time; the Grenville Canal being reduced to little more than building the Locks, and the Chûte à Blondeau, from its limits, not requiring many persons to superintend it.

I have, &c.

(signed) Henry Du Vernet.

No. 67.—STATEMENT of EXPENSES incurred in *Canada* on account of the *Grenville Canal*, from 25th May 1819 to 24th December 1828: extracted from the Record of the Offices of Accounts at *Quebec*, and Ordnance at *Montreal*.

	£.	s.	d.	£.	s.	d.	
	Currency.			Sterling.			
LABOUR by civilians who receive free rations	54,160	16	9½				
Purchase of Land, Stores and Materials	9,120	6	5				
Transport from La Chine to Grenville *	3,528	11	8½				
Pay and Allowances of the Royal Staff Corps, for six months in each year	22,458	12	3				
Ditto - ditto - for the Commissariat Establishment at Grenville	3,632	9	8				
Ditto - ditto - of the Storekeepers and Clerks at Grenville	1,034	16	8½				
Expense of rations, after deducting the usual stoppage from the Troops	32,307	13	10½				
	£.	126,243	7	4½	109,410	18	5
Amount of Stores supplied by the Ordnance Department					4,510	14	1

Amounting, in sterling, to £. 113,921. 12. 6.

Quebec, 12th February 1829.

\* All Stores for Upper Canada and the Ottawa River are forwarded from Montreal to La Chine; but as the accounts for transport do not express the proportion intended for the latter, the amount of transport only includes the expenses incurred for conveyance from La Chine to Grenville.

No. 68.—DESPATCH from Secretary Sir *George Murray* to Lieut.-General Sir *James Kempt*, &c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

SIR,

Downing-street, 4th April 1829.

I HAVE the honour to acknowledge the receipt of your despatch of the 12th of February last, enclosing an Estimate for the completion of the Grenville Canal, and Plans and Estimates of the Canals proposed to overcome the obstructions to the navigation to the Ottawa at the Chûte à Blondeau and Carillon Rapids. I entirely approve of Major Du Vernet's suggestion, that those two Canals should be of somewhat diminished breadth, though of a sufficient width throughout to admit of the passage of a steam-boat of the largest class frequenting this navigation, with two "lay-by or passing places" for these boats.

My despatch of the 5th January last will have informed you of the amount to be appropriated in the present year in carrying on the Canals in Canada; and provided Major Du Vernet confines his expenditure on the Grenville Canal and the Chûte à Blondeau and Carillon Rapids to the sum granted by Parliament for this service, viz. £. 32,213. 6. 8., I am not aware of any objection to the execution of a proportion of the work by contract.

I have, &c.  
(signed) *G. Murray.*

No. 69.—LETTER from *R. W. Hay*, Esq. to *R. Byham*, Esq.  
&c. &c. &c.

SIR,

Downing-street, 12th June 1829.

I AM directed by Secretary Sir *George Murray* and Board of Ordnance, a copy of a despatch which has been received from Lieut.-General Sir *James Kempt*, enclosing a letter which had been addressed to him by Lieut.-Colonel *By*, reporting the rupture of the dam on the Rideau Canal.

No. 70.  
13 April.

I am, &c.  
(signed) *R. W. Hay.*

No. 70.—DESPATCH from Lieut.-General Sir *James Kempt* to the Right Hon. Sir *George Murray*, &c. &c. &c.

SIR,

Quebec, 13th April 1829.

IT is with regret that I transmit to you the enclosed copies of a communication which I have just received from Lieut.-Colonel *By*, of the Royal Engineers, reporting that the dam at the Hog's Back, upon the Rideau, gave way on the 3d instant.

No. 72.

I am in possession of no other information upon the subject than Lieut.-Colonel *By*'s report affords; but I have directed the matter to be particularly investigated, and will not fail to communicate the result to you.

I have the honour to be, Sir,  
Your most obedient humble servant,  
(signed) *James Kempt.*

No. 71.—LETTER from Lieut.-Colonel *By* to Lieut.-General Sir *James Kempt*, &c. &c. &c.

SIR,

Royal Engineer's Office, Rideau Canal,  
4th April 1829.

IT is with the deepest regret I have to report for the information of your Excellency, that the dam at the Hog's Back failed on the morning of the 3d instant, and have the honour of enclosing a copy of my letter to General Mann on the subject, to which I beg to refer your Excellency for every information in my power to give relative to this unexpected and unfortunate occurrence.

I have the honour to be, &c.  
(signed) *John By,*  
L. Col<sup>r</sup> R<sup>l</sup> Eng<sup>r</sup> Com<sup>d</sup>, Rideau Canal.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 72.—LETTER from Lieut.-Colonel *By* to General *Munn*,  
&c. &c. &c.

SIR,

Royal Engineer's Office, Rideau Canal;

4th April 1829.

I HAVE the honour to report, for the information of his Lordship the Master General and Right honourable and Honourable Board, that on Friday morning, 3d instant, the dam at the Hog's Back gave way, and in a few minutes about one-third of it was destroyed; fortunately no lives were lost, nor any damage done to the surrounding country.

This dam was nearly completed, and the water raised within four feet of the required height, which proves the practicability of the plan, and the correctness of our levels, as the water levels perfectly agreed with those taken by the instrument.

The way I account for the accident is this: the contractor having given up the work in November last, it became indispensably necessary to make every exertion to complete the dam before the spring floods commenced, it being the only chance of saving that part of the work which the contractor had performed; I therefore moved up to this work at the Hog's Back, such of the two companies of the Royal Sappers and Miners as could be spared, leaving a sufficient number to furnish guards for the magazines and military chest, and ordered that two officers should constantly be on duty at this work; from that period, Captain Victor, Royal Engineers, who had charge of the work, has scarcely been a day absent, and great praise is due to him and to the other officers, for their unremitting attention during the whole of this severe winter; and I have the satisfaction to state, that every exertion was made to accomplish the desired object of finishing the dam, but the severe frosts formed the earth above water into a solid mass, and when the spring floods came, the pressure of the water separated that which was not frozen from the congealed mass above, and caused a great leakage on the 28th March, which continued to increase, notwithstanding every exertion was made to stop it, until ten o'clock on the 3d of April, when the arch key work, 26 feet thick at the base, gave way about 15 feet above the foundation, and near the centre of the dam, with a noise resembling thunder. I was standing on it with forty men, employed in attempting to stop the leak, when I felt a motion like an earthquake, and instantly ordered the men to run, the stones falling from under my feet as I moved off.

The loss of work and materials, tools, &c. I estimate at between three and four thousand pounds.

Notwithstanding the present failure of this work, I beg leave to assure his Lordship the Master General and Right honourable and Honourable Board, that I do not entertain the least doubt of being able to establish the dam, but that to prevent a recurrence of a similar event to that which has just taken place, it appears evident that the whole of this work must be carried to its required height in one summer; but as the prevailing sickness renders all operations uncertain, before I commence re-constructing the dam, I propose again exploring the wilderness to the right and left, and taking fresh sections, with the hope of finding some way by which this bold undertaking may be avoided, although from the many examinations I have already given the country, I fear there is but little hope of finding a better route for the Canal at this place, in which case I shall commence re-constructing the dam the moment the spring floods have passed, and you may rely on my using every possible exertion to complete the work before the frost sets in.

I have the honour to be, &c.

(Signed) *John By*,

Lieut. Col<sup>l</sup> R<sup>d</sup> Engineers Com<sup>d</sup>, Rideau Canal.

No. 73.—LETTER from *R. W. Hay*, Esq. to *R. Byham*, Esq.  
&c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

SIR,

Downing-street, 20 July 1829.

I AM directed by Secretary Sir George Murray to transmit to you the copy of a Despatch from Lieut.-General Sir James Kempt, inclosing a detailed Report from Lieut.-Colonel By, relative to the failure of the dam at Hog's Back, and also a Report from Lieutenant Pooley of the Royal Engineers, upon the precarious state of the dam at Smith's Falls, and I am to request that you will lay the same before the Master General and Board of Ordnance for their information.

I am, &c.

*R. W. Hay.*

No. 74.  
30 April 1829.  
No. 76.

No. 74.—DESPATCH from Lieut.-General Sir *James Kempt* to the  
Right Hon. Sir *George Murray*, &c. &c. &c.

SIR,

Quebec, 30 April 1829.

WITH reference to my letter (No. 3.) of the 13th ultimo, upon the accident to the dam at Hog's Back upon the Rideau Canal, I have now the honour to transmit to you a detailed Report (No. 1.) upon that subject, which I have just received from Lieut.-Colonel By of the Royal Engineers, to whom the superintendence of that work is entrusted.

No. 70.

No. 75.

It is with great regret that I find it at the same time my duty to transmit a Copy of a Report from Lieutenant Pooley of the Royal Engineers, upon the precarious state of the dam at Smith's Falls.

No. 76.

I have directed Colonel Durnford, the Commanding Royal Engineer in Canada, to proceed without loss of time to the Rideau Canal, with a view to consult with Lieut.-Colonel By upon the most eligible mode of proceeding with that work during the approaching summer; but I have more especially directed his attention to the necessity of ascertaining the most effectual means of averting the recurrence of accidents of so serious a nature in future.

You are doubtless aware also that the Welland Canal has given way at the "Deep Cut," and I fear the damage sustained will greatly increase the original estimate for the completion of that work, and create greater difficulty in carrying on the undertaking than was apprehended.

I have, &c.

(signed) *James Kempt.*

No. 75.—REPORT on the Failure of the Dam at *Hog's Back* on the *Rideau Canal*.  
Lieut.-Colonel *By* to Lieut.-Colonel *Couper*.

Royal Engineer Office, Rideau Canal,  
23 April 1829.

SIR,

I HAVE the honour of acknowledging your letter of the 18th inst. just received, requiring further particulars relative to the failure of the dam at Hog's Back.

In answer to which I beg to state, for the information of his Excellency Sir James Kempt, that the failure of the dam is to be accounted for as follows: the Rideau River has been raised about 22 feet by the contractor, when he gave up the work in November last, and it was evident, that unless the water could be rendered passive, by its being raised above the Three Island Rapids, the rapidity of the current would carry all away in the spring, to prevent which I caused every exertion to be made, and the desired object was obtained, for we raised the water 41 or 42 feet perpendicular, and the Three Island Rapids were destroyed; our surface water extending on an uninterrupted level to the Black Rapids, the water, as also the ice, became passive; I constructed three booms at different parts of the river to hold back the said ice until it sunk or was dissolved, and I flattered myself our labours were completed, when unfortunately an extensive leak made its appearance and rapidly increased,

notwithstanding

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

PLAN, No. 4.

notwithstanding every exertion was made to stop it. It appears that the earth became one frozen mass from the surface water level of November last to the top of the dam, which is 43 feet above the said level, the dam being upwards of 60 feet high at the time of the accident; 45 feet is the required height, but I added 15 or 17 feet to the height, to give it greater strength, and made the base 200 feet thick.

You will perceive by the accompanying Section, that this whole mass of earth about the surface water level was 22 feet in November last, became one frozen mass, resting on the rocks on each side of the river, 180 feet apart; and such was the strength of this frozen mass of earth, that it remained perfect for some time after the torrent had swept all from under it, until the spray, rising with great force, striking the under part, gradually thawed it, and caused it to fall in large flakes, until it became so thin that its own weight broke it. The force of the water was such, that stones of two or three tons weight were tossed about as if they had been blocks of wood, and the frozen earth was carried over the Rideau Falls, a distance of between five and six miles; but as the frozen earth rested on the side rocks, and did not settle with the earth below, which was considerably compressed by the pressure of the water when raised to its height, the water found a passage between the frozen earth and that which was not frozen; but as the puddle behind the arch key work prevented the water from passing through the key work, this passage was not discovered until a sudden rise of the river on the 28th March, when the pressure became more than the unprotected puddle could resist, and it was washed through the arch key work from the height of 15 feet to the bottom; but this did not in the least affect the arch key work, therefore I believed it possible to save the dam, and made every exertion, notwithstanding which the leak increased until about ten o'clock in the morning of the 3d inst. when the water forced its way through the upper part of the puddle at the back of the arch key-work, and began to flow over the top without carrying off any of the coping stones. I then conceived that as the water had found a free passage all was safe; and said to Mr. Sargeant, the barrack-master, who stood on the arch key work near me, "You see what perseverance will do, the dam is saved." At which moment I felt it tremble, and instantly ordered the men to run. I stood and looked at it for a few seconds, when the stones fell from under my feet as I ran off. It appeared to give way in the centre of the dam, about 17 feet from the base, and in the strongest part. The cause of the failure being thus evident, there is no doubt of its ultimate success; but as the period for working at it is only from July to the end of November, great exertions are requisite, during the whole period, to insure its completion. I therefore propose forming it with timber, filled with rough stone, this season, and leaving the arch key work to be carried up at any future period; feeling convinced that if the work is well conducted during the summer, it must succeed; I therefore hope his Excellency will allow me a detachment of thirty men of the line, to furnish the necessary guards, as the guard duty prevents the non-commissioned officers of the Sappers being of so much use to me as they otherwise would be, and there are no persons I can hire, who are of equal value to them, and much depends upon every part of the dam being well executed.

I have, &c.

(signed) *John By,*  
L' Col. R' Engineers Com<sup>d</sup>, Rideau Canal.

No. 76. — REPORT on the precarious state of the Dam at *Smith's Falls*.  
Lieutenant *Pooley* to Lieutenant-Colonel *By*.

Royal Engineer Office, Edmund's Rapids,  
23d April 1829.

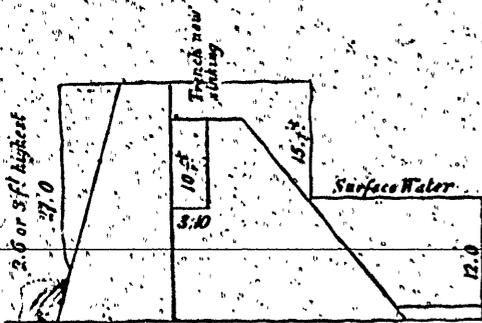
SIR,

I THINK it my duty to report to you, by a messenger express, the dangerous state in which I fear the dam at *Smith's Falls* is at present. About five o'clock, P. M. of the 20th instant, a leakage was first observed through the arch key work, issuing from it about the top of the lower course, two feet six inches or three feet from the bottom, and extending from west abutment across, to about centre of course, coming through muddy, evidently washing away the puddle. Upon this alarm, a body of about thirty men set to work, excavating behind the key work, in order, by sinking a trench, to discover where the run of water proceeds from, and then to choke and repuddle it; the clay being hard frozen about six or seven feet deep, little progress was made; the working parties were regularly relieved all night, but the thunder

thunder storm and heavy rains precluded the possibility of doing much work. By three o'clock in the morning the rush of water through the key work had considerably increased since first discovered, and by day-light, when I visited it, the leak extended along the lower course from west abutment, two-thirds across the dam, the greatest quantity issuing from about the centre, muddy with the puddle; level of water above dam not perceptibly lowered. Mr. Rykert being absent at Brockville, I directed his foreman to persevere sinking behind the key work, over the principal rush of water, and to collect at hand a quantity of fresh puddle, brushwood, sheeting poles, horse dung, &c. to choke it as expeditiously as possible on discovering the run of it; other parties were at work wheeling in clay in front of the dam, opposite the leaks, but with no effect; they continued to work yesterday, and last night. To day Mr. Rykert having returned, I found him pursuing the same plan, but there is so little energy manifested by his workmen or foremen, who do not appear to be competent to conduct a work of this nature, and so indifferently supplied with tools, that I cannot refrain from expressing my apprehension as to the result. The excavating party had not got down below frost, although about seven feet deep, and had been blasting all the morning. The rush of water had not however much increased, although this evening I thought it was rather gaining ground. Mr. Rykert is of opinion, that the water issues from the fissures of the rock forming west abutments of dam, and from thence follow the line of puddles until it escapes through a key work, or insinuates itself between the artificial work and natural bank, and circumstances seem rather to favour such an opinion; and a considerable stream certainly rushes from the rock or natural bank of river just below this abutment, through the numerous fissures to be seen on surface of the rock in river just above Rykert's store. A small clay dam having been run across the little bight from corner of Rykert's store to dam the water inside, it all escaped through the fissures and left it perfectly dry, but made no perceptible difference in the run of water, either through the rocky bank below the dam or the key work.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

## SECTION.



This Section will explain where the water is making its escape through the key work about nine feet at least below the level of surface water above the dam, and as no alteration has yet taken place in its position, or no additional leaks burst out above the points there represented, I am inclined to think it will be found to get through the puddle at abutment, in which case, I request your instructions as to the means you wish to be adopted, permanently to protect the

line of puddle at that point; for any attempt to choke the numberless fissures in the rock would, in my humble opinion, be attended with no hope of success.

I have the honour to inform you, that the dam at Old Sly's seems perfectly secure, no water gets through it at any part. The (A.) key work across the gap at east abutment, which was the original waste channel, has been carried up to the same height as the rest, and the water completely stopped by the puddling behind it. The old coping has been replaced by another substantial course the whole length of the dam, and is now leveling off with a coping at that height. I have given directions to Mr. Richardson to continue raising the clay parts, and he has been extremely since the alarm at Smith's Falls, making every preparation and using every precaution to resist any sudden rush of water that would come down in the event of a breach being made through the dam at Smith's Falls; and I see no reason to apprehend any danger at Old Sly's. The waste weir carries off the surplus water of the floods. The rise of the river since 13th instant by  $5\frac{1}{2}$  inches having gradually risen by inches only.

Anxious to receive your instructions,

I have, &c.

(signed)

H. Pooley, L<sup>r</sup> R<sup>e</sup> Eng<sup>r</sup>.

P. S. 23d April 1820.—Having visited the work at Smith's Falls early this morning, I found it much in the same state as yesterday, the water through the key work not abated, coming through occasionally coloured by the earth and thrown in above the dam; level of water above dam has varying scarcely any in height since 21st instant. Trench behind key work sunk about ten feet. I lose no time in dispatching this communication to you.

(signed)

H. Pooley, L<sup>r</sup> R<sup>e</sup> Eng<sup>r</sup>.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 77.—LETTER from *R. W. Hay*, Esq. to the Hon. *J. Stewart*,  
&c. &c. &c.

SIR,

Downing-street, 28th July 1829.

No. 78.

I AM directed by Secretary Sir George Murray to transmit to you the copy of a letter from the Secretary to the Board of Ordnance, stating that it will be necessary to increase the vote for the Rideau Canal to the sum of £.140,000. for each of the years 1830 and 1831, if the work is to be completed in 1831, which the Master General and Board of Ordnance are induced to recommend, both as a measure of importance and very considerable economy; and I am to request that you will submit the same to the Lords Commissioners of the Treasury, for their Lordships' consideration and decision.

I am, &c.  
(signed) *R. W. Hay*.

No. 78.—LETTER from *R. Byham*, Esq. to *R. W. Hay*, Esq.  
&c. &c. &c.

SIR,

Office of Ordnance, 8th July 1829.

ADVERTING to your letter dated 12th. ultimo, transmitting the copy of a despatch from Lieutenant-General Sir James Kempt, enclosing an abridged Report of the proceedings of Lieutenant-Colonel By on the Rideau Canal to the 1st March last, and statement of the expense which has been incurred upon it to that period;—

I am commanded to acquaint the Master-General and Board of Ordnance have perused these papers, and they request the attention of Secretary Sir George Murray to the opinion expressed by Lieutenant-Colonel By in his letter of the 20th November last, "that the Canal may be completed on the 12th August 1831, if he be allowed £.137,200. in each of the years 1829, 1830, 1831;" on this his Lordship and the Board beg to observe, that for the year 1829, £.130,666. only has been allowed, and that it will therefore require in round numbers £.140,000. for each of the years 1830 and 1831, if the work is to be completed in 1831, which, as a measure of very considerable economy as well as of great consequence, the Master General and Board of Ordnance would recommend should be accomplished; by the allotment of the required sum of £.140,000. in each of the two next years.

I have, &amp;c.

*R. Byham*.

No. 79.—Copy of TREASURY MINUTE, dated 4 August 1829.

READ a letter from Mr. Hay, dated 28 July 1829, transmitting, by desire of Secretary Sir George Murray, the copy of a letter from the Secretary to the Board of Ordnance, of the 8th ultimo, stating that it will be necessary to increase the vote for the Rideau Canal to £.140,000. for each of the years 1830 and 1831, if the work is to be completed in 1831, which the Master General and Board of Ordnance are induced to recommend, both as a measure of importance and very considerable economy.

Write to Mr. Byham that My Lords have had before them a copy of his letter of the 8th July last, addressed to Mr. Under Secretary Hay, recommending that a vote for £.140,000. should be submitted to Parliament for each of the years 1830 and 1831, to complete the Rideau Canal; in which letter Mr. Byham refers to one of the 20th November 1828, from Lieutenant-Colonel By, desiring to be allowed £.137,200. in each of the years 1829, 1830 and 1831, and My Lords request that Mr. Byham will move the Master General and Board of Ordnance to furnish them with a copy of Lieutenant-Colonel By's letter alluded to, and to favour them with any observations which may have occurred to them upon it, with reference to the Report of the Committee formed by General Sir James Kempt, Lieutenant-Colonel Fanshawe

Fanshawe and Lieutenant-Colonel Lewis, of the 28th June 1828, in which they dissent from the estimate of Lieutenant-Colonel By, amounting to £. 576,757. 14. 9., and report their opinion that £. 558,000. would be amply sufficient to complete the Canal with all probable contingencies that may occur; and as £. 166,000. had already been provided, there remained only £. 392,000. to be granted by Parliament in the years 1829, 1830 and 1831, to make up the sum of £. 558,000; and a grant of £. 130,000. having been obtained in the last session, there now remains £. 262,000. to be voted in 1830 and 1831, which is £. 18,000. less than the sum proposed in Mr. Byham's letter to Mr. Hay, of the 8th July last.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Write to Mr. Hay requesting he will move Secretary Sir George Murray to transmit to their Lordships a copy of the despatch of Lieutenant-General Sir James Kempt, inclosing an abridged Report of the proceedings of Lieutenant-Colonel By on the Rideau Canal, to the 1st March last, and a statement of the expense which had been incurred upon it up to that period, copies of which papers appear to have been transmitted by Mr. Hay to the Board of Ordnance, as My Lords deem it necessary to receive that information before they can judge of the propriety of applying to Parliament for a further grant of £. 280,000, which exceeds by £. 18,000. the estimate which was sanctioned on the 28th June 1828, by Lieutenant-General Sir James Kempt and the Committee of Engineers.

No. 80.—LETTER from *R. W. Hay*, Esq. to the Hon. *J. Stewart*,  
&c. &c. &c

SIR,

Downing-street, 20th August 1829.

I HAVE laid before Secretary Sir George Murray your letter of the 11th instant, and in compliance with the request of the Lords Commissioners of the Treasury, I am directed to transmit to you the copy of a despatch from Lieutenant-General Sir James Kempt, inclosing an abridged Report of the proceedings of Lieutenant-Colonel By, on the Rideau Canal, to the 1st March last, and a statement of the expenses which had been incurred upon it up to that period.

No. 81.  
1 April 1829.

I am, &c.

*R. W. Hay.*

No. 81.—DESPATCH from Lieutenant-General Sir *James Kempt* to the  
Right Hon. Sir *George Murray*, &c. &c. &c.

SIR,

Quebec, April 1, 1829.

HAVING found the Report of progress upon the Rideau Canal, submitted at the close of each year by Lieutenant-Colonel By, the commanding Royal Engineer upon that station, a document of a very detailed and voluminous description, I requested that officer to prepare an abridgment of it, comprehending the information it affords in a more concise and condensed form.

A copy of this abridgment (No. 2.) I do myself the honour to enclose, by which you will perceive the actual state of that Canal on the 1st ultimo, and the expense incurred upon it to that period, amounting to £. 186,370. 1. 8½. sterling

No. 83.

£. 186,370. 1. 8½.  
Sterling.

I also transmit an extract of a letter from Lieutenant-Colonel By, dated November 20th, 1828, (No. 3. page 17.) whereby he expresses his opinion that the Canal may be completed on the 12th of August 1831, if an annual expenditure upon the work of £. 137,200. to that period were authorized.

No. 84.

£. 137,200.

I have the honour to be, &c.

*James Kempt.*

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 82.—LETTER from Lieutenant-Colonel *By* to Colonel *Durnford*,  
&c. &c. &c.

SIR,

Royal Engineer's Office,  
Rideau Canal, 16th March 1829.

I HAVE the honour of enclosing a Report showing the quantity of work executed in each section of the Rideau Canal, and the sum of money expended on that service from its commencement in September 1826 up to the 1st of March 1829, as called for by his Excellency Sir James Kempt, by letter dated 3d instant, and I shall feel obliged by your laying the same before his Excellency. I have the satisfaction to report, that on Friday I raised the Rideau River at the Hog's Back to the height of forty-one feet perpendicular, which is within six feet of the height I expect the water will ever rise in time of floods. The arch key work was closed on Saturday; and the bridge of communication leading from the dam to the stone quarry finished. I have taken the precaution of constructing three booms at different parts of the river above the said dam at the Hog's Back, to prevent the waste weir being choked with drift timber, and I have ordered a guard to be placed at each boom to prevent the rafts men destroying them; and having made these arrangements, and the works appearing perfectly out of danger, I leave this for Jones' Falls to-morrow, to look after the dam at that place, which Lieutenant Briscoe reports he has had taken down, and recommended building agreeable to my orders.

I have the honour to be, &c. &c.

(signed) *John By*,

L<sup>t</sup> Co<sup>t</sup> R<sup>l</sup> Engineers Com<sup>d</sup>, Rideau Canal.

No. 83.—ABRIDGED STATEMENT of the PROGRESS of the WORKS of the RIDEAU NAVIGATION, under the superintendence of Lieutenant-Colonel *By*, Royal Engineers, taken 1st March 1829.

SECTIONS.	PLACE or SERVICE.	NATURE OF SERVICE, and AVERAGE OF WORK PERFORMED.	CASH disbursed on each Section, up to the 1st March 1829.		
			£.	s.	d.
Section, No. 1.	Entrance Valley	-- Chopping, clearing and grubbing completed; excavations about four-fifths finished; masonry of the three upper locks nearly finished; inverted arch and foundation of side walls of lower lock laid; about three-eighths of the whole masonry is built, and nearly a sufficient quantity of cut and rough stone prepared for the ensuing season; the backing and puddling behind the walls of the three upper locks are raised as high as the masonry; the gates for the locks, with sluice gates, &c. are in progress, as well as the iron work for ditto, about one-fourth done; pointed sills for lower lock gates completed; sheeting piles driven in the three upper breast works and lower pointed sill.			
	The cut stone Bridge, at the head of Entrance Valley.	-- About four-fifths finished; the parapet walls not yet constructed; the approach at the eastern end nearly completed, say about three-fourths; a considerable quantity of rough stone prepared to be cut next season			
	Excavations from first eight locks to Dow's Great Swamp.	-- Rock excavation, near Stone Bridge, about three-fourths finished; earth in Beaver Meadow and Deep Cut about one-fourth completed; embankment, lower end of Natural Gully, completed; grubbing on the foregoing completed; grubbing in the Natural Gully about two-thirds finished; excavations from upper end of Natural Gully to Dow's Great Swamp about one-fourth finished; grubbing about three-fourths done; clearing on the whole of the foregoing nearly completed.			
	Dow's Great Swamp	Large mound nearly completed, say 24-25ths; scite of smaller mound about half cleared.			

No. 83.—Abridged Statement of the Progress of the Works of the Rideau Navigation—*continued.*

SECTIONS.	PLACE or SERVICE.	NATURE OF SERVICE, and AVERAGE OF WORK PERFORMED.	CASH disbursed on each Section up to the 1st March 1829.
			£. s. d.
Section, No. 1— <i>continued.</i>	From Dow's Swamp to the Hog's Back.	-- Excavation one-third done; grubbing two-thirds done; and a considerable quantity of the ashlar for the two locks south side of Dow's Swamp, has been drawn to the spot, as well as sand, &c. not yet measured; clearing the land nearly completed; mounds or embankments across the mouth of Bugle and Peter's Gulley formed, about seven-eighths, and latter one-third done.	
	Works at Hog's Back	-- Dam three-fourths finished; water raised about thirty feet; a quantity of the ashlar and rough stone for the locks, sand, &c. drawn to the spot, not yet measured; excavation for the locks and upper entrance one-third done; clearing of land nearly completed.	
	From Hog's Back to Black Rapids.	Deepening shoals, &c. not yet commenced.	
	Works at the Black Rapids	-- Dam about three-fourths finished; clearing completed; excavation of lock pits completed; of lower and upper entrance about half done; masonry of the lock about three-fourths finished; lower pointed sill laid; ashlar and rough stone to complete the lock, drawn to the spot; lock-master's house nearly finished; backing and puddling of lock completed, nearly as high as the masonry of side walls about two-thirds finished.	
	Works at Long Island	-- Dam about three-fourths finished; clearing and grubbing completed; excavations for lock and entrance about half finished; masonry of the upper lock about half finished; a quantity of cut and rough stone prepared on the spot; lock-master's house nearly completed; embankment west side of river nearly finished.	
	Works at Long Island Still Water.	Deepening shoals, &c. not commenced.	
		Sum expended on the First Section - £.	81,713 - 9½
Section, No. 2.	Burrett's Rapids	-- Chopping and clearing finished; grubbing about half done; excavations about three-fourths done; a quantity of rough stone raised for the dam, and cut and rough stones for lock quarried, some of which are drawn to the spot, not yet measured	1,650 - -
Section, No. 3.	Nicholson's Rapids	Clearing and grubbing half done; a quantity of cut stone drawn to the spot, not measured	1,450 - -
Section, No. 4.	Clowe's Quarry.	-- Dam about one-third finished; excavation for lock completed; of lower entrance about three-fourths done; masonry of lock commenced, about one-fourth done; half the quantity of cut stone required is on the spot	6,444 11 8½
Section, No. 5.	Merrick's Mills	-- Chopping and clearing finished; excavation of lock-pits, basin, and line of canal, about half done; masonry of middle lock about one-fourth done; three-fourths of the cut and rough stone, sand, &c. required, drawn to the spot; dam not commenced; wooden pointed sill framed, but not laid	5,448 15 8½
Section, No. 6.	Maitland's Rapids	-- Chopping, clearing, &c. finished; excavation for lock pit finished; for line of canal about half done; half of the cut and rough stone required, on the spot	3,330 - -
Section, No. 7.	Edmond's Rapids	Clearing about half finished. No cash yet drawn by the contractors on this work.	
Section, No. 8.	Phillips' Bay	Not commenced.	
Section, No. 9.	Old Sly's Rapids	-- Dam nearly finished; foundation of upper breast work laid; cut stone for the two locks drawn to the spot; clearing completed; excavations for locks finished; ditto through point of land below the locks about half done	5,700 - -

No. 83.—Abridged Statement of the Progress of the Works of the Rideau Navigation—*continued.*

SECTIONS	PLACE or SERVICE	NATURE OF SERVICE and AVERAGE OF WORK PERFORMED.	CASH disbursed on each Section up to the 1st March 1829.		
			£.	s.	d.
Section, No. 10.	Smith's Falls	-- Clearing, grubbing, &c. completed; dam about three-fourths finished; excavation for lock-pits only commenced; embankment at head of Hornet's Snie half done; half of the quantity of cut stone drawn to the spot, and one-sixth of ditto in the quarries	6,180	--	--
Section, No. 11.	First Rapids on the Rideau	-- Clearing nearly completed; grubbing one-tenth done; excavations one-twelfth; a small quantity of cut and rough stone for lock drawn to the spot, not measured, some in the quarries; dam not commenced	1,000	--	--
Section, No. 12.	Oliver's Ferry	Not commenced.			
Section, No. 13.	Upper Narrows Rideau Lake	Not commenced.			
Section, No. 14.	Isthmus Rideau Lake	Chopping and clearing nearly finished; excavating about one-twelfth part done	1,761	13	4
Section, No. 15.	Isthmus Indian Lake	This work is about two-thirds done	50	--	--
	Chaffey's Mills	-- Chopping and clearing completed; excavation for waste weir half finished; nine-tenths of cut stone for the locks are drawn to the spot; excavations for the locks commenced	3,291	11	5 $\frac{1}{2}$
Section, No. 16.	Davis' Rapids	-- Chopping and clearing completed; dam not commenced; cut and rough stone for lock two-thirds on the spot; about one-sixth in the quarry; excavation for lock and line of canal only commenced; coffer-dam made	1,362	--	--
Section, No. 17.	Jones' Falls	-- Chopping and clearing completed; excavations for locks two-thirds done; nearly all the cut stone for the locks drawn to the spot; wooden pointed sills commenced; iron work for ditto forwarded to the place; limestone and cord-wood to burn lime provided; dam commenced; about one-twelfth finished; a large quantity of rough free-stone in blocks for arch key work of dam is provided on the spot, these, as well as the cut stone for locks, are brought a distance of five and a half miles; an excellent double railway is laid to lower the stones on the dam, which is progressing briskly	9,837	8	2 $\frac{1}{2}$
Section, No. 18.	Cranberry Lake	-- Clearing trees, &c. from the drowned land nearly completed; removing the temporary dams at Round Tail and White Fish Falls; and constructing a waste weir at the latter place, not yet commenced	1,021	8	4 $\frac{1}{2}$
Section, No. 19.	Brewer's Upper Mills	-- Cut and rough stones for locks in operation; about half the quantity required is provided; clearing and excavating between Upper and Lower Mills in progress, not yet measured	1,641	3	10
Section, No. 20.	Brewer's Lower Mill	A quantity of cut stone (about one-fourth of what will be required) is provided on the spot.			
Sections, No. 21 & 22.	Bellidore's and Jack's Rifts	-- The locks at these two sections are not required, as the lift will be obtained at Kingston Mills; but two-thirds of the clearing indispensably necessary, one-fifth of the grubbing, and about one-fourth of the excavations are performed	3,136	5	6 $\frac{1}{2}$
Section, No. 23.	Kingston Mills	-- Clearing, &c. completed; excavations for locks about two-thirds done; dam three-fourths built; cut and rough stones for the locks, about three-fourths of the quantity required in the quarry; coffer-dam at the head of Kingston Bay commenced	8,220	10	--
	Civil and Military Establishment	-- Extra pay and allowances of officers of Royal Engineers, Royal Sappers and Miners; pay and allowances of barrack-master and paymaster, pay of clerks and overseers of works, &c. including expense of erecting barracks, hospital, cook-houses, &c.	20,471	4	5 $\frac{1}{2}$

## No. 83.—Abridged Statement of the Progress of the Works of the Rideau Navigation—continued.

		NATURE OF SERVICE, and AVERAGE OF WORK PERFORMED.	CASH disbursed on each Section, up to the 1st March 1829:
			£. s. d.
General Contingencies	On Estimate	Stone storehouses, temporary barracks, engineer yard, survey of canal route, bridge at Falls of Chaudière, roads of communication, &c. &c. &c.	9,979 3 7
	Not on Estimate	Tools, ropes, charcoal, lumber of sorts, &c. compensation for damages in sundry places, postage of letters, stationery, conveyance of stores and materials, carpenters and smiths' shops, scows, &c. &c. &c.	14,151 17 2½
		Deduct Amount repaid for Tools, &c. supplied to Contractors	£. 187,840 14 2 1,470 12 5½
		Amount of Expenditure to 1st March 1829 - £.	186,370 1 8½

N. B.—The number of the Sections may be ascertained by a reference to the Plan of the Canal.

(signed) *John By,*

L<sup>t</sup> Colonel Roy<sup>l</sup> Eng<sup>r</sup> Com<sup>d</sup>, Rideau Canal.

No. 84.—LETTER from Lieut.-Colonel *By* to Lieut.-Colonel *Couper*,  
&c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Royal Engineer Office, Rideau Canal,  
20th November 1828.

SIR,

I HAVE the honour of transmitting, for the information of his Excellency Sir James Kempt, the Progress Report of Works and Expenditure on the Rideau Canal, from its commencement on the 21st September 1826 to the 1st of November 1828, at which date I had expended £.141,313. 15. 5½.; and between the 1st and 20th instant, I have paid £. 12,003. 5. 11½. making my total disbursements, £.153,317. 1. 5½. which leaves a balance of only £.12,682. 18. 6½, of which I suppose £. 5,000. is due to the various contractors, as we never advance the full value on the cut stone until it is measured in the wall; and I have the satisfaction of stating, that although my operations have been much retarded by the restricting of my expenditure, in the commencement of the present year, to £.41,000. until the Committee of the 29th of June authorized my expending £.105,000, and the sickness among my men and officers, which created a sad stagnation in the works, yet, taking these unexpected events into consideration, there has been an astonishing quantity of work performed, as fully detailed in the accompanying Report.

The line of bridges erected across the Ottawa at the Chaudière Falls is completed; and although the great Kettle Bridge was destroyed by the chains breaking on 2d of April last, it has been rebuilt, and that service completed at an excess of only £.372. 14. 4½. on the original estimate. The traffic appearing very great, I have ordered a toll-house and gates to be erected, and the following Notice to be fixed at the gate, and conceive the tolls will produce at least £.100. currency per year; which will be paid, as collected, into the military chest, until I receive instructions on that subject—

“ These Bridges across the Chaudière Falls having been built at the expense  
“ of His Majesty's Ordnance. Orders are given, That no Persons whatever  
“ shall be permitted to pass until they have paid one Penny; one Penny also  
“ to be paid for every horse, mare, gelding, ox, cow, calf, sheep, lamb and  
“ pig; and Two-pence for every waggon, sleigh or carriage, until the pleasure  
“ of His Majesty's Ordnance is known.

(signed) “ *John By, L<sup>t</sup> Col<sup>l</sup> R<sup>l</sup> Eng<sup>r</sup>.”*

M

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

I have succeeded in making the mound across Dow's Great Swamp water-tight, which places beyond all doubt the practicability of converting that unhealthy swamp into a fine sheet of water, and does away with the original idea of forming an aqueduct in the centre of the said mound, and a considerable saving will be made in consequence. I have also succeeded in raising the Rideau River at the Hog's Back 27 feet perpendicular, and am now busily employed in carrying on that work, in thickening the base, and completing the arch key work across the river, which was injured by the spring floods carrying away the temporary dam; and I have every reason to hope by this time next year to have the water raised to the required height of 45 feet, as at present I have met with nothing to create a doubt of the practicability of the plan; and if I am allowed to expend £.137,215. 11. 10½. in 1829, 1830 and 1831, I am confident the whole of the proposed works will be completed by the 12th August 1831; but I shall require the assistance of six officers of Royal Engineers in addition to those I have now the honour of commanding, to ensure the masonry and other works being well executed.

I have the honour to be, &c. &c.

(signed) *John By,*  
L' Col' R' Eng's Com<sup>d</sup>, Rideau Canal.

No. 85.—LETTER from Secretary to Ordnance Office to the Hon. *J. Stewart,*  
&c. &c. &c.

SIR,

Office of Ordnance, 28th August 1829.

HAVING submitted to the Board of Ordnance your letter, dated 7th instant, stating that the Lords Commissioners of His Majesty's Treasury have had before them a copy of my letter of 8th July last, addressed to Mr. Under Secretary Hay, recommending that a vote for £.140,000. should be submitted to Parliament for each of the years 1830 and 1831, to complete the Rideau Canal, in which letter reference is made to one of the 20th November 1828, from Lieut.-Colonel By, desiring to be allowed £.137,200. in each of the years 1829, 1830 and 1831, and signifying the desire of the Lords Commissioners to be furnished with a copy of Lieut.-Colonel By's letter, together with any observations which may have occurred to the Master General and Board thereon, with reference to the Report of the Committee formed by General Sir James Kempt, Lieut.-Colonel Fanshawe, and Lieut.-Colonel Lewis, of 28th June 1828, in which they dissent from the estimate of Lieut.-Colonel By, amounting to £.576,757. 14. 9½. and report their opinion that £.558,000. would be amply sufficient to complete the Canal with all probable contingencies that may occur;—

I am commanded by the Board of Ordnance to transmit to you, as desired by the Lords of the Treasury, a copy of Lieut.-Colonel By's letter of 20th November 1828, and have to request you will inform their Lordships that the Lieutenant-Colonel does not appear to have been in possession of the reduced estimate for the Rideau Canal formed by the Committee; of which Sir James Kempt was President.

Before the amount proposed by the Committee, namely £.558,000, is finally assumed as sufficient, the Board are of opinion it will be advisable to furnish the Commanding Engineer in Canada with a copy of the Committee's Report, so far as relates to calculations, in order that he may report regarding the reduction of £.18,000. as proposed by the Committee; and the Board beg to suggest to the Lords of the Treasury, that in the meantime the sum of £.140,000. be the amount to be voted for 1830, leaving the remainder open for future consideration.

The Board, on receiving their Lordships' acquiescence, will make the proposed communication to the Commanding Royal Engineer in Canada.

I have the honour, &c.

(signed) *G. Butler,*  
(for the Sec<sup>y</sup>.)

No. 86.—LETTER from Lieut.-Colonel *By* to Lieut.-Colonel *Couper*,  
&c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Royal Engineer Office, Rideau Canal,  
20th Nov. 1828.

SIR,

I HAVE the honour of transmitting, for the information of his Excellency Sir James Kempt, the Progress Report of Works and Expenditure on the Rideau Canal, from its commencement on the 21st September 1826 to the 1st November 1828, at which date I had expended £.141,313. 15. 5½., and between the 1st and 20th instant, I have paid £.12,003. 5. 11½., making my total disbursements £.153,317. 1. 5½., which leaves a balance of only £.12,682. 18. 1¼. of which I suppose £.5,000. is due to the various contractors, as we never advance the full value on the cut stone until it is measured in the wall; and I have the satisfaction of stating, that although my operations have been much retarded by the restricting of my expenditure in the commencement of the present year to £.41,000, until the Committee of the 29th of June authorized my expending £.105,000, and the sickness among my men and officers, which created a sad stagnation in the works, yet taking these unexpected events into consideration, there has been an astonishing quantity of work performed, as fully detailed in the accompanying Report.

The line of bridges erected across the Ottawa, at the Chaudière Falls, is completed; and although the great Kettle Bridge was destroyed by the chains breaking on 2d April last, it has been rebuilt, and that service completed at an excess of only £.372. 14. 4½. on the original estimate.

The traffic appearing very great, I have ordered a toll-house and gates to be erected; and the following Notice to be fixed at the gate, and conceive the tolls will produce at least £.100. currency per annum, which will be paid, as collected, into the military chest, until I receive instructions on that subject:—

“ These Bridges across the Chaudière Falls having been built at the expense of His Majesty’s Ordnance, Orders are given, That no Persons whatever shall be permitted to pass until they have paid one Penny; one Penny also to be paid for every horse, mare, gelding, ox, cow, calf, sheep, lamb and pig; and Two-pence for every waggon, sleigh or carriage, until the pleasure of His Majesty’s Ordnance is known.

“ *John By*, L<sup>t</sup> Col<sup>l</sup> R<sup>l</sup> Engineers.”

I have succeeded in making the mound across Dow’s Great Swamp water-tight, which places beyond all doubt the practicability of converting that unhealthy swamp into a fine sheet of water, and does away with the original idea of forming an aqueduct in the centre of the said mound, and a considerable saving will be made in consequence. I have also succeeded in raising the Rideau River at the Hog’s Back 27 feet perpendicular, and am now busily employed in carrying on that work, in thickening the base, and completing the arch key work across the River, which was injured by the spring floods carrying away the temporary dam; and I have every reason to hope by this time next year, to have the water raised to the required height of 45 feet, as at present I have met with nothing to create a doubt of the practicability of the plan; and if I am allowed to expend £.137,215. 11. 10½. in 1829, 1830 and 1831, I am confident the whole of the proposed works will be completed by the 12th August 1831; but I shall require the assistance of six officers of Royal Engineers, in addition to those I have now the honour of commanding, to ensure the masonry and other works being well executed.

I have, &c.

(signed) *John By*.

No. 87.—Copy of TREASURY MINUTE, dated 10th September 1829.

READ a letter from Mr. Hay, dated 20th August last, transmitting, as requested by the letter from this Board of the 11th of that month, the copy of a despatch from Lieut.-General Sir James Kempt, enclosing an abridged Report of the proceedings of Lieut.-Colonel *By* on the Rideau Canal to the 1st March last, and a Statement of the Expenses which had been incurred upon it up to that period.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Read also a letter from the Secretary to the Ordnance, dated 28th ultimo, transmitting, as desired by the letter from this Board of the 7th of that month, a copy of Lieut.-Colonel By's letter of the 20th November 1828, desiring to be allowed £. 137,200 in each of the years 1829, 1830 and 1831, for the Rideau Canal, and the Secretary to the Ordnance at the same time states, that the Lieut.-Colonel does not appear to have been in possession of the reduced estimate for the Rideau Canal formed by the Committee, of which Sir James Kempt was President, alluded to in the above letter from this Board.

Before the amount proposed by the Committee, namely, £. 558,000, is finally assumed as sufficient, the Board of Ordnance are of opinion, it will be advisable to furnish the Commanding Engineer in Canada with a copy of the Committee's Report, so far as relates to the calculations, in order that he may report regarding the reduction of £. 18,000, as proposed by the Committee; and the Board suggest to their Lordships, that in the mean time the sum of £. 140,000. be the amount to be voted for 1830, leaving the remainder open for further consideration.

Transmit copy of Mr. Hay's letter and enclosures to the Secretary of the Ordnance, for the information of the Master General and Board, and acquaint him, with reference to his letter of the 28th ultimo, that although the whole amount of the estimate of the Committee which remains to be provided is £. 262,000. only, My Lords will submit to Parliament a vote for £. 140,000. in the next session, as recommended by the Master General and Board, leaving £. 122,000. to be voted in the year 1831; and My Lords request that Lieut.-Colonel By may be called upon to report in the fullest detail, and without delay, on the estimate of the Committee, and that his Report may be submitted to the Committee, for their observations, with reference to their estimate of £. 558,000, as My Lords will not propose to Parliament to grant a larger sum than is sufficient to complete the estimate of £. 558,000, without the most clear and satisfactory evidence of the necessity.

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No. 88.—LETTER from *R. Byham*, Esq. to the Hon. *J. Stewart*,  
&c. &c. &c.

S I R, Office of Ordnance, 23d September 1829.  
HAVING laid before the Board your letter of the 18th instant, respecting the estimates for the Rideau Canal;—

I am directed to acquaint you, for the information of the Lords Commissioners of His Majesty's Treasury, that agreeably to their Lordships' desire Lieut.-Colonel By will be called upon for the detailed Report required upon this subject.

I have the honour to be, Sir,  
Your most obedient humble servant,  
*R. Byham.*

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No. 89.—LETTER from *R. W. Hay*, Esq. to the Hon. *J. Stewart*,  
&c. &c. &c.

S I R, Downing-street, 19th November 1829.  
I AM directed by Secretary Sir George Murray to transmit to you the copy of a despatch from Lieutenant-General Sir James Kempt, dated the 20th September last, stating, that in compliance with the recommendation of Lieutenant-Colonel Durnford, commanding Royal Engineers in Canada, he had purchased certain lots of land at the Hog's Back, on the Rideau Canal; I am to request that you will lay the same before the Lords Commissioners of the Treasury, for their Lordships' information, acquainting their Lordships that Sir George Murray is of opinion, that Sir James Kempt has acted with a just view to the public interest, and in fact has only anticipated the instructions which have been conveyed to him on this subject.

I am, Sir,  
Your most obedient servant,  
*R. W. Hay.*

No. 90.—DESPATCH from Lieut-General Sir *James Kempt* to the  
Right Hon. Sir *George Murray*, &c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

SIR,

Chateau St. Lewis, Quebec, 20th Sept. 1829.

WITH reference to my letter (No. 35), dated 2d April 1829, upon the purchase of certain lots of land at the Hog's Back, on the Rideau Canal, belonging to Dr. Munro and to Mr. R. D. Fraser, I have now the honour to transmit extracts of letters from Colonel Durnford, commanding Royal Engineers in Canada, (No. 1), and from Lieut-Colonel By, commanding Royal Engineers upon the Rideau Canal, (No. 2), urging the immediate necessity of buying those lands.

No. 91.

No. 92.

As it appears by the representations of those officers, that the verdict of a jury would most probably award a larger sum in compensation of the damages which those lands have sustained from persons employed upon the Canal; than the price at which their proprietors offer them for sale; as a further delay in their purchase would not only subject the public to an increased demand from the proprietors, but also to the probability of their being bought by unprincipled speculators, with a view to subsequent imposition upon Government, (an expedient which has already been too successfully practised on the line of this Canal), and as there can be no doubt that its completion will greatly enhance the value of all land in its vicinity, I have been induced, at the earnest solicitations of those officers, to authorize the purchase of the lots of Mr. Fraser and Dr. Munro.

The situation of those lots is described in the enclosures of my letter; (No. 35) dated 2d April last. That of Dr. Munro on the right bank of the Rideau, comprising 900 acres, he now offers *without reserve* for One thousand pounds sterling; and that portion of Mr. Fraser's on the left bank of that River, which remains (after the purchase of the 45 acres formerly made by Lieut.-Colonel By) consisting of 455 acres, is offered for Three hundred and eighty pounds sterling, in all One thousand three hundred and eighty pounds sterling, the amounts which I have authorized to be paid for those lots.

£. 1,000 sterling.

£. 380 sterling.

£. 1,380 sterling.

It is with great reluctance that I depart, even upon the most urgent occasions, from the rule by which I am generally governed, to refrain from sanctioning any expenditure of the public money which has not been previously authorized, but I entertain no doubt that under the circumstances I have stated, you will readily concur in the expediency of the course I have pursued.

I have the honour to be, &c.

(signed) *James Kempt*.

No. 91.—EXTRACT of a Letter from Colonel *Durnford*, Commanding Royal Engineers, *Canada*, (No. 14,) addressed to Lieut.-Col. *Couper*, M.S.; dated 5th September 1829.

—WITH reference to my letters of the 12th February and 24th March last, Nos. 1 & 2, of the Appendix, to Sir James Kempt's letter, No. 35; dated 2d April 1829, I beg leave again strongly to recommend that his Excellency be pleased to sanction the purchase of the property mentioned in Lieut.-Colonel By's letter, No. 2, for the reasons therein explained.

No. 92.

No. 92.—EXTRACT of a Letter, (No. 11;) from Lieut.-Colonel *By*, Commanding Royal Engineers, *Rideau Canal*, addressed to Colonel *Durnford*, Commanding Royal Engineers, *Canada*; dated *Rideau Canal*, 27th August 1827.

—THE enclosed is a letter just received from Mr. R. D. Fraser, and as I am convinced his demand for damages will be much greater than he asks for the estate, I strongly recommend its being purchased immediately. I also recommend Government purchasing Dr. Munro's 900 acres at the Hog's Back, which he has offered to sell without reserve for £. 1,000 sterling, if immediate payment takes place, and

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

I dread the consequences if much further delay takes place, for some one will purchase for the express purpose of making a job of the Government. Your obtaining for me the authority of his Excellency Sir James Kempt to make these purchases will greatly oblige me, as I am convinced the Government will save money by an immediate purchase.

No. 93.—LETTER from Mr. *R. D. Fraser* to Lieut.-Colonel *By*,  
&c. &c. &c.

SIR,

Edwardsburg, 14th August 1829.

I WOULD have completed the deed for the frontage of the lots Nos. 34 & 35, in Nepean, forty-five acres, but when I came to give the dimensions, I had it not from the surveyor; however, it is no consequence, as I am ready to execute the deed at any time. I have spoken to a number of people who have lands upon the Rideau River, but they hold these lands at too high a rate that I should ever mention.

Mrs. Fraser, my sister-in-law, from Montreal, is now with me; she has lands, 800 acres, where the embankments are going on in Nepean. Should you be desirous to arrange with her for the same, if you will write me what time you will see her, I will go to By Town with her. Also please let me know what is your intention respecting the remainder of the lands at the Hog's Back, 445 acres.

I have the honour, &c. &c.

(signed) *R. D. Fraser.*

No. 94.—LETTER from *R. Byham*, Esq. to the Hon. *J. Stewart*,  
&c. &c. &c.

SIR,

Office of Ordnance, 29th January 1830.

WITH reference to your letter of the 18th September last, stating the intention of the Lords Commissioners of His Majesty's Treasury to submit to Parliament a vote for £.140,000. in the next Session, on account of the Rideau Canal,

I have the honour to acquaint you, as it does not appear that any amount has been notified to the Board as intended to be taken on account of the Grenville Canal, carrying on by the Staff Corps Companies in Canada, now under the orders of the Ordnance Department, the Board, agreeably to a recommendation upon this head from the Inspector General of Fortifications, beg to submit to their Lordships, that the sum of £.30,000. be included in the Colonial Estimates, on account of the Grenville Canal, for the present year.

I have, &c.  
(signed) *R. Byham.*

No. 95.—Copy of TREASURY MINUTE, dated 2d February 1830.

MY Lords read the letter from the Secretary of the Board of Ordnance, of the 29th January, recommending to propose a grant of Parliament in the ensuing Session of £.30,000. on account of the Grenville Canal, carrying on by the Staff Corps Companies in Canada, under the orders of the Ordnance Department, in addition to the vote of £.140,000. which My Lords intend to propose on account of the Rideau Canal.

My Lords resume the consideration of all the former papers on the subject of the Canal Communications in Canada; and advert particularly to the Report of the Committee, of which Sir James Kempt was President, on the Rideau Canal, and to the letter of the Secretary of State for the Colonial Department, of the

November

November 1828, transmitting that Report to My Lords, in which it was stated that the whole expense for the Canal Communication would be, exclusive of St. Ann's Rapids, £.734,640. as follows:—

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Rideau Canal	-	-	-	-	£.	558,000
Grenville Canal	-	£. 59,100	-	-		
Chûte à Blondeau	-	12,540	-	-		
Carillon Rapids	-	105,000	-	-		
						176,640
					£.	734,640

My Lords have not yet received any estimate of the probable expense that will be incurred at St. Ann's Rapids, and have therefore not yet sanctioned any expense being incurred on that part of the line of Canal Communication.

It appears, by the accounts and papers before this Board, that there has already been applied on account of the above-stated expenditure, £.409,000.; viz.

From the Army Extraordinaries in the commencement of the work	-	£.	40,000
And from Grants of Parliament in the years 1826, 7, 8 & 9	-		369,000
		£.	409,000

And that the whole sum required therefore to complete all the estimates already approved of is £.325,500.

The whole of the grants of Parliament have already been issued to the Ordnance Department, to enable that Department to repay, to the credit of Army Extraordinaries, the advances made in the first instance out of that fund in Canada to Ordnance officers on account of this expenditure, and My Lords are not aware that the Board of Ordnance have been called upon to pay, or have paid, any portion of the first-mentioned sum of £.40,000. applied from the Extraordinaries when the work first commenced.

My Lords have already communicated to the Master General and Board of Ordnance their intention to submit a vote to Parliament of £.140,000. on account of this service during the present Session, and they think it will be expedient to add to that proposed vote the further sum of £.23,000. instead of the £.30,000. proposed by the Ordnance, so as to grant an equal amount in the present as in the last year for this expenditure. By making a grant of £.163,000. during the Session of 1830, the amount which will be required in 1831 to complete all the works already approved of, viz. Rideau Canal, Grenville Canal, Chûte à Blondeau and Carillon Rapids, will be reduced to £.162,640., and that amount My Lords will accordingly propose to Parliament to be granted in the Session of 1831; but their Lordships will not submit any vote whatever beyond these sums for these services, if any such should be called for without the most distinct and satisfactory explanations of the ground on which any such exceedings can be justified. They think it right to make this declaration thus early, in order that the Master General and Board of Ordnance may make the necessary communications upon the subject to all the parties employed, and issue to them the strictest injunctions for keeping this expenditure within the estimates.

Transmit copy of this Minute to the Secretary of the Ordnance, and desire he will bring it under the special consideration of the Master General and Board, who will perceive from it that My Lords do not think it expedient to propose to Parliament, during the Session of 1830, a larger grant, on account of these works, than that for which the sanction of Parliament was given in 1829, and can therefore only increase the estimate already prepared for £.140,000. by the addition of £.23,000. instead of £.30,000. as recommended by that Board, making the total proposed grant for 1830, £.163,000.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 96.—LETTER from *R. Byham, Esq.* to the Hon. *J. Stewart,*  
&c. &c. &c.

SIR,

Office of Ordnance, 8th March 1830.

HAVING laid before the Board your letter of the 10th ultimo, transmitting a copy of a Minute of the Lords Commissioners of His Majesty's Treasury, dated the 2d of that month, relative to the sums required for the Water Communications in progress in Canada;—

I have the honour to state, that on a perusal of the Minute, there appears to be a considerable difference between the sums calculated for those works, as compared with the calculations in this department, the Board therefore submit to their Lordships the following explanatory observations upon the subject; viz. /

In the statement, the expense of the Rideau, which has been conducted by the Ordnance from the commencement, and the Grenville and other Canals carrying on by the Staff Corps, and only very recently transferred to the Ordnance, appear in the Minute to be mixed up into one account; as this, however, may lead to inconvenience, the Board are of opinion that it is advisable to separate those expenses, in order that the subject may be understood. And with respect to the Rideau, the Board merely observe, that the amount stated in their Lordships' Minute for the work is £. 558,000; but that Lieut.-Colonel By's estimate is £. 576,757, making a difference of £. 18,000; and on this the Lieut.-Colonel has been called upon to report, as requested by their Lordships in your letter of 18th September 1829, and upon receipt of his answer a notification will be made to their Lordships; under the admission, therefore, that this is to be further explained, there is no difference relative to the expense of the Rideau.

In regard however to the Grenville, the Chûte à Blondeau, and the Carillon Rapids, for which a sum of £. 176,640. is put down in their Lordships' Minute, the Board presume that this sum has been obtained from the information afforded by Lieut.-Colonel Fanshawe, a member of the late Canada Commission, of which Sir James Kempt was President; as, agreeably to the desire of the Secretary of State for the Colonial Department, notified in Mr. Hay's letter of 22d October 1828, the Board called for an account of the probable expense of completing those works with locks on the scale of those ordered for the Rideau, and a communication of the same was made to Mr. Hay on 7th November 1828, from which it appears that the above sum was made out as follows:

	£.
For the Grenville Canal already commenced	59,100
For the Chûte à Blondeau	12,540
For the Carillon Rapids	105,000
Total	£. 176,640

The Board however beg to observe, that this calculation was stated by Lieut.-Colonel Fanshawe to be only grounded on the different estimates of the executive officers, who were not then under the orders of the Ordnance, nor the works conducting under their superintendence; and moreover, that the above sum was calculated for the completion of the works from that date, viz. the end of 1828; whereas, in the statement in their Lordships' Minute, the whole that was allowed for those works out of the Army Extraordinaries, or from the grants of 1826, 1827 and 1828, appear to be placed against this expense, when only the vote of 1829 (£. 32,313.) the Board submit to be the fair charge against the £. 176,640. given in by Lieut.-Colonel Fanshawe. The Board further direct me to state, that there were, in fact, no documents or detailed estimates in this office to shew the expense of completing these works, until the receipt of Sir James Kempt's despatch of 12th February 1829, addressed to the Secretary of State for the Colonial Department, but which is not adverted to in their Lordships' Minute. In the said despatch it is distinctly stated by Sir James Kempt (and the detailed estimates are furnished) that

that the Grenville Canal, exclusive of what had been previously expended on it, would require	£. 21,000
That the Chûte à Blondeau would require	11,580
And the Carillon Rapids	58,000
Making a total of	£. 90,580

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

And as, before this Report was received in England, a vote of £. 32,213. had been allowed, in the estimate for 1829, on account of the Grenville, there remained to be voted for these works the sum of £. 58,367.

In stating the foregoing observations for their Lordships' consideration, the Board direct me to add, that the calculation was formed on the above-mentioned despatch when they submitted, in their letter of 29th January last, that £. 30,000. should be voted for those works in the present year, in order that they might be proceeded with so as to be completed as soon as the Rideau; and on reference to Sir James Kempt's Report, the expediency of a grant to that amount will be perceived.

I have, &c.

(signed) *R. Byham.*

No. 97.—Copy of TREASURY MINUTE, dated 19th March 1830.

READ Letter from the Secretary of the Ordnance, dated the 8th instant, further on the subject of the Water Communication in Canada.

My Lords have again before them the former papers on this subject, and refer particularly to their Minute of 2d February 1830, in which their Lordships set forth the amount which from those papers it appeared to them to be necessary to provide for completing all those parts of this line of Canal Communication, for which estimates have received the sanction of this Board.

My Lords perceive from the letter of the Board of Ordnance, that although that Board states the subject in a somewhat different manner, yet that they arrive at very nearly the same result.

The Board of Ordnance assume from the reports which they have received, that £. 58,367. was required, at the commencement of the year 1830, to complete the Grenville Canal, the Chûte à Blondeau and the Carillon Rapids; and as that had to the close of 1829 been granted for the Rideau Canal, £. 296,000. then remained as stated in My Lords' Minute of 4th August 1829, to be granted in 1830 and 1831, £. 262,000. to complete the Rideau Canal. These two sums taken together, amount to £. 320,367, and as an estimate has already been laid upon the table of the House of Commons, for granting £. 163,000. for this service for the year 1830, there will remain still to be granted according to the Ordnance account in the year 1831, £. 157,367. to complete the whole amount required, by which means provision will be made for completing the whole of the Canals at the same time. It does not appear to My Lords under these circumstances to be necessary to increase the estimate for 1830.

Transmit copy of this Minute to the Secretary of the Ordnance, for the information of The Master General and Board.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 98.—LETTER from *R. W. Hay*, Esq. to the Hon. *J. K. Stewart*,  
&c. &c. &c.

SIR,

Downing-street, 14th June 1830.

I AM directed by Secretary Sir George Murray to transmit to you the enclosed despatches from Lieut.-General Sir James Kempt, with their enclosures, from Lieut.-Colonel By, relative to the progress of the Rideau Canal, and the increase upon the estimate for the Carillon Canal; and I am to request that you will lay the same before the Lords Commissioners of the Treasury for their Lordships' information.

I am, &c.

(signed) *R. W. Hay*.

12 Feb. 1830.

1 April 1830.

No. 99.—DESPATCH from Lieut.-General Sir *James Kempt* to the  
Right Honourable Sir *George Murray*, &c. &c. &c.

SIR,

Castle of St. Lewis, Quebec, 12th Feb. 1830.

THIS being the period of the year at which you may expect from me a report upon the state of the Rideau and Ottawa Canals, I beg to transmit for your information a copy of a letter upon the former, addressed to me by Lieut.-Colonel By, the engineer in command, which I consider satisfactory; and, when received, I shall not fail to forward you the condensed Report upon that Canal to which he alludes, together with the Annual Reports upon the progress and state of the Canals upon the Ottawa, the arrival of which I am in daily expectation.

I am sorry, however, to observe, that the Canals at the Carillon and Châte à Blondeau have by no means advanced during the past season as I was led to expect; indeed, at the former, with the exception of clearing and surveying its course, no part of the work has been even yet undertaken.

A few days ago an Estimate of the Carillon Canal was submitted to me, amounting to £.88,633. 5. 2½. sterling, which exceeds the amount of that approved by His Majesty's Government (£.58,068. 8. 6.) in the sum of £.30,564. 16. 8., an excess of more than half the total amount of the approved Estimate.

Being greatly surprised by so extraordinary a discrepancy, for which I was altogether unprepared, I lost no time in directing a committee of competent officers, of which Colonel Durnford, Commanding Royal Engineer in Canada, is President, to be convened upon the spot to investigate the matter, and to prepare a correct Plan and Estimate for that Canal, which shall be forwarded to you with the least possible delay. In the meantime I have suspended the commencement of that work, with the exception of such small preparatory measures as may be found necessary until its estimate shall have met your approbation; and I trust I shall be honoured with your instructions to proceed with the work, so far at least as the sum appropriated thereto by the Imperial Parliament may permit, at a period of the season sufficiently early to prevent any delay in its prosecution, from the suspension, which, for the foregoing reasons, I have deemed incumbent upon me to direct.

I have, &c.

(signed) *James Kempt*.

No. 100.—LETTER from Lieut.-Colonel *By* to Lieut.-General Sir *James Kempt*  
&c. &c. &c.

MY DEAR SIR,

By-Town, 8th January 1830.

I HAD yesterday the honour of receiving your Excellency's kind note of the 20th *ultimo*, and have the gratification of assuring your Excellency, that, as I have succeeded in raising the water at the Hog's Back to the required height, the surplus quantity of flood water has to pass over a solid rock, on the east flank; and the west flank being protected by the lock and the wing walls of the said lock, with a strong natural

Dated 8 Jan. 1830.

natural bank considerably above the required level, I trust there is no fear of being beaten on either flank; and all that remains to be done is, to strengthen the centre, which appears to stand the pressure without the least alteration; I am, therefore, inclined to call this great work finished, with the exception of dressing off the ground in the spring.

As I am extremely anxious to make my Progress Report as explicit as possible, I am forming Plans and Sections of each work, on a scale of twenty feet to an inch, which I hope to be able to send to Colonel Durnford to lay before your Excellency, with the Plans of the ground required for the Rideau Canal, accompanied by my Progress Report, in about six weeks; at which time I shall be able to send your Excellency an abridged Report, showing the state of each work; and I beg to state that, finding it impossible to send off my Progress Report within that period, and conceiving it a matter of consequence that Government should, with the least possible delay, be made acquainted with the amount of my disbursements, I have sent, by the way of New York, my letter to General Mann, which was written to accompany my detailed Progress Report, a copy of which I have the honour of enclosing for the information of your Excellency, from which it appears that the work keeps pace with the expenditure, and that the estimate will nearly complete the Water Communication from the Ottawa to Kingston; but as I can hardly flatter myself that this is the fact, myself and officers are re-measuring the work still remaining to be executed, wishing to form a correct calculation before I send an abridged Report to your Excellency.

I have, &c.

(signed)

John By.

No. 101.—LETTER from Lieut.-Colonel *By* to General *Mann*,  
&c. &c. &c.

SIR,

Royal Engineers' Office, Rideau Canal, 31 Dec. 1829.

I HAVE the honour of transmitting, for the information of his Lordship the Master General, and Right Honourable and Honourable Board of Ordnance, the Progress Report of Works on the Rideau Canal, Upper Canada, from their commencement on the 21st September 1826 to the 31st December 1829, from which it appears that £. 349,264. 13. 2. has been expended, to which sum should be added about £. 10,000 for works not yet measured, conceiving it my duty to reserve some of the contractor's work as security.

The sums authorized to be expended are;—

	£.	s.	d.
For the year 1826	5,000	—	—
— 1827	50,000	—	—
— 1828	105,000	—	—
— 1829	130,666	13	4
	£. 296,666	13	4

But the expenditure, as detailed in the Progress Report herewith annexed, amounts to £. 349,264. 13. 2., which sum taken from the estimate of £. 576,757. 12. 2½. for the large locks, as given to the Committee, of which His Excellency Sir James Kempt was President in June 1828, leaves a balance unexpended of £. 227,492. 19. —½. being about two-fifths of the sum then supposed to be required; and I have the satisfaction to state, that, on examining the various works, and comparing the measurements, as far as possible, of those performed with those still remaining to be executed, I find that rather more than three-fifths of the work are already executed; consequently I have every reason to suppose the Water Communication between the Ottawa and Kingston will be completed in August 1831, with very little excess on the said Estimate: but I most respectfully beg to explain, for the information of his Lordship the Master General, that although there is only a certain sum per annum granted to carry on these works, it is not in my power to limit the expenditure to that sum, the contracts being so worded, that payment must be made as the works progress; and the dreadful effects of the lake fever have so alarmed the different contractors, and so materially increased the expenses, that they are anxious to complete their works with the least possible delay. I therefore expect that nearly the whole of the works will be completed next year, and that, in consequence,

31 Dec. 1829.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

£. 200,000 will be required for the year 1830, leaving £. 27,492. 19.  $\frac{1}{2}$ . for the year 1831.

I have also the honour to report, that the dam at the Hog's Back is nearly completed, and answers the desired object in every respect, having raised the Rideau River to the required height of forty-five feet; and thrown back six feet depth of water into the lock at Black Rapids, which proves my original levels at this place to be correct, and also the practicability of my project, which, when the dam gave way last April, was doubted by many, and to this annoyance I attribute the serious illness with which I was afflicted in April last; but owing to the prompt assistance I received from Mr. Tuthill, the ordnance surgeon at this station, I was enabled to resume my duty in a few days, and I went through the line of the Canal with Colonel Durnford within a fortnight after my attack. I have also the satisfaction to state, that although my life was despaired of in consequence of a severe attack of the lake fever, which I caught when up the line in September last, I was sufficiently recovered to go up again on the 9th November, and, although exposed to very great hardships, by being frozen in on Mud Lakes, and passing the night in a small uninhabited island, I have not suffered, and trust my health is so re-established as to permit me to continue my arduous duties until this great work is completed. At the same time I feel extremely grateful for your having sent me Lieut.-Colonel Boteler, whom I have placed in charge of the Kingston division, extending from the narrows Rideau Lake to Kingston; and he has my instructions to forward the service of surveying the lands required for the defence of the various works on the Rideau Canal with all possible dispatch. I am also preparing plans and sections of each work, with calculations, to show the sums required for the completion of each. At the same time I respectfully beg to observe, these calculations must not be considered as the *positive* sums required; for although myself and officers are using every exertion to bring them as near the sum required as possible, yet the clearing and deepening various parts of the River, Cranberry Marsh and Lake, as also clearing and deepening Cataroqui Creek, and the excavation of the Isthmus Rideau Lake, are services so interwoven with unforeseen contingencies, that the expenses of them must remain uncertain until they are completed; and the utmost that can be done is, to state the probable sum that will be required.

I have, &c.

(signed) *John By,*  
Lieutenant Colonel Royal Engineer  
Comm<sup>d</sup>. Rideau Canal.

No. 102.—LETTER from *R. W. Hay*, Esq. to the Hon. *J. K. Stewart*,  
&c. &c. &c.

SIR,

Downing-street, 14 June 1830.

WITH reference to my letter of this day's date, transmitting despatches from Lieut-General Sir James Kempt, on the subject of the Rideau Canal, I am now directed by Secretary Sir George Murray to transmit to you a copy of a despatch from Lieut-General Sir James Kempt, enclosing a Report from Colonel Durnford, with the Estimates prepared by the Committee of which he was President, for the formation of the Canals at Carillon (£. 72,318. 3. 7 $\frac{1}{2}$ . sterling); Châte à Blondeau (£. 20,785. 5.); for completing the Grenville Canal (£. 24,131. 13. 3 $\frac{1}{2}$ .), and for altering its dimensions where necessary, to correspond with those of the Rideau and the other Ottawa Canals (£. 54,245. 19. 2.), which, with the expenses of the establishments of the two Companies of the Royal Staff Corps, employed upon that work from 25 June 1829 to 31 December 1832 (£. 23,761. 11. 8 $\frac{1}{2}$ .), form an aggregate amount of £. 195,242. 12. 10. sterling; and I am to request that you will lay the same before the Lords Commissioners of the Treasury, for their Lordships' consideration and decision, calling their Lordships' attention to Sir James Kempt's suggestion as to the expediency of retaining and employing upon the Ottawa Canals a portion of the Engineer Officers and Sappers and Miners now stationed on the Rideau Canal, which will be nearly completed in the present year.

I am, &c.

(signed) *R. W. Hay.*

No. 103.

To His Excellency Lieut. Gen. Sir James Kempt, G. C. B.  
&c. &c. &c.

REPORT and ESTIMATE

Of the Total probable Expense, from the 25th of April 1829, of  
Forming the Line of Canal at the Carillon Rapids :

Completing the Line now under execution at the Chute à Blondeau :

Completing the Grenville Canal according to the Plan and Instructions already  
approved of by the Committee, under His Excellency Sir James Kempt :—and

Altering the Three Locks now constructed at the Grenville Canal, on the small  
scale, to correspond with those of larger dimensions ; and widening and deepening  
the Canal where necessary, as ordered by the same Committee ; including  
the Expense of the Two Companies of the Royal Staff Corps, from the  
25th June 1829 :

Proposed to be carried on in the years 1830, 1831, and 1832 ;

Amounting to the Sum of - - £. 195,242. 12. 10.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 103.—REPORT and ESTIMATE of the total probable Expense from

ABSTRACT

Item.

1. FORMING the line of Canal at the Carillon Rapids - - - - -
2. Completing the Canal now under execution at the Chûte à Blondeau
3. Completing the Grenville Canal according to the Plan and Instructions already approved of - - - - -
4. Altering the three Locks now constructed at the Grenville Canal on the small scale, to correspond with those of larger dimensions; and widening the Canal where necessary - - - - -
5. Establishment from 25th of June to 31st of December 1829, and for the years 1830, 1831 and 1832 - - - - -

TOTAL - - -

REPORT.

THE line of Canal, as directed in 1828, would form one continued line of cutting from its entrance above Dewar's Island to the village of Carillon; and for which the revised estimate, amounting to £. 88,633. 5. 2½, transmitted by Lieut.-Colonel Du Vernet on the 6th January 1830, would scarcely suffice.

By taking advantage, however, of the north channel of Dewar's Island, by constructing two dams, a saving of about £. 5,360 is effected.

At the lower end, by making the entrance to be protected by a pier or breakwater, at a point about 500 yards above the village of Carillon, a further saving of about £. 10,950 is made on that Estimate; calculating on the same average prices, although perhaps the deep cutting through the latter part, thus avoided, might amount to £. 15,000.

From the information obtained, and as there was but little fall on the ice (February 1830) between the proposed lower entrance and the former one in the village, it was considered that by means of a pier or breakwater, the navigation of the river might be practicable as far as the upper point: on which principle this Estimate has been framed.

As, however, this could only be decided finally upon seeing the place at other seasons of the year, it is recommended now to commence the cutting of the Canal upwards, opposite to the proposed lower entrance, and with the excavation to form the rough mass of the breakwater: in which case, should the current still prove to be too strong for the adoption of this proposed entrance, the general line of Canal would not have been interfered with, and only a small expense incurred for some extra wheeling; and it would afterwards become a question, whether to make the entrance near Davis's Wharf (as shown on the Plan) at an additional expense to this Estimate of £. 3,471. 15. 3½, or at the village, as directed in 1828, at the additional expense to this Estimate of £. 15,116. 17. 2¼, allowing an extra price for this deep cutting.

PLAN, No. 1.

the 25th of April 1829, of forming the Line of CANAL at the Carrillon Rapids.

Correspondence relative to the Canal Communication in Canada.

ABSTRACT.

AMOUNT OF ESTIMATES, including Sums Expended.	ORIGINAL ESTIMATES	EXCESS to be Provided.
£. s. d.	£. s. d.	£. s. d.
72,318 3 7½	58,206 17 9½	14,111 5 10
20,785 5 -	14,033 5 5	6,751 19 7
24,131 13 3½	21,031 16 2½	3,099 17 1
54,245 19 2	- - - -	54,245 19 2
23,761 11 8½	- - - -	23,761 11 8½
195,242 12 10	93,271 19 5½	101,970 13 4½

ESTIMATE.

1.—FORMING the LINE of CANAL at the Carrillon Rapids.

	£.	s.	d.
127,816½ cubic yards of excavation through rock - 5s. sterl.	31,954	2	6
42,605 - - - ditto - - - through earth - 1s. 6d. -	3,195	8	3
21,000 - - - ditto - - - of hard rock in Channel, De-war's Island - 6s. sterl.	6,300	-	-
27,250 - - - ditto - - - of rock from Channel to old line - 5s. -	6,812	10	-
21,888 - - - ditto - - - in forming two dams complete, 3s. sterl.	3,193	4	-
611 toises of dry masonry in Pier or Breakwater, at the proposed lower entrance to Canal - 20s. sterl.	611	-	-
Extra wheeling of excavation to fill in behind - ditto -	800	-	-
1,166 cubic yards of excavation through rock in bed of River, in clearing the entrance of Canal - 6s. 6d. sterl.	378	19	-
Additional coffer-dam, and machinery for pumping - - -	300	-	-
Regulating Lock, Masonry - - (former Estimate) £. 5,548 15 3			
Ditto - - - Carpentry - - - ditto - 507 10 9			
Ditto - - - Iron and Smith's work, ditto - 265 - -			
Ditto - - - Machinery for Sluices, ditto - 187 19 -			
Ditto - Lower Lock - - - - ditto - 6,339 15 4			
Currency - - - £. 12,849 - 4	11,135	16	3½
2 Lock Houses - - - (former Estimate) £. 346 - -			
2 Dams - - - - - ditto - 300 - -			
New Road proposed - - - ditto - 500 - -			
Fencing 2 miles, 229 yards, at 2s. p' pannel, ditto - 80 6 3			
Currency - - - £. 1,226 6 3	1,062	16	-
Contingencies, 1/10 - - -	65,743	16	-½
	6,574	7	7½
Total - - - £.	72,318	3	7½
Amount of Estimate, dated 29th January 1829 - £.	58,206	17	9½
Excess to be provided for - - - £.	14,111	5	10

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

REPORT.

The excavation at this place was originally estimated at 3*s.* 6*d.* currency per cubic yard, on the supposition, as stated by Lieut.-Colonel Du Vernet in the Report, that the rock appearing to be in loose horizontal strata, might be removed without much blasting: immediately under the surface, however, it has proved to be extremely hard and compact, and the excavation, already performed to the depth of seven feet only, has averaged 4*s.* 5  $\frac{1}{2}$  *d.* sterling the cubic yard. Consequently, 6*s.* 6*d.* sterling per cubic yard will not be more than necessary to complete the remainder to the full depth of twenty-two feet, especially as a great part of it will be under the surface of the river. An extra allowance for the coffer-dam and machinery for pumping out the water also appears to be necessary.

The erection of the Barrack Store and Workshops, and the making a road of communication from the high road to the works, formed a necessary part of the expenditure.

In the Estimate for this service, amounting to the sum of £. 21,031. 16. 2  $\frac{1}{2}$  dated 8th November 1828, the several prices inserted for the excavations were far too low, in consequence of which, the whole amount of £. 2,205. 18. 6: currency, together with the contingency on it, has been expended mostly in the lock pits, having 3,024 cubic yards in the bed of the river at the lower entrance to Canal to be excavated, and which are now brought forward.

The formation of a drain at the back of the locks will be required, in consequence of some strong springs of water.

A sum of £. 150 currency was inserted in the former Estimate for a coffer-dam and pumping; but the now apparent difficulties make an additional sum advisable.

The paving to the bottom of No. 4 & 5 locks was not contemplated in the former Estimate: it has since been found necessary.

## ESTIMATE.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

2.—COMPLETING the CANAL now under execution at the <i>Chûte à Blondeau.</i>		£.	s.	d.
29,382 cubic yards of excavation remaining to be cut through hard rock 22 feet deep, with a great part of it below the surface of the River, at 6s. 6d. sterling		9,549	3	-
	£. s. d.			
Masonry - - - - as in former Estimate	6,075 18 9			
Carpentry - - - - ditto	580 17 6			
Iron and Smiths' work - - - - ditto	275 - - -			
Machinery Cast-iron work - - - - ditto	187 19 -			
Lock-house - - - - ditto	173 - - -			
Coffer-dam and pumping - - - - ditto	300 - - -			
Fencing - - - - ditto	6 - - -			
	Currency - - - £. 7,598 15 3	6,585	11	10½
Extra coffer-dam, and machinery for pumping, at £. 200 currency		173	6	8
	Contingencies, 1/16	16,308	1	6½
	Total required to complete - - - £.	1,630	16	1¼
	Total required to complete - - - £.	17,938	17	8¼
11,312 cubic yards of excavation already performed in 1829, 4s. 5½d. sterling		2,538	15	3½
Expended in building a Barrack, Store, and Workshops -		230	11	11½
Forming a road of communication from the high road to works -		77	-	¾
	Total expended and required to complete - - £.	20,785	5	-
	Amount of revised Estimate* - - - £.	14,033	5	5
	Excess to be provided for - - - £.	6,751	19	7
<hr/>				
3.—COMPLETING the GRENVILLE CANAL, according to the Plan and Instructions already approved of.				
3,024 cubic yards of excavation in hard rock, in bed of River at the lower entrance to Canal - - - 6s. 6d. sterling		982	16	-
810 cubic yards of excavation, in forming a drain at the back of the locks - - - 5s. 6d. sterling		222	15	-
Additional coffer-dam, and machinery for pumping - - - -		300	-	-
10,500 feet superficial of strong paving to bottom of Nos. 4 & 5 Locks - - - 2s. 6d. sterling		1,312	10	-
	Contingencies, 1/16	2,818	1	-
	Contingencies, 1/16	281	16	1
	Total required to complete - - - £.	3,099	17	1
To complete Nos. 6 and 7 Locks, agreeably to the Estimate dated 8th November 1828; being the Amount remaining unexpended on that Estimate on the 31st December 1829 - - - -		10,637	4	10¾
	Total required to complete - - - £.	13,737	1	11¾
Expended in 1829, including £. 1,301. 12. 3, amount of Materials purchased and remaining in store, to be used in the Works - - -		10,394	11	4
	Total expended and required to complete - - - £.	24,131	13	3¼
	Amount of Estimate, dated 8th November 1828 - £.	21,031	16	2¼
	Excess to be provided for - - - £.	3,099	17	1

\* Reported in Lieut.-Colonel Du Vernet's letter to the Military Secretary, dated 19th June 1829.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

REPORT.

These locks were built as formerly ordered, 108 feet long and 20 feet wide. It is calculated that they cannot be taken down and rebuilt complete, of the dimensions now approved of (130 feet by 33) feet for steam navigation, at a less expense than stated.

The Canal had been originally laid out 28 feet wide at bottom, excepting at the deep and expensive cuttings, where, for a distance of about 1,600 yards, it is only 20 feet wide. The excavation herein stated is for making the whole length of Canal, about six miles, forty feet wide at bottom; and the average price of 3s. 6d. per cubic yard is assumed, as in the deep cutting it is entirely through rock, and in no other part is there less than two or three feet of rock at the bottom.

The re-forming a tow-path or road is estimated, as in some places the whole, and in others the greater part, will have been cut away in widening the Canal.

The Canal having isolated between it and the Ottawa River a long slip of land, although not more than about 360 acres, yet extending nearly six miles, and belonging to different proprietors settled on it; five permanent bridges had been established, which must now be replaced by draw-bridges (and of a greater extent), to allow the passage of steam-boats, or the land be purchased; which, however, may not be so practicable, except in one instance, where the sum required for the bridge exceeds the value of the land.

This item is for the entire establishment for three years and a half, which period may be considered necessary for the completion of the whole line of works, twelve miles in extent from the Carillon village to Grenville, and includes the subsistence, clothing, rations, and total expense, of the two companies of the Royal Staff Corps.

The labour of the two companies has been considered in the foregoing Estimate; but as their services are chiefly directed towards the superintendence of the works, as well as affording the necessary military protection, since there is, in consequence, no detachment of other troops at the station, the charge for them is now made a separate item.

The actual charge for the establishment, from the 25th June to the 31st of December 1829, not having been otherwise provided for, is necessarily inserted in this item.

## ESTIMATE.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

4.—ALTERING the three Locks now constructed on the *Grenville* Canal on the small scale, so as to correspond with those of the larger dimensions, and widening and deepening such parts of the Canal as may require alteration.

	£.	s.	d.
Taking down and re-building on the approved large scale for Steam-boat navigation - - - - No. 1 Regulating Lock - - -	7,000	-	-
Taking down and re-building ditto, No. 2 Lock, 6 feet lift - - -	4,500	-	-
Taking down and re-building ditto, No. 3 Lock, 7 feet lift - - -	5,000	-	-
300 toises of dry masonry in forming a Pier on south side of entrance at upper end of Canal - - - - - 20s.	300	-	-
Coffer-dam, and machinery to pump out water - - - - -	300	-	-
163,147 cubic yards of excavation through rock and earth, in widening the present Canal from 20 and 28 feet width to 40 feet throughout at bottom - - - - - 3s. 6d.	28,550	14	6
13,777 cubic yards of excavation, in re-forming a Tow-path 1s. 8d.	1,148	1	8
4,314 yards running of grubbing, and removing the Boulders on part of ditto - - - - - £. 5 per 100 yards	215	14	-
6 miles running-metalling the whole length of ditto, including breaking of stone and transport - - - - - £. 100	600	-	-
Taking down and re-building four large Drains or Bridges over rivulets - - - - - £. 50	200	-	-
Putting up five Draw-bridges over Canal, constructed to permit the passage of Steam-boats - - - - -	1,500	-	-
	49,314	10	2
Contingencies, $\frac{1}{15}$ - - - - -	4,931	9	-
<b>TOTAL</b> - - - - - £.	54,245	19	2

## 5.—ESTABLISHMENT.

	£.	s.	d.
Pay and Allowances, including every charge of one Field-Officer and two Companies of the Royal Staff Corps for 365 days (as per Return) for the year 1830 [Vide page 105.] - - - - -	6,520	18	7
	Currency.		
Clerk of Works, 365 days, at 7s. 6d. - - - - -	136	17	6
Lodging Money - - - - -	24	-	-
Office Rent - - - - -	18	-	-
Wood Money - - - - -	8	-	-
365 days' Rations, at 7d. - - - - -	10	12	11
	197	10	5
Clerk, 365 days, at 3s. - - - - -	54	15	-
365 Rations, at 7d. - - - - -	10	12	11
	65	7	11
Two Issuers of rations to Civilians, and of Tools, 730 days, at 1s. - - - - -	36	10	-
Ordnance Clerk and Acting Paymaster, 365 days, at 9s. - - - - -	164	5	-
Fuel and Candles - - - - -	4	5	4
Contingent Account, Postage and Travelling - - - - -	12	-	-
<b>TOTAL</b> - - - - - £.	6,960	18	9½
Similar Establishment for two years in addition, viz. 1831 and 1832 - - - - -	13,921	17	7
Pay and Allowances, including every charge of one Field Officer and two Companies of the Royal Staff Corps, as per Return from 25th June to 31st December 1829 [Vide page 104.] - - - - -	2,862	7	4½
Pay of Acting Paymaster, including Postage Account, from 25th June to 24th September 1829 - - - - -	32	12	4½
Pay of Ordnance Clerk and Acting Paymaster, including Contingent Account from 1st October to 31st December 1829 - - - - -	43	15	7
<b>TOTAL</b> - - - - - £.	23,761	11	8½

*E. W. Durnisford*, Col. Corps of Royal Engineers, —President.  
*John By*, Lieut.-Col. Royal Engineers,  
*R. Boteler*, Lieut.-Col. Royal Engineers,  
*Henry Du Vernet*, Lieut.-Col. Royal Staff Corps,  
*G. D. Hall*, Captain Royal Staff Corps, } Members.

Grenville,  
6th March 1830.

In reference to ITEM 5, p. 103.

**DETAILED EXPENSE** of the Detachment ROYAL STAFF CORPS employed on the Public Works on the Ottawa River, from the 25th June, the day handed over to the Ordnance Department, to the 31st of December 1829, inclusive.

	RATE per Day.	No. of Days.	AMOUNT STERLING.	TOTAL STERLING.	
	£. s. d.		£. s. d.	£. s. d.	
<b>PAY:</b>					
1 Lieut.-Colonel (on pay of Major)	- 19 3	190	182 17 6		
2 Captains	- 15 8	-	297 13 4		
3 First Lieutenants	- 9 -	-	256 10 -		
1 First Lieutenant (Waterloo)	- 10 -	-	95 - -	832 - 10	
<b>COMPANY ALLOWANCES:</b>	Per Annum.				
2 Companies, Contingent Allowance	47 7 6	-	47 7 6		
2 Captains, Stationery - ditto	6 - -	-	6 - -	53 7 6	
<b>ORDINARY ALLOWANCES:</b>					
Lodging, and Forage Allowance for Officers: Mess, &c. to 24 December (paid by Commissariat)			190 9 4½		
Fuel Allowance for entire of Detachment; same period (paid by Commissariat Department)			93 13 11	284 3 3½	
Amount of Pay List from 25 June to 24 September 1829			536 - 9 -		
Amount of Soldiers' Rations for the same period, at	- - 6	-	273 6 6		Officers, Soldiers Wives and Children, not included.
Amount of Pay, from 25 Sept. to 31st December 1829			531 19 9		
Amount of Rations for the same period			273 11 6		ditto - ditto.
Straw for Men's Beds			1 10 10½		
Attendance of a private Practitioner on Sick			3 6 4		
Apprehension of Deserters			13 - -	1632 15 8½	
				2,802 7 4½	

Henry Du Vernet,

Lieut.-Colonel Royal Staff Corps.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

In reference to ITEM 5, p. 103.

ESTIMATE of PAY and ALLOWANCES, for a Detachment of the Royal Staff Corps stationed in *Canada*, consisting of one Field Officer, and two Companies complete, to the Establishment turned over to the Ordnance; from the 1st January to 31st of December 1830.

No.	DESCRIPTION.	No. of Days.	RATE per Diem.			AMOUNT.			TOTAL AMOUNT.			
			£.	s.	d.	£.	s.	d.	£.	s.	d.	
<b>OFFICERS:</b>												
1	Lieutenant Colonel, having the pay of } Major - - - - -	365	-	19	3	351	6	3	1,890	7	11	
2	Captains - - - - -		-	15	8	571	16	8				
4	First Lieutenants - - - - -		-	9	-	657	-	-				
	First ditto for Waterloo - - - - -		-	1	-	18	5	-				
2	Second Lieutenants - - - - -		-	8	-	292	-	-				
<b>NON-COMMISSIONED OFFICERS, BUGLERS AND PRIVATES:</b>												
6	Serjeants - - - - -	-	-	2	6	273	15	-	3,341	5	5	
1	Bugle Major - - - - -	-	-	1	10	33	9	2				
1	Bugler - - - - -	-	-	1	3	22	16	3				
12	Privates, 1st Class - - - - -	-	-	2	-	438	-	-				
24	Ditto - 2d ditto - - - - -	-	-	1	6	657	-	-				
84	Ditto - 3d ditto - - - - -	-	-	1	3	1,916	5	-				
<b>RATIONS:</b>												
9	Extra allowance for Officers (the men } paying 6d. each) - - - - -	-	-	-	3½	47	18	1½	144	9	7	
1	Officer's Servant, not soldier - - - - -	-	-	-	3¼	5	6	5½				
6	Soldiers' Wives - - - - -	-	-	-	3	27	7	6				
21	Ditto - Children, average at - - - - -	-	-	-	2	63	17	6				
<b>HORSES' FORAGE RATIONS:</b>												
2	Lieutenant Colonels - - - - -	-	-	-	1	6	273	15	273	15	-	
2	Captains - - - - -	-	-	-	-	-						
6	Subalterns - - - - -	-	-	-	-	-						
<b>FUEL ALLOWANCE:</b>												
						Per Week.						
1	Field Officer - - - - - 2 rooms - - - - -	-	-	-	11	4	29	9	4	213	12	8
2	Captains - - - - - 2 ditto - - - - -	-	-	-	-	-	29	9	4			
6	Subalterns - - - - - 6½ ditto - - - - -	-	-	-	17	-	44	4	-			
2	Acting Staff Serjeants, 2½ ditto - - - - -	-	-	-	5	8	14	14	8			
1	Orderly Room - - - - - ½ ditto - - - - -	-	-	-	2	10	7	7	4			
1	Officers' Mess - - - - - 2 ditto - - - - -	-	-	-	11	4	29	9	4			
	Non-commissioned Officers and Men, } occupying 4 rooms - - - - -	-	-	-	22	8	58	18	6			
<b>LODGING MONEY:</b>												
							Per Annum.					
1	Field Officer - - - - -	-	-	-	47	-	47	-	-	300	-	-
2	Captains - - - - -	-	-	-	31	-	62	-	-			
6	Subalterns - - - - -	-	-	-	21	-	126	-	-			
2	Acting Staff Serjeants - - - - -	-	-	-	17	-	34	-	-			
1	Officers' Mess - - - - -	-	-	-	31	-	31	-	-			
<b>POSTAGE AND STATIONERY:</b>												
	Commanding Officer - - - - -	-	-	-	30	-	30	-	-	42	-	-
2	Officers of Companies - - - - -	-	-	-	6	-	12	-	-			
<b>REPAIR OF ARMS:</b>												
2	Officers of Companies - - - - -	-	-	-	47	7	94	15	-	94	15	-
<b>CLOTHING:</b>												
6	Serjeants - - - - -	-	-	-	3	-	18	-	-	220	13	-
120	Rank and File - - - - -	-	-	-	1	13	198	-	-			
1	Bugle Major - - - - -	-	-	-	3	-	3	-	-			
1	Bugler - - - - -	-	-	-	1	13	1	13	-			
<b>TOTAL</b>								£.	6,520	18	7	

Henry Du Vernet,  
Lieut.-Colonel Royal Staff Corps.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

104.—DESPATCH from Lieutenant General Sir *James Kempt* to  
the Right Hon. Sir *George Murray*, &c. &c. &c.

Castle of St. Lewis, Quebec,  
April 1st, 1830.

SIR,

WITH reference to my Letter, No. 17, of the 12 February 1830, I have now the honour to transmit a Report from Colonel Durnford, Commanding Royal Engineer, (No. 1, page 1,) with the Estimates<sup>1</sup> prepared by the Committee, (No. 2, page 5,) of which he was president, for the formation of the Canals upon the Ottawa, at Carillon (£.72,318. 3. 7½. sterling,) Châte à Blondeau (£.20,785. 5.); for completing the Grenville Canal (£.24,131. 13. 3¼.) and for altering its dimensions, when necessary, to correspond with those of the Rideau and of the other Ottawa Canals (£.54,245. 19. 2.) which, with the expenses of the Establishment<sup>2</sup> of the two Companies of the Royal Staff Corps employed upon that work from 25th June 1829 to 31st December 1832, (£.23,761. 11. 8½.) (No. 2, page 17) form an aggregate amount of £.195,242. 12. 10. sterling. In calling for the Estimates which accompanied my Letter 10, on the 12th February 1829, for the Canals at Carillon and Châte à Blondeau, and for completing that at Grenville, the most particular instructions were given that the utmost care and attention should be bestowed to include in them every expense and contingency which might possibly arise in the formation of the works; and although every disposition evidently existed to attend to those instructions, yet I observe with extreme regret that the present Estimates exceed the former in the sum of £.26,602. 15. 7½.

You will perceive a considerable difference between the amount of the Estimates for the Carillon and Châte à Blondeau Canals, given under the head of "original Estimates," in the Abstract<sup>3</sup> (No. 2, page 6) and that of the former Estimates for those works, proceeding from several alterations which it was found necessary to make in the latter, subsequently to their transmission to you.

The Estimates submitted by the Committee are, of course, intended to supersede those you have already approved, and upon which £.32,213. 6. 8. has been appropriated towards the prosecution of the works by the Imperial Parliament, leaving £.163,029. 6. 2. to be provided for.

Of the £.32,213. 6. 8. £.16,800. 11. 10. was expended on the 31st December 1829; and upon the balance, £.15,412. 14. 10. those works have been carried on since that period.

You will observe by the Sketch<sup>4</sup> (No. 3, page 29) and by the Report (No. 1, page 2) that several alterations are suggested by the Committee in the plan of the Carillon Canal; and that the most eligible point of its lower junction with the Ottawa is still undetermined, being dependent upon circumstances, which it will require some time to investigate; and as a project has been proposed (No. 4, page 31) to feed this Canal from the North River (which falls into the Ottawa about five miles below the Carillon Rapid) by which, if found practicable, a considerable Saving would accrue, I have directed that the commencement of that Canal shall be suspended until the feasibility of this scheme shall be ascertained.

The necessary surveys to determine this point are now in progress; and I trust I shall be enabled in a short time to transmit for your consideration a plan and estimate for the work.

I am of opinion that it will be advisable to purchase the strip of land, comprising about 360 acres, which lies between the Grenville Canal and the Ottawa,<sup>5</sup> (No. 2, page 14) if it can be procured upon reasonable terms.

From this measure, the expense of erecting draw-bridges (£.1,500.) the subsequent repairs and attendance upon them, would be saved, and the interruption which they present to the navigation of the Canal avoided.

I have accordingly directed the terms upon which that land may be procured, to be ascertained, and I shall give you an early intimation of the result.

It appears by Lieut. Colonel By's Report to General Mañn, dated 31st December 1829, of which a copy was transmitted with my Letters 17, of the 12th February 1830, that the Rideau Canal will be nearly completed in the course of this season; and Colonel Durnford (No. 1, page 3) states that the Canals upon the Ottawa cannot be finished in less than three years. But as the advantages of the Rideau Canal

<sup>1</sup> See page 98.

<sup>2</sup> See page 103.

<sup>3</sup> See page 98.

See PLAN, No. 1.

<sup>5</sup> See page 102.

Canal must remain in a great measure dormant until the Canals on the Ottawa are completed, the expediency of retaining and employing upon them a portion of the Engineer officers and Sappers and Miners now stationed on the Rideau Canal may not be undeserving of consideration.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

By these means, and the numerous artificers and labourers who will be deprived of work on the Rideau, I am of opinion, if the necessary funds be supplied, that the completion of the Ottawa Canals, and of the back navigation between the mouth of that river and Kingston, might be materially expedited.

I have, &c.

(signed) *James Kempt.*

No. 105.—LETTER from Colonel *Durnford* to Lieut.-Colonel *Couper*,  
&c. &c. &c.

SIR,

Grenville, 8th March 1830.

JUST as the Committee had closed their Report and Estimates, to which my Letter, No. 54, of this date refers, Lieut.-Colonel Du Vernet suggested the possibility of making the North River subservient as a feeder to the Carillon Canal. I have therefore the honour to report, that Lieut. Colonels By and Du Vernet, and myself, immediately repaired thither, and traced it up four or five miles, to observe the nature of its banks, &c. From our observations, it appeared to us that it was of great importance to ascertain whether there was any, and what difference of level between this river and the proposed water level of the Carillon Canal; and an officer of the Royal Staff corps was the next day dispatched to take a level between the two. His report, on the second day of this operation, gave us a difference of about six feet in favour of the North River; and I am therefore sanguine that it may be practicable to obtain a feeder, which will, as far as I can venture to offer an opinion, be the means of materially favouring, if not altering the project of the Carillon Canal, and save considerable expense.

The weather being extremely unfavourable for levelling at the time the officer above alluded to was employed in ascertaining this difference (obliging him to make a considerable detour) he may not be so entirely correct as is desirable; but as I considered it a matter of much consequence, I was induced to traverse the ground repeatedly with Lieut.-Colonel By and Boteler; and I find that before we can properly ascertain the features of the ground and swampy land between the Carillon and the North River, a considerable time must unavoidably elapse; I have therefore given Lieut.-Colonel Du Vernet instructions to make a survey of it, and take such sections as will enable him to report distinctly on the practicability of creating this feeder; and desired him to forward, with as little delay as possible, a Plan and Estimate upon the project, for the further information of His Excellency; and having done so, I thought it unnecessary to remain myself, or detain Lieut. Colonels By and Boteler. Trusting my proceeding thus far will meet with approval, and that His Excellency will be pleased to confirm the same, by issuing his instructions for Lieut.-Colonel Du Vernet to proceed with a regular survey of the Ottawa and North River, from the entrance of the latter below St. Andrews, and up both, to such points as may be considered necessary for this prospect, with a view to ascertain with accuracy their comparative levels, as also to discover if any, and what difficulties may present themselves to the undertaking.

I have, &c.

(signed) *E. W. Durnford*, Col.  
Comm<sup>r</sup> R<sup>l</sup> Engineers, Canada.

No. 106.—LETTER from Colonel *Durnford* to Lieut.-Colonel *Couper*,  
&c. &c. &c.

SIR,

Grenville, 8th March 1830.

1.—AGREEABLY to the commands of His Excellency the Commander of the Forces, communicated in your Letter to me, No. 121, of the 28th January last, I caused Lieut.-Colonels By and Boteler of the corps of Royal Engineers, to join Lieut.-Colonel Duvernet and Captain Hall of the Royal Staff corps, as a Committee, of which I assumed the Presidency, and we met at Carillon on the 23d ultimo.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

2.—I have now the honour to submit for the consideration of His Excellency, the Reports and Estimates called for, together with a Survey of the proposed lines of the Carillon Canal; viz.

1. Report and Estimate for the formation of the Canal at the Carillon Rapids, as well as for completing the Chûte à Blondeau and Grenville Canals, amounting to the sum of £. 195,242. 12. 10. sterling.

2. Progress Report of the Works carrying on by the Royal Staff Corps, on the Grenville and Chûte à Blondeau Canals, from the 25th April to the 31st December 1829.

3. A Survey of the proposed Lines of the Carillon Canal.

3.—On the Survey is given a diagram of the soundings taken through the ice, which, making reasonable allowance for the water falling still below its present line (although it can scarcely be expected to vary much) have induced the Committee to propose the alteration of the line of the Carillon Canal, from the safer line lately estimated by Lieut.-Colonel Du Vernet, as much with reference to economy as a desire to shorten the period of its execution.

4.—The Committee having endeavoured to make their Report on each Estimate as explanatory as possible, I am induced to hope they will be satisfactory; and I have therefore only to add, that I am of opinion it will be advisable that the alteration of the three locks already constructed at Grenville, and the widening of the Canal where absolutely necessary, should proceed simultaneously with the Carillon; and that yearly grants of money should be sanctioned upon the principle of completing all these Works in three years from such approval, being the shortest period they can be executed in.

I have, &c.

(signed) *E. W. Durnford*, Col.  
Com<sup>d</sup> Roy<sup>l</sup> Engineers, Canada.

No. 107.—TREASURY MINUTE requiring Statement and original Estimates of Works in progress on Canals in *Canada*.

Copy of Treasury Minute of 18th June 1830.

READ Letter from Mr. Hay, dated 14th instant, transmitting copy of a Dispatch from Lieut.-General Sir James Kempt, at Quebec, inclosing Report, &c. relating to the Canals in Canada.

Read also a Letter from Mr. Hay, dated 14th instant, inclosing further Despatches from Sir James Kempt, respecting the progress of the Rideau Canal, and the increase of the Estimate of the Carillon Canal.

Transmit these Papers to the Secretary of the Ordnance, and state to him, That before My Lords come to any decision in regard to the additional Expenditure which appears to be required on these Canals, they request to be furnished with the opinion of the Master General and Board of Ordnance thereon; and they request that in the meantime a Statement may be prepared and transmitted to this Board with the least possible delay, showing the amount of the original Estimate for each of the Works which are the subject of those papers, the amount which has been actually expended upon each, and the amount which remains unexpended; also what have been the subsequent additions to the original Estimate.

No. 108.—LETTER from *R. Byham*, Esq. to the Hon. *J. Stewart*, &c. &c. &c.

SIR,

Office of Ordnance, 23d June 1830.

AGREEABLY to the desire of the Lords Commissioners of His Majesty's Treasury, as notified in your letter of the 19th instant, I have the honour, by the Board's commands, to transmit herewith a Statement shewing the amount of the original Estimates for the Canals constructing in the Canadas, so far as the documents in this office will afford the information.

No. 109.

I have, &c.

(signed) *R. Byham*.

No. 109.—STATEMENT, showing the AMOUNT of the ORIGINAL ESTIMATES for the CANALS constructing in the *Canadas*, prepared in compliance with the Board's Minute of the 19th instant, on Mr. Stewart's Letter of the same date, as far as the Documents in this Office will afford the information.

NAME.	1. AMOUNT of ESTIMATE.	2. EXPENDED to 31st Dec. 1829.	3. Remains to Complete on Original Estimates.	REMARKS.
	£.	£.	£.	
Rideau Canal, according to the Scale ordered by the Committee, of which Sir Jas. Kempt was President.	576,757	359,685	226,072	-- By the correspondence referred from the Treasury by the Board's Minute of 19th June, also by a Report from the commanding Engineer in Canada, dated 24th April, it appears that the Estimate for the Rideau has been increased £.185,921, making a total of £.762,678; but this includes £.53,000 for the purchase of land for Military Works, and the construction of 22 Blockhouses; £.8,000 for forming a Reservoir at By Town towards the defence of the Canal, and also for a Feeder for the Locks; and £.8,230 for 14 Bridges over the Canal, which may be required to be constructed under the Rideau Act; but none of these services (£.69,230) have yet received the sanction of Government, and await future decision.
Grenville Canal -	134,920	130,720	4,200	-- By Sir James Kempt's despatch of 1st April 1830, referred to this Office with the Board's Minute of the 19th instant, it appears that this Estimate is increased £.57,344, making a total of £.192,264; of which £.54,245 is for widening the Canal where necessary, and for increasing the size of three Locks to correspond with those on the Rideau, not included in the original Estimate. The expenditure of £.130,720 to 31st December 1829, is obtained from Sir James Kempt's despatch before referred to.
Carillon Rapids -	58,000	-	58,000	-- By the same despatch from Sir James Kempt it appears that this Estimate is increased £.14,318, making a total of £.72,318. The work is not yet commenced, but waits the approval of Government.
Chûte à Blondeau -	11,580	-	11,580	-- By the same despatch this Estimate is increased £.9,205, making a total of £.20,785. This Work is in progress.
St. Ann's Rapids -	-	-	-	-- No Estimate yet received. The exact line not yet determined.
Establishment to the end of 1832.	23,761	-	-	-- By the same despatch from Sir James Kempt it appears that £.23,761 will be required for the Civil Establishment and Pay of the Staff Corps Companies employed on the three last-mentioned Canals, from 31st December 1829 to the end of 1832, the period at present contemplated for their completion, and which expense was not included in the original Estimates.

RECAPITULATION

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

## RECAPITULATION.

	ORIGINAL ESTIMATES.	PRESENT ESTIMATES.	INCREASE on the ORIGINAL ESTIMATES.	Already Voted.	Remains to be Voted for Completion of Present Estimates.
	£.	£.	£.	£.	£.
Rideau - - -	576,757	762,678	185,921	296,666	466,012
Grenville - -	134,920	192,264	57,344	-	} 163,029
Carillon Rapids -	58,000	72,318	14,318	-	
Chûte à Blondeau -	11,580	20,785	9,205	-	
St. Ann's Rapids Establishment -	No Estimate yet received, but expense assumed at £. 45,000	23,761	23,761	-	
TOTAL - - - £.	781,257	1,071,806	290,549	-	629,041*

*N.B.*—It should be carefully noticed that the sums put down in Column 2. of the Statement do not agree with the votes already made on account of these Works, and consequently those in Column 3. not with the Sums required to be voted to complete the Services. These latter are shewn in the Recapitulation; viz. £. 466,012 for the Rideau, and £. 163,029 for the other Canals, according to the amount of the Estimates now received.

\* Including the proposed Vote for 1830.

84, Pall Mall, 21 June 1830.

(signed) *Alexander Bryce.*

No. 110.—LETTER from *R. Byham*, Esq. to the Hon. *J. Stewart*,  
&c. &c. &c.

SIR,

Office of Ordnance, 23d June 1830.

REFERRING to your letter, dated 18th September last, relative to the Estimate for the Rideau Canal, I have the honour, by command of the Board of Ordnance, to transmit to you herewith, to be laid before the Lords Commissioners of His Majesty's Treasury, a Copy of a Report from Lieut.-Colonel By on that subject, dated the 30th December 1829, to which is annexed a Minute of the Inspector General of Fortifications, dated the 15th instant.

I have, &c.

(signed) *R. Byham.*

No. 111.—REPORT relative to the Estimate for the Rideau Canal.  
*Lieut.-Colonel By* to Colonel *Darnford*, &c. &c. &c.

SIR,

Royal Engineer's Office, Rideau Canal,  
30th Dec. 1829.

I HAVE the honour of acknowledging the receipt of a copy of a letter, (No. 301.) addressed to me from Colonel Mann, dated 7th October 1829 (received at the Rideau the 27th instant), transmitting copies of a correspondence relative to the reduction of the Rideau Estimate, as recommended by the Committee of which Sir James Kempt was President.

In answer to which I have the honour to state, for the information of his Lordship the Master General, that I have always reported the sum estimated for the Rideau Canal as the probable, not the positive sum; as it was, and still is utterly impossible to state the exact amount that will be required to complete that service; and beg to state, that, from the general knowledge I had of the country, having previously served nine years in Canada, I was so aware of the magnitude of the undertaking, from the manner it was first mentioned to me, that when Major-General Sir J. C. Smyth, in the Royal Engineer Office in Pall Mall, informed me that the sum allowed for the Rideau Canal, with locks on the same scale as the La Chine Canal, was £. 169,000,

£. 169,000, I remonstrated against the smallness of the sum, and stated to him that as the La Chine Canal, situated close to Montreal, only seven miles in length, without any deep cutting, and requiring but seven locks of seven or eight feet lifts, had cost £. 137,000, how could it be imagined that the Rideau Canal, 135 miles long, through an uncleared country, with eighteen or twenty miles of excavation, some of which was rock, and deep cutting, with forty-seven locks to surmount, a difference of level of 455 feet, with a variety of extensive dams and waste weirs necessary to regulate the spring torrents of the Rideau River, which is the outlet of several lakes, could be excavated for the sum he (Sir J. C. Smyth) had stated; and on the 13th August 1826, I reported to General Mann that, from the information I had collected during the time I was waiting at Montreal for my instructions, I found that the Rideau Canal would cost about £. 400,000. This was before I had seen the ground; but when I had examined the whole line of Canal, accompanied by Captain Bolton, Royal Engineers, in 1827, and formed the Estimate of works required, I found that £. 474,899. 1. 2½*d.* was the *least* sum for which these works could be executed. In this Estimate I did not include the expense of the Civil and Military Establishments necessary to carry on such extensive works; wishing to show the actual amount of works indispensably necessary to form the proposed Water Communication from the Ottawa to Kingston, and formed my calculations on very moderate prices.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

	£.	s.	d.
When the Committee were with me in 1828 this Estimate was re-calculated, and the amount proved to be	474,844	1	2½
To which was added, for Military and Civil Establishments	61,452	—	3½
For purchase of Mills, &c.	8,500	—	—
For Alterations necessary for the increased size of the Locks	40,845	13	11
<hr/>			
Making the Estimate	585,641	15	5
Deduct for saving at Jacks Rifts, &c.	8,102	—	—
<hr/>			
Leaving	577,539	15	5
Deduct for difference	782	3	2½
<hr/>			
	£. 576,757	12	3½

The details of which are herewith annexed, from which it will appear that the saving arising from my proposals to do away with the locks at Billidores and Jacks Rifts, by placing a fourth lock at Kingston Mills, raising the dam at that place, and forming certain embankments to retain the water, so as to convert Cataroque Creek into a fine sheet of water, extending to the high land on each side, and thereby drowning that pernicious swamp, by forming it into a small lake of about 9,400 acres, was deducted, which deduction amounted to £. 8,102. 2., and this alteration was approved of by the Committee; I therefore beg to observe, that until I received copies of the correspondence above alluded to, I had no idea that the Committee had recommended any reduction in the Estimate, and consequently have always calculated on the Estimate given to them, of £. 576,757. 12. 2½.

	£.	s.	d.		
Thus,—	137,200	—	—	×	3
	411,600	—	—	×	
1826	5,000	—	—		
1827	50,000	—	—		
1828	105,000	—	—		
<hr/>					
Making in all	£. 577,600	—	—		
Difference	842	7	9½		
<hr/>					
	£. 576,757	12	2½		

As appears by my having reported that £. 137,200 would be required for the years 1829, 1830, 1831.

I further beg to remark, that the Committee, in their Instructions, ordered all just claims to be immediately settled, thereby assuming that I had allowed just claims to remain unpaid; which was not the case, as proved by my answer to the Memorial of

Messrs.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Messrs. Mac Martin & Macdonell, sent to his Excellency Sir James Kempt, a copy of which is herewith forwarded for the information of his Lordship the Master General, and the Right Honourable and Honourable Board.

The Committee also recommended that no more work should be undertaken than the allowed sum of £. 105,000 would meet; yet, notwithstanding this recommendation, no one step has been taken to enable me to comply with the Instructions, as all the contracts formed by the Commissariat Department in February 1828, which embrace nearly all the works on the line of the Canal, still remain in force, and by those contracts the contractors were bound to complete their works in two years from the date of signature. It was therefore out of my power to prevent their commencing their various works; and at the time the Committee were with me, the contractors were threatening to bring actions against Government to recover damages for the losses they had sustained by the sudden check that had taken place, in consequence of the unexpected limitation of expenditure in March 1828 to £. 41,000.

I therefore reported that the only arrangement I could make with these contractors was, to give them four years to complete their work, which would prolong the works to 1831; and I stated that I should require £. 137,200 per annum.

It is necessary here to remark, that although the contractors had no objection to this increase of time being allowed them, they would not bind themselves to be so long about their work, and consequently I have no controul over the expenditure, the contracts being so worded that the contractors can demand payment as their works progress; and the fatal effects of the lake fever in the summer and autumn of 1828 (which still continues, though in a less alarming degree,) has so increased their expenses that they are all exerting themselves to complete their works next season; and this is the cause of my disbursements for the present year amounting to £. 211,354. 7. 6 $\frac{1}{2}$ . instead of £. 130,666. 13. 4. as authorized, notwithstanding my efforts to retard the expenditure as much as possible; and this gives me every reason to suppose that £. 200,000 will be required for 1830. This is on the supposition that the Estimate is ample, and that no failure will take place in any part of the works, which, in such extensive waterworks, is almost improbable; but from the great success I have hitherto met with in those works, I trust all will succeed, and that I shall have the honour of opening the Steam-Boat Navigation from the Ottawa to Kingston on the 12th of August 1831.

I further beg leave to state, that I complained to the Committee, as I went through the line of Canal with them in 1828, that it was impossible to form a correct Estimate in an uncleared country; and that it was utterly impossible to state whether invert arches to the various locks would be necessary until the excavations were made. It was also impossible to foresee what difficulties would arise from the water during the construction of the various locks, dams and water-weirs; and the Committee then agreed with me, that all I could do was to keep the expense of each work separate, so that my Progress Report would show where and from what causes the excess or saving in Estimate arose. To this I have paid strict attention, as, I trust, will appear by referring to my Progress Report herewith annexed.

In reference to the items in Estimate, from which the Committee propose a reduction, viz. in the Masonry of the Locks - £. 17,725 6 8

And on the Gates of Locks - 1,789 - -

Making - - - £. 19,514 6 8

I beg to state, that the calculations of the Committee are perfectly correct, and the locks ought to have been estimated according to the mode adopted by them; but I have estimated the side-walls of the locks at eight feet thick, instead of six feet six inches (as estimated by the Committee), in order to cover the extra masonry required for the foundations of the said walls, and the Committee ought either to have done the same, or to have allowed for the foundations; whereas they have taken the exact dimensions of the walls independent of foundations; and I beg to observe, that from the measurement of the work performed, it appears I have not allowed too much for the foundations in the extra substance of the side-walls.

With regard to the reduction of Estimate for the gates, I agreed with the Committee that they were to all appearance too high; but explained to them, that having  
been

been favoured with a sight of the actual cost of the gates of the La Chine Canal, I had formed mine on that data, and beg to observe, that although the sum on Estimate is considerably more than I am paying for actual workmanship and material, yet the contingent expenses of collecting the workmen and materials at the various places, as also the means of hanging such heavy gates, will amount to the sum on Estimate, and therefore no reduction should be made, as proposed by the Committee. And I am of opinion, had the Committee taken into consideration the very moderate prices in the Estimate, and the difficulty of ascertaining precisely the extent of works required in an uncleared country, they would have considered my Estimate, with the usual ten per cent. allowed for contingencies, as far too small, instead of recommending a reduction; but I have the satisfaction to state, that I still believe the works will be completed within a few thousands of the Estimate of £. 576,757. 12. 2½. and within the period of five years, as I first stated: for it was on the 21st September 1826, that I commenced the Rideau Canal, and, as I have already stated, I have every reason to believe it will be finished on the 12th August 1831; and when these extensive works are compared with the sums expended, I am confident that the Rideau Canal will be considered one of the cheapest and most durable works of the kind that has hitherto been constructed.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Since the arrival of Lieut.-Colonel Boteler, he has examined the whole of the works, and agrees with me in opinion, that to do justice to their execution, I should have the assistance of five officers early in the spring, who, with himself, will make six officers, I have already requested.

Trusting that his Lordship the Master General, and Right Honourable and Honourable Board, will excuse my having entered thus fully into the difficulties of ascertaining the precise sum required for the Rideau Canal,

I have, &c.

(signed) *John By,*  
Lieut.-Col. Royal Engineers Com<sup>d</sup>, Rideau Canal.

I forward this Report from Lieut.-Colonel By, for the Board's information and orders, in reference to their order of 23d February 1829.

By the explanation now afforded, it appears that the reduction of £. 18,000 contemplated by the Committee, of which Sir James Kempt was President, cannot be effected; but that the Estimate prepared by Lieut.-Colonel By, amounting to £. 576,757, will at least be required. And this answer has been calculated upon in the Return recently laid before Parliament, called for by the Board's order of 6th March 1830.

15th June 1830.

(signed) *A. B.*

No. 112.—LETTER from *R. Byham, Esq.* to the Hon. *J. Stewart,*  
&c. &c. &c.

SIR,

Office of Ordnance, 9th July 1830.

1.—ADVERTING to the Statement transmitted by the Board on the 23d ultimo, for the information of the Lords Commissioners of His Majesty's Treasury relative to the Canals in Canada;—

2.—I have the honour, by the Boards' commands, to request you will submit to their Lordships, in further reference to your letter of the 19th ultimo, that it appears the Estimate for the Carillon Rapids has been increased from £. 58,000 to £. 72,318, but that no final opinion or decision can now be given on this Estimate, as a further Report is promised by Sir James Kempt, which holds out the possibility that a less expensive plan may be adopted; and in the meanwhile the commencement of this work appears to be suspended. The Board have therefore only at present to remark on any contemplated alteration of this Canal by aid from the North River, that it may be expedient that the local authorities in Canada should be instructed to ascertain how far it will affect the interest of private individuals, and thus involve the Government in claims arising therefrom.

3.—In regard to the Estimate now transmitted for the Chûte à Blondeau, the amount is £. 20,785, instead of £. 11,580, before reported, being an excess of £. 9,205,

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

£. 9,205, which is stated to be caused by the rock through which this Canal is entirely cut, proving to be extremely hard and compact, instead of loose horizontal strata, which appeared when the first Estimate was prepared: the Board, therefore, consider this excess unavoidable. This work appears to be in progress by the Staff Corps.

4.—In respect to the Estimate for the Grenville, there is an excess of £. 3,399 beyond the first Estimate for the completion of this Canal, as transmitted by Sir James Kempt in February 1828, which is stated to be in consequence of the prices put down in the first Estimate, which was prepared by Lieut.-Colonel Du Vernet, being far too low. Besides the above, there is now provided, for the first time, £. 54,245 for altering the three locks (already constructed in this Canal on the small scale), so as to correspond with those of the Rideau, and for widening and deepening such part of the Canal as may require alteration; in regard to which, the Board have only to observe, that this service will be necessary in order to complete the Water Communication on the same scale as the locks on the Rideau. This sum includes £. 1,500 for five bridges to communicate with the land (about 136 acres) belonging to private individuals, lying between the Ottawa and the Grenville; but this land Sir James Kempt proposes should be purchased to avoid the expense of constructing and repairing these bridges, and a further Report is promised respecting the proposed purchase.

5.—The Estimates also provide £. 23,761 for the establishment and entire expense of the two Staff Corps companies employed on these Canals from the 25th June 1829 (when the companies were transferred to the Ordnance) to the end of 1832, being the period contemplated for the completion of the works, provided the necessary funds can be granted. This expense has hitherto not been provided in the Estimates for these works, but understood to be borne on the Army Extraordinaries, and therefore it may be said to be only a change of account.

6.—In regard to the Rideau Canal, the Board propose to make it the subject of a separate communication to their Lordships, in reference to Reports which have recently been received from the Commanding Royal Engineer in Canada.

I have the honour to be, Sir,

Your most obedient, humble Servant,

*R. Byham.*

P. S.—The Papers which accompanied your letter, are herewith returned, as requested.

No. 113.—LETTER from Secretary of Ordnance to the Hon. *J. Stewart*,  
&c. &c. &c.

SIR,

Office of Ordnance, 17th August 1830.

ADVERTING to the last paragraph of the Board's communication of the 9th ult. and in further reference to your letter of 19th June last relative to the Canals in Canada;—

I have the honour, by the Board's commands, to acquaint you, for the information of the Lords Commissioners of His Majesty's Treasury, that they have had before them a Report from Major-General Sir Alexander Bryce, Inspector General of fortifications, accompanied by Statements and other Papers, which have been forwarded by Colonel Durnford, Commanding Royal Engineer in Canada, in explanation of the expenses of the Rideau Canal.

The Board direct me to state, that, on a perusal of the documents adverted to, it appears, that in addition to the expense at present estimated for that Canal (viz. £. 576,757), a further sum of £. 116,686 will be required, of which £. 30,134 is the amount of the excess in the execution of the works already finished; also £. 2,843, the amount of errors in the original Estimate, and £. 83,714 for additional works, which it is stated were neither contemplated by Lieut.-Colonel By, nor ordered by the Committee, of which Sir James Kempt was President, and consequently are not included in the original Estimate for the Rideau Canal.

With

With reference to these expenses, the Board submit, that an excess of £. 30,000 on so large an expenditure already incurred (£. 349,000) for work carried on for the greater part through a country hitherto a wilderness, might not unreasonably have been expected; and Lieut.-Colonel By has furnished a detailed Statement, showing upon what particular points of the Canal the excesses have occurred.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

In regard to the additional works, which are calculated at £. 83,714, the Board consider that it is much to be regretted these services were not foreseen and originally provided for. Colonel Durnford states, that the principal item of expense of these additional works is for waste-weirs at each of the dams, and not of locks, the necessity for which became particularly apparent after the failure of the dam at the "Hog's Back," insomuch, that it is found necessary that they should be adopted on the whole line of the Canal; and it is added, that their beneficial effects have been already satisfactorily proved where executed. The Board have to observe hereon, there can be no doubt that every precaution should be adopted to prevent accidents to the dams, upon which the efficiency of the Canal will so greatly depend; but the Board propose to limit their use to such cases as both Colonel Durnford and Lieut.-Colonel By consider absolutely necessary. These expenses (including the errors of £. 2,843 in the original Estimate) will make a total of £. 693,448 for the Rideau. Upon none of the heads under which the excesses are here classed, do the Board, from the documents now transmitted, find themselves able to pronounce a positive opinion, whether in all respects the increase is satisfactorily accounted for; but they have directed Colonel Durnford to enter into a minute examination of each particular, and report further to the Board.

The Board direct me to observe, that the work appears to be in rapid progress, and is expected to be completed in August 1831, if the necessary funds are provided; it may therefore be here proper to add, that the sum of £. 436,666 has already been voted for the Rideau Canal, including the grant of 1830; and therefore, according to the present calculation, a further sum of £. 256,777 requires still to be voted for its completion. At the same time the Board beg to call their Lordships' attention to the enclosed Extract from Colonel Durnford's letter of 24th April last, wherein he adverts to unforeseen casualties which may occur in the progress of the work, over which the superintending officer may have no control, and therefore observing, "that too much reliance should not be placed even on this present Estimate, which may yet be expected to be exceeded by several thousand pounds."

In addition to the observations submitted respecting the services before-mentioned, the Board have to advert to four others now brought forward for the first time, viz.

22 Block-houses	£. 33,000
Land for ditto, and Defences	20,000
Reservoir at By Town	8,000
15 Bridges over the Canal	8,230
	<hr/>
	£. 69,230
	<hr/>

These services do not appear to be commenced, but wait the orders of Government; of these a certain number of the bridges *must*, by the provisions of the Rideau Act, be constructed; but the Board are unable to ascertain the number, which cannot be avoided, and have called for further information. With regard to the other services, though they do not seem to be absolutely necessary for the navigation of the Rideau, yet the Board understand that they are so nearly connected with the Canal, that the possibility of their being ultimately found advisable should not be lost sight of. The Board have at the same time to observe, that the block houses, if constructed now, are intended also to lodge some of the lock-masters, and, in this case, the houses provided for them in the original Estimate, need not be constructed; that the purchase of the land is altogether a part of the expense attending the defences; that the proposed reservoir is partly for the Canal and partly for its defences, it being intended to feed the first eight locks, and also to serve as a wet ditch for the defence of the entrance of the Canal. With reference to these

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

services, the Board coincide in the recommendation which has been submitted by the Inspector General of Fortifications, that they should be deferred until the Canal is completed, and until the general question of the works required for its defence can be considered and finally approved, with the exception of such only of the proposed bridges as, by the Rideau Act, Government is bound to construct; and that, therefore, the lock-masters' houses, and a small reservoir to feed the first eight locks, which is provided in the original Estimate, should be constructed.

I have the honour to be, Sir,

Your most obedient humble Servant,

*G. Butler,*  
(for the Secretary).

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No. 114. — EXTRACT of a Letter from Colonel *Durnford*, Commanding Royal Engineer in Canada, addressed to Colonel *Mann*, of the Royal Engineers; dated Quebec, 24th April 1830.

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—IT is but mere justice to Lieut.-Colonel By to observe, that in water-works of such magnitude and variety, the usual allowance for contingencies appears to be inadequate, and that casualties may yet be expected, over which he can have no control; one of which, sickness, has already been a serious obstruction, and consequent cause of increase of expense, having rendered it necessary to prosecute excavations to a great extent, both of earth and rock, during the winter; so that too much reliance should not be placed even on this present heavy Estimate, which may yet be expected to be exceeded by several thousand pounds; but, should this happen, General Mann may rely on it not being attributable either to Lieut.-Colonel By, his officers or contractors, of whose unremitting assiduity and perseverance I cannot speak too highly: and, as I have before reported, the whole of the works appear to be executing in the most substantial manner.

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No. 115.—LETTER from *R. W. Hay*, Esq. to the Hon. *J. K. Stewart*,  
&c. &c. &c.

SIR,

Downing-street, 18th August 1830.

WITH reference to my letter of the 14th June last, transmitting a despatch from Lieut.-General Sir James Kempt, on the subject of the Expense which it would be necessary to incur for the formation of the Canals upon the Ottawa, in completing the Grenville Canal, and for altering its dimensions, when necessary, to correspond with those of the Rideau and of the other Ottawa Canals; I am now directed by Secretary Sir George Murray to transmit to you the copy of despatch from Sir James Kempt, by which it appears that the plan of feeding the Carillon Canal from the North River has been ascertained, and that a saving will accrue from this alteration to the amount of £.26,854. 3. 31. sterling; and I am to request that you will lay the same before the Lords Commissioners of the Treasury, acquainting their Lordships, that, under the circumstances stated in the latter part of Sir James Kempt's despatch, Sir George Murray is of opinion that he has exercised a sound discretion in directing that the works of the Carillon Canal should be prosecuted with all possible vigor to the amount of £.38,412. 14. 10.

I am, &c.

(signed) *R. W. Hay.*

No. 116.—DESPATCH from Lieut.-General Sir *James Kempt* to the  
Right Hon. Sir *George Murray*, &c. &c. &c.

Castle of St. Lewis, Quebec,  
8 June 1830.

SIR,

WITH reference to the Letter (33) which I had the honour to address to you on the 1st April 1830, I have now the satisfaction to acquaint you, that the practicability of the scheme for feeding the Carillon Canal from the North River has been ascertained; and you will perceive by the enclosed Plan, Report and Estimate, that a Saving will accrue from this alteration, to the amount of £.26,854. 3s. 3½d. sterling.

You are already aware that on the 31st December 1829 there was an unexpected Balance of the sum appropriated by Parliament for the Canals upon the Ottawa PLAN, No. 2 & 3. for the past year (£.32,213. 6. 8.) amounting to £.15,412. 14. 10.; and as it appears by a communication from the Inspector General of Fortifications to the commanding Royal Engineer in Canada, that the Lords Commissioners of the Treasury propose to submit to Parliament an appropriation of £.23,000. towards the progress of those Canals for the current year, I have directed that it shall be prosecuted with all possible vigour, to the amount of the aggregate of those two sums (£.38,412. 14. 10.)

I have, &c.

(signed) *James Kempt*.

No. 117.—LETTER from Colonel *Durnford* to Lieut.-Colonel *Couper*,  
&c. &c. &c.

Royal Engineers' Office, Quebec,  
29th May 1830.

SIR,

WITH reference to your Letter, No. 29, for the 19th March last, and the correspondence on the subject; I have now the honour to forward, for the information of His Excellency the Commander of the Forces, Lieut. Colonel Du Vernet's Plan, Report and Estimate of the Carillon Canal, as connected with the proposed Feeder from the North River; and as the project appears to me to be perfectly feasible, and will be attended with a considerable saving, I beg to recommend the prosecution of the work on the said plan; and have therefore to request His Excellency's instructions, whether Lieut. Colonel Du Vernet shall use his utmost endeavours, by every method he can devise, to complete the same by the end of the next or following season; and whether a supply of money correspondent with the progress of the work will be available. I think it my duty to request specific instructions on the above points, as there is at present a limitation to the expenditure of only £.23,000. for the present year towards the prosecution of all the works on the Ottawa under the superintendence of the Royal Staff Corps.

I have, &c.

(signed) *E. W. Durnford*,  
Colonel Commanding Royal Engineers.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 118.—REPORT and ESTIMATE of the probable Expense of construct-  
ing a Canal to turn the *Carillon* Rapids, as connected with a Feeder from  
the *North River*, to be completed in two years from the commencement;  
amounting to £. 45,464. 0. 4. sterling.

HAVING ascertained that the *North River*, which flows through the wild lands  
on the north side of the *Ottawa*, and falls into it below the village of *St. Andrew's*,  
was on a higher level, and approached so near in one situation as to be available  
as a Feeder for the proposed *Carillon Canal*; after a careful examination of the  
ground, it is considered the line laid down on the accompanying Plan is the nearest  
and best, the distance being only 1,150 yards, and without any cutting through  
high ground.

PLAN, No. 2 & 3.

By the construction of two Dams on the *North River*, in the situations marked, of  
nine feet in height, a depth of four feet in water, with the trifling excavation shown  
by the Section, may be obtained at all times, and may be used as a Canal for *Bat-  
teaux*, for the conveyance of produce from the *Back Settlements*, if required, as it is  
proposed making it 12 feet wide at the bottom, with slopes of 45 degrees; a Sluice  
being placed at the end near the Canal, the walls will serve as the piers for the bridge  
for the high road, which it will be necessary to make along the ridge.

By constructing a Dam 10 feet high across the lower end of the valley, from the  
lowest part of the ridge to a projecting bank, in a diagonal direction, and cutting  
six feet and a half deep below what is considered the highest rise of the *Ottawa* at  
the upper entrance of the Canal, the same level may be continued throughout, and  
strong banks be formed by cutting through the bank, as expressed on the Plan, and  
forming the valley into a *Bason*. A lock will be necessary at the upper entrance,  
21½ feet high, to admit of boats entering it at the lowest water, and to be above the  
influence of the highest. At the lower end a double lock of 10½ feet lifts the  
coping of the upper of an equal height with the first, and that of the lower 15½  
feet above what is considered low water at the foot of the rapid. Near the dam it is  
proposed making a *Waste Weir* over the rocky bank, to carry off the superfluous water  
into the *Ottawa* over the cliff. According to this project, the great expense of cutting  
through rock, which was necessary in the former Plan, will be saved, and a reduc-  
tion made from £. 72,318. 3. 7½. to £. 45,464. 0. 4. in the construction of the Canal,  
which will not only be wider, but will be capable of being navigated by boats draw-  
ing seven feet of water, if required, and may be completed a year sooner.

Chatham, }  
16th May 1830. }

(signed) *Henry De Vernet*,  
Lt. Col. Royal Staff Corps.

### E S T I M A T E

PORTIONS OF WORK, AND DETAIL.	Sterling Amount of each Item.	Sterling Amount of each Portion.
	£. s. d.	£. s. d.
DAM across the <i>North River</i> below the entrance of the proposed Feeder, in length 200 feet	475 - -	
Dam across the Channel round <i>Isle aux Châts</i> , of a similar description, in length 150 feet	356 5 -	
Clearing on the site of the Feeder 8 acres, at per acre, £. 4	32 - -	
Excavation of 10,575 cubic yards of earth and rock, including the removal of stumps and boulders, at per cubic yard, 1 s. 6d.	793 2 6	
Bridge for High Road, and Sluice	320 12 -	
Making Total for Feeder		1,976 19 6
Excavation of 114,095 cubic yards in formation of Canal, nearly equal portions of earth and rock, including the removal of numerous boulders, at per cubic yard, 2s. 6d.	14,261 17 6	14,261 17 6
Excavation for N <sup>o</sup> 1, Lock, Pit, and upper Entrance from <i>River Ottawa</i> , 7,058 cubic yards, at 5s.	1,764 10 -	

PORTIONS OF WORK, AND DETAIL.	Sterling Amount of each Item.			Sterling Amount of each Portion.			Correspondence relative to the Canal Communication in Canada.
	£.	s.	d.	£.	s.	d.	
Excavation for N° 2, Lock, Pit, in rock, 3,708 cubic yards, at 5s.	927	-	-				
Excavation for N° 3, Lock, Pit, in rock and water, 5,032 cubic yards, at 6s.	1,509	12	-				
Making for Excavation, Total				4,201	2	-	
Dam across Valley, 450 feet long, 10 feet high	825	6	-	825	6	-	
Waste Weir	163	7	6	163	7	6	
Grubbing in Valley, 8 acres, at per acre, £. 10	80	-	-	80	-	-	
Dry Masonry in Pier or Breakwater at the proposed Lower Entrance to Canal, 611 toises, at £. 1	611	-	-	1,411	-	-	
Wheeling of Excavation to fill in behind Pier, extra	800	-	-				
Excavation through rock in bed of River, in clearing lower Entrance, 1,166 cubic yards, at 6s. 6d.	378	19	-	378	19	-	
Two Cofferdams, and Machinery for pumping	600	-	-	600	-	-	
Lock at upper Entrance, as per former Estimate	5,641	7	-	16,629	16	4	
Two Locks at lower Entrance	10,988	9	4				
Two Lock Houses, as per former Estimate	299	17	4	299	17	4	
New Road	433	6	8	433	6	8	
Fencing	69	6	8	69	6	8	
				41,330	18	6	
Contingencies, to				4,133	1	10	
TOTAL Amount Sterling			£.	45,464	-	4	

Royal Engineer Office, Quebec,  
29th May 1830.

(signed) *Henry Du Vernet,*  
Lieut. Col. Royal Staff Corps.

(signed) *E. W. Durnford,*  
Colonel Commanding Royal Engineers, Canada.

No. 119.—LETTER from *R. W. Hay*, Esq. to the Hon. *J. K. Stewart*,  
&c. &c. &c.

SIR,

Downing-street, 13 Sept. 1830.

I AM directed by Secretary Sir George Murray to transmit to you herewith, for the information of The Lords Commissioners of the Treasury, a copy of a Dispatch which has been received from Lieut.-General Sir James Kempt, enclosing an Abstract Report of the Expenditure on the Rideau Canal, up to the 30 June last.

I am, &c.

(signed) *R. W. Hay.*

20 July.

No. 120.—DESPATCH from Lieut.-General Sir *James Kempt*, to the  
Right Hon. Sir *George Murray*, &c. &c. &c.

Castle of St. Lewis, Quebec,  
20th July 1830.

SIR,

HAVING received from the commanding Royal Engineer in Canada the enclosed abridged Abstract Report of the Expenditure on the Rideau Canal to the 30th ult. amounting to £. 441,183. 7. 8½. I do myself the honour of herewith transmitting it to you, for your information.

I have the honour, &c.

(signed) *James Kempt.*

No. 121.—ABSTRACT REPORT of the WORKS on the Line of the Rideau Canal,

showing Amount of original Estimate, Sums Expended, and Amount when completed.

SECTIONS.	ESTIMATE handed to Committee.			EXPENDED.			Probable AMOUNT of Works when completed, supposed to be on 12th August 1831.			EXCESS.				
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.		
Entrance Valley, and first Eight Locks	68,413	11	4	58,684	12	1	69,831	18	8 1/4	1,418	7	4 1/4		
First Eight Locks to Hog's Back	43,372	17	9	71,011	- 11 1/4	92,414	19	11 1/2	15,299	15	11	3,084	6	-
Hog's Back to Capt. Wilson's Still Water	30,658	-	3											
Black Rapids	10,613	12	5	13,041	6	7	13,875	11	6	3,243	19	1		
Long Island Still Water	22,504	2	6	29,298	8	1	36,305	18	3 1/4	13,801	15	9 1/4		
Burrett's Rapids	11,249	9	5	7,965	8	7 1/4	12,546	9	10 1/2	1,297	-	5 1/2		
Nicholson's Rapids	10,725	9	4 1/2	8,757	15	1	14,664	13	5 1/2	3,939	4	- 1/2		
Clow's Quarry	9,865	-	4 1/2	11,060	14	9 1/4	11,061	14	1 1/2	1,196	13	9		
Merrick's Mills	17,906	10	9	16,195	1	9 1/2	21,278	6	4	3,371	15	7 1/2		
Maitland's Rapids	5,776	5	7	9,034	-	8 1/2	10,227	18	7 1/4	4,451	13	- 1/4		
Edmonds' Rapids, including Phillips' Bay	14,182	6	3	5,068	10	- 1/4	11,972	12	7 1/2	-	-	-		
Old Sly's Rapids	12,248	18	10 1/2	12,132	12	5 1/2	17,846	4	5	5,597	5	6 1/2		
Smith's Falls	20,408	10	5 1/2	16,597	1	10 1/4	33,504	4	7	13,095	14	1 1/4		
First Rapids	10,718	1	10 1/2	5,169	9	10 1/4	18,571	1	5 1/2	7,852	19	7		
Oliver's Ferry	100	-	-	-	-	-	-	-	-	-	-	-		
Narrows, Rideau Lake	409	10	-	589	15	3	5,427	1	10	5,017	11	10		
Isthmus, Rideau Lake, and Strait between Mud and Clear Lakes	13,639	3	-	15,428	18	2 1/4	27,077	17	2 1/2	13,438	14	2 1/2		
Chaffey's Mills, and small Isthmus, Indian Lake	20,799	16	2 1/2	6,171	12	9 1/2	14,553	18	9 1/4	-	-	-		
Davis' Rapids	8,988	9	9 1/2	3,910	19	1 1/4	8,487	3	3	-	-	-		
Jones' Falls	39,136	10	3 1/2	32,438	12	3	54,301	8	1 1/2	15,164	17	10		
Cranberry Marsh and White Fish Falls	1,384	-	-	1,032	10	10 1/4	1,671	8	4 1/2	287	8	4 1/2		
Brewer's Upper Mill and Round Tail	17,219	16	- 1/2	6,150	17	6 1/2	16,908	4	8	-	-	-		
Brewer's Lower Mill	11,262	19	11 1/2	2,240	13	2 1/4	10,612	16	11	-	-	-		
Kingston's Mills, including Tack Rifts and Billidore's Rifts	49,382	7	5	27,768	7	10 1/4	52,274	12	4 1/2	2,892	4	11 1/2		
Civil and Military Establishments, Barrack, &c. and General Contingencies	128,635	5	8 1/4	78,434	17	7 1/4	138,050	16	4 1/2	9,415	10	8 1/4		
£.	579,600	15	7 1/2	441,183	7	8 1/4	693,449	11	10 1/4	123,866	18	2 1/2		

TOTAL AMOUNT Expended on the Rideau Service

Probable Time of Completion.	REMARKS.
October - 1830	In consequence of the foundation turning out bad, constructing of drain, &c. See Report, 31st December 1829.
October - 1830	In consequence of extra masonry required to the breastwork, from bad foundation constructing waste weirs, &c.
-	This excess includes the masonry required to the breastworks of the lock at Hartwells, in consequence of the nature of the foundation; the waste weir at Hartwells, and the guard lock which it was deemed expedient to place at the Hog's Back. Vide Details.
September 1830	In consequence of increased height of dams, consequent increase of the volumes waste weirs to carry flood waters off, bad foundations, &c. &c.; pitching bottom of river with boulders; extra rock excavation for side walls, retaining walls for puddle. For further particulars, see detailed Reports, 31st December 1829.
October - 1830	In consequence of increased embankment, for security from proximity to river; constructing waste weir, extra excavations. Vide Details.
November 1830	In consequence of dividing the lift, increased height of dam, construction of waste weir to prevent valuable land being drowned.
November 1830	In consequence of injury the dam sustained from flood, 1828; removal of old material, construction of waste weir.
August - 1830	In consequence of deviation from original line in Timber Snie, extra grubbing, detached lock, extra sills, basin walls, deepening river, &c. &c.
November 1830	In consequence of extra pumping, extra rock excavations, &c. &c.; as also dry stone walling found requisite.
September 1830	£. 2,209. 13. 7 1/2. saving, in consequence of doing away with works at Phillips Bay, and putting whole lift on Edmonds. Vide Detail, 31st December.
July - - 1831	Extra clearing, extra rock excavations, straitening entrance, lining side of lock next river with ashlar, increased dimensions of dam, constructing a waste weir, &c.
November 1830	From impracticability of raising water to intended height, construction of detached lock, extra rock excavation.
August - 1831	In consequence of extra clearing of land for free circulation of air, increased width of excavation in consequence of impracticability of raising water so high as intended by Smith's Falls Dam, thereby incurring more excavation.
August - 1831	£. 100. saving.
August - 1831	To save expense of a rock excavation at Isthmus; to have a head of water in reserve in Upper Rideau Lake, to scour muddy bottom below Narrows, &c. &c.
September 1830	In consequence of much greater proportion of excavation turning out rock, than could at first be ascertained, from want of boring rods; as also by construction of lock at this place, deemed advisable to save such expensive rock excavation.
July - - 1830	£. 6,245. 17. 5 1/2. saving In consequence of throwing more water back by dam at Davis's Mills, saving rock excavation, doing away with guard lock, &c. &c.
November 1830	£. 501. 6. 6 1/2. saving In consequence of substituting a mound of rubbish, retaining walls and puddle in place of arch key'd work, there being no material at hand fit for such works.
August - 1831	In consequence of avoiding most difficult lock excavation, bad foundation of river lock, angling lock to suit line of navigation down the marsh, as also extra height of dam; construction of waste weir.
July - - 1831	In consequence of its being found advisable to cut stumps two feet lower, securing White Fish dam, and for carriage of limestone, &c. for works at Jones Falls.
July - - 1831	£. 311. 1. 4. saving.
November 1830	£. 650. 3. - 1/2. saving.
August - 1831	In consequence of increased height of dam to save sickness and excavation; construction waste weir, &c.
August - 1831	Erecting barracks, stores, slaughter-house; drawing water; travelling expenses, canoes, solicitors' fees; purchase of land, and damages; constructing of stone bridge, forming roads through the woods, &c. &c.
	Amount of Additional Works - £. 123,866 18 2 1/2
	Ditto Savings - 10,018 2 - 1/4
	Real Excess on Estimate given to Committee - £. 113,848 16 2 1/2

from 21st September 1826 to the 30th June 1830 - £. 441,183. 7. 8 1/4. Sterling.

(signed)

John By,

Lt. Col. Royl Engineers Commanding, Rideau Canal.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 122.—LETTER from Lieut.-Colonel *By* to Colonel *Durnford*,  
&c. &c. &c.

Royal Engineer Office, Rideau Canal,  
15th March 1830.

SIR,

I HAVE the honour of transmitting the Progress Report of Works, detailing my disbursements from the commencement of the Rideau Canal, on the 21st September 1826 to the 31st December 1829, from which it appears that £. 349,264. 13. 2. has been expended, and that sum reported; but, on re-examining the accounts, the sum appears to be £. 350,685. 12. 1½.

I have also the honour of transmitting Plans and Sections of some of the principal Works; also Plans showing the lands taken for the use of the Canal, and those that are supposed will be required for the military defence of the same; as also my letter to General Mann, stating the probable expense of erecting block-houses and bridges, and the purchase of land for the military defence of the Canal, amounting together to £. 69,230, which, added to the sum of £. 342,763. 19. 9. required to complete the Canal, as appears by the accompanying detailed Report (errors excepted), makes the total sum required £. 411,993. 19. 9. And I solicit your explaining to his Excellency Sir James Kempt, when you lay the Report and Plans before him, that although £. 411,993. 19. 9. is still required to complete the various services connected with the Rideau Canal, yet

The Estimate of	£. 576,757 12 2½
Errors detected	- 2,843 3 5¼
	£. 579,600 15 7¾

given to the Committee in June 1828, will only be exceeded by £. 30,134. 8. 9½ which is a trifling sum, when compared with the magnitude of the works, and the uncertain value of workmanship and materials at the time the Estimate was formed: the remainder of the sum required, amounting to £. 83,714, is for works not provided for in the Estimate, nor could they have been foreseen at the time of forming the Estimate, they having been found, by experience, as the works progressed, indispensably necessary, as explained in the Report.

To avoid the continuation of the expense of the Civil and Military Establishments I have recommended that the whole of these works be carried on at the same time; therefore, if this is approved of, and his Excellency recommends the purchase of the lands, there will, in all probability, be required for this year £. 200,000, and for the year 1831, £. 211,993. 19. 9., as appears by the detailed Report, and my letter to General Mann of this day's date.

I further beg to observe, that about forty other Plans and Sections are required to show all the works in progress, but fear the works will be completed before I shall have it in my power to furnish you with a complete set to lay before his Excellency, as the superintendence of the various works fully occupies myself and officers.

I have, &c,

(signed) *John By*,  
L' Col' R' Eng' Commanding, Rideau Canal.

No. 123.—LETTER from Lieut.-Colonel *By* to General *Mann*,  
&c. &c. &c.

SIR,

Royal Engineers' Office, Rideau Canal,  
15th March 1830.

I HAVE the honour to transmit, for the information of his Lordship the Master General and Board, the Progress Report of Works on the Rideau Canal, from their commencement on the 21st September 1826 to the 31st December 1829, from which it appears that £. 349,264. 13. 2. has been expended; but, on examining the accounts, the sum appears £. 350,685. 12. 1½.

I have also the honour of transmitting Plans, showing the quantity of land taken for that service, distinguishing the quantity that will in all probability be required for the military defence of the said works; also a Plan showing the crown and clergy

clergy reserves in the vicinity of the Rideau Canal; and have coloured those lots pink which I am respectfully of opinion should be held by Government, and leased at moderate rents to the emigrants. As these lots have been recently offered to me by one of the agents of the Canada Land Company at four dollars per acre, saying his instructions were to charge six dollars per acre to any other person, consequently this monopoly is keeping that part of the country which ought to be immediately settled, in a state of wilderness; and, as it appears, from the accompanying affidavits, as also from Dr. J. Dunlop's letter herewith enclosed, that these lots are of comparatively little value, I have no doubt but Government could obtain them on moderate terms.

The Report and Plans of the works should have been sent with my letter of the 31st December 1829, but were unavoidably delayed in consequence of my not being able to collect some of the measurements and plans, owing to the impassable state of the roads, which continued until the 12th January, when I visited each work, and found the contractors making every arrangement to enable them to carry on the works with rapidity.

I have marked on the accompanying Plans the places where I recommend the erection of block-houses similar to the enclosed Plan, as they would answer as dwellings for the lock-masters, and men required to attend the locks and to clear away drift timber, &c., which, as the settlement of the country on the line of Canal has already commenced, will require great attention for some years, it being impossible to prevent the settlers from throwing trees into the river, that being the cheapest mode of getting rid of those growing on the banks. The lower part of these block-houses I propose building with stone, there being a sufficient quantity remaining at each station from the rock excavation to enable that part to be built of masonry, with walls four feet thick, at the same price as timber. These walls would support strong flooring beams, with a layer of masonry, to render the lower stories fire-proof and nearly bomb-proof, as shown by the Section. The roofs and timber-work I propose covering with tin, which will render these buildings very durable and difficult to destroy by fire, as tin remains free from rust in this climate upwards of sixty years. I am therefore most respectfully of opinion, that these block-houses would tend much to the general strength of that part of the country, and recommend the forming a square redoubt round each, which would add much to their formidable appearance, and serve as mustering-places for the militia of the surrounding country.

Taking the twenty-two stations where I have proposed these works, one with another, I estimate each block-house and redoubt (the latter to be formed of the excavations necessary to sink the lower story) at £.1,500. each, consequently £. 33,000 will be required for that service, and shall delay building the lock-masters' houses until I am favoured with instructions from the Honourable Board on this subject. These block-houses are proposed on a large scale, that they may serve as secure depôts in time of war for provisions, ammunition and small arms, for the militia, as large villages are forming at every station where there are locks building. The magazine, in one corner of the ground-floor of the block-house, will contain 264 barrels of gunpowder, leaving an air passage round the walls; and the remainder of the said floor will form an excellent provision store for 600 barrels; the two upper floors would form a barrack for 150 men, but the building could be defended by twenty. The crest of the glacis I do not propose forming into a covert way until time of war, as earth works are difficult to keep in repair in this climate. The ports are proposed to be made five feet high by four feet wide, that they may be used as doors or windows until required as ports, when I recommend their being reduced to the proper size, by lining them with raw hides well salted and rolled tight, and jammed in whilst moist, which is an excellent mode of protecting the ports from being damaged by the discharge of their own guns.

The Progress Report and Plans show the works as they are now completing; and although it will be seen, by examining the Plans, that many alterations have been made from the original design, formed when the country was covered with forest, and consequently the best positions for the works could not at that moment be seen, yet I have no doubt the whole will be finished in August 1831: and I beg to state, notwithstanding the excavations are carrying on at the lower lock at Kingston Mills, also the deepening and clearing Cataroque Creek, and cutting through the Isthmus between Mud and Rideau Lakes during the winter, which,

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

owing to the intense frost, adds considerably to the expense, yet such is the dreadfully offensive smell arising from the decayed vegetable matter in these excavations, that I am apprehensive of the breaking out of the fever afresh, and have, as a matter of necessity, to lessen these expensive excavations, ordered the dam and locks at Kingston Mills to be raised, which lessens the excavations in Cataroque Creek: I have also increased the height of the dam and lock at Davis's Mill, to lessen the excavation necessary to form a good entrance into the lock at Chaffies; and I have ordered a lock at the Isthmus, between Mud and Rideau Lakes; these two latter works enable me to raise the Upper Rideau Lake four feet above the proposed summit level, and do away with the necessity of taking out the lower four feet of the cut across the Isthmus, which is about a mile and a half long. This is a great point gained; for such are the dreadful effects of the lake fever, that it is impossible to calculate the expense that would otherwise have been incurred in removing this four feet; and I trust that these alterations will be the means of great saving both in life and money.

\* Which should be  
£:579,600. 15. 7 1/2.

With reference to my letter of 31st December 1829, I beg to observe, that I omitted, in my statement of the sums required to complete the works, the expense of those not provided for on Estimate amounting to £.113,848. 16. 2 1/4, which, when added to the Estimate, of £.576,757. 12. 2 1/4,\* given to the Committee, of which his Excellency Sir James Kempt was President, in June: 1828, will make the sum of £.693,449. 11. 10 1/4, as appears by the accompanying Report. At the same time I beg to be clearly understood, that these sums do not include the expense of building the proposed block-houses, or the purchase of the land necessary for the military defence of the Rideau Canal, or the forming the reservoir to supply the first eight locks, which is also intended to serve as a wet ditch to strengthen the position of the proposed works for the defence of the entrance of the Canal, and to prevent the erection of any building on the land that will be required for a glacis: the Provincial Act authorizes this land being taken for a reservoir; but if it had been taken for the military defence of the Canal, Mr. Sparks, the proprietor, informed me, he should ask £.10,000 for the eighty-eight acres I have taken for the said reservoir, which in fact, being chiefly swamp, is worth very little. I therefore respectfully recommend, to prevent future litigation, that £.6,000 should be spent in forming this reservoir, and that £.2,000 should be spent in carrying the earth to the spot where the ramparts of the said works will ultimately have to be placed, as this position is one of the strongest in Upper Canada: neither is included the expense of erecting bridges, which the Provincial Act for the Rideau Canal provides shall be erected wherever the Canal crosses a public road; and as the Canal is causing the country to settle rapidly, notwithstanding the high price charged by the Canada Land Company, as already noticed, the number of bridges required will in all probability increase yearly, until every concession road is supplied; but as the traffick on the Canal will be augmented by the number of roads leading to it, the expense of these bridges will soon be repaid. At present I suppose I shall be called upon to erect thirteen, and estimate them as follows,—

One at Notch of the Mountain	£
— Hog's Back	300
— Long Island	400
— Burritt's Rapids	430
— Nicholson's Rapids	400
— Merrick's Mills	400
— Maitland's	400
— Edmond's Rapids	400
— Old Sly's	400
— Smith's Falls	500
— Isthmus Rideau Lake	300
— Narrows Rideau Lake	400
— Chaffies Mills	300
— Cataroque Creek	300
— Kingston Mill, where the Canal crosses the road leading to Montreal; at this place a stone bridge is proposed, which, with its approaches, will cost	3,000
	£. 8,230

Therefore, speaking in round numbers, if the twenty-two Block-houses are ordered to be built, there will be required for that service	£. 33,000
For the purchase of Land required for Military Works	20,000
Forming the Reservoir, and removing the earth	8,000
Building fourteen wooden Bridges, and one of stone	8,230
	£. 69,230

Correspondence relative to the Canal Communication in Canada.

I further beg to observe, that the whole of these works should be carried on simultaneously with the Rideau Canal, and be completed within the same period; so that the present establishment may be discharged at the close of the Canal works. And should the above-mentioned works be approved, there will be required £. 200,000 for the present year, and £. 211,993. 19. 9. for the year 1831; and I beg to remark, that, with my present strength of officers, I fear the works will be completed before I have it in my power to lay before the Honourable Board a complete set of Plans of all the works of the Rideau Canal.

I have, &c.  
 (signed) *John By,*  
 Lieut.-Colonel Roy<sup>l</sup> Eng<sup>s</sup> Com<sup>s</sup>, Rideau Canal.

N. B.—I beg to apologize for the slovenly state in which, to save time, I am obliged to send my Progress Report; and have to observe, that it has been occasioned by the temporary insanity of my first clerk, Mr. H. H. Burgess, and the ill state of health to which the lake fever has reduced many of my other clerks and overseers; but, that the Report may be clearly understood, I have enclosed a Section, showing the lifts of each work, with the sum estimated, that expended; and that required to complete the same; from which it will appear the statement stands thus:—

	£.	s.	d.
Amount of Estimate given to Committee, with correction of £. 2,843. 3. 5 1/4	579,600	15	7 1/2
Amount of Works not provided for on Estimate	113,848	16	2 1/2
Estimate of Bridges, Block-houses, &c. &c.	69,230	-	-
<hr/>			
Expended 31st December 1829	762,679	11	10 1/2
	350,685	12	1 1/2
	£. 411,993 19 9		
Required for 1830	£. 200,000	-	-
— 1831	211,993	19	9
	411,993 19 9		

(signed) *John By,*  
 Lieut.-Colonel Royal Eng<sup>s</sup> Com<sup>s</sup>, Rideau Canal.

	£.	s.	d.
Amount of Estimate	579,600	15	7 1/2
Excess on ditto	113,848	16	2 1/2
Amount of Works, which could not be foreseen	83,714	7	5 1/2
Excess on Estimate given to the Committee	£. 30,134 8 9 1/2		

(signed) *John By.*

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

No. 124.—LETTER from Colonel *Durnford* to Lieut.-Colonel *Couper*,  
&c. &c. &c.

SIR, Royal Engineer Office, Quebec, 24th April 1830.

I HAVE the honour to forward, for the information of his Excellency the Commander of the Forces, copies of two letters from Colonel Mann, Nos. 301 & 307, of the 7th October and 3d November last, and enclosures, calling on me to report, in the fullest detail, on the Estimate of the Committee of which his Excellency was President, amounting to £. 558,000, for the Rideau Canal.

In obedience to the above instructions, I am about to transmit a Report I have drawn up for General Mann's information, founded upon a separate detail of each particular work, compiled by Lieut.-Colonel By, which, according to our united judgment, would afford the fullest information; which Report I beg to enclose, in case his Excellency may have observations to make thereon before it goes.

His Excellency will perceive that Lieut.-Colonel By has already exceeded, by the sum of £. 54,000, the amount of the several grants of Parliament to the end of the year 1829, viz. £. 296,000.

His Excellency will also perceive that, from the extract from Mr. Stewart's letter to the Secretary to the Board of Ordnance, that a vote for the sum of £. 140,000 will be submitted to Parliament for 1830, making £. 296,000 + 140,000 = 436,000 to the end of 1830.

Having just received from Lieut.-Colonel By, for the information of his Excellency, a letter under date the 26th March 1830, No. 56, accompanied by an abridged abstract, from which it appears that he has expended the sum of £. 391,000 nearly, up to the 25th ultimo, consequently there now remain (supposing that the £. 140,000 is granted for 1830) only £. 45,000. to be expended to the end of the present year; I therefore think it my duty to ascertain, in due time, from his Excellency, whether it be his desire that Lieut.-Colonel By should be restricted from expending beyond the extent of the votes of Parliament up to that period. At the same time it appears to me to be my duty respectfully to observe, that as the whole of the contractors have already executed fully half their respective undertakings, and laid in materials and stores to enable them to complete their engagements in the most faithful and satisfactory manner, I am apprehensive that the least check to their exertions would inevitably produce such appeals to the courts of Justice, as would involve the government in expenses far beyond the amount of their engagements with the contractors, and tend to paralyze the undertaking.

I have, &c.

(signed) *E. W. Durnford*,  
Colonel Commanding Royal Engineer,  
Canada.

No. 125.—LETTER from Lieut.-Colonel *Couper* to Colonel *Durnford*,  
&c. &c. &c.

SIR, Military Secretary's Office, Quebec, 27th April 1830.

I HAVE had the honour to receive and lay before his Excellency the Commander of the Forces, your letter (69) of the 24th instant, with your Report on the Rideau Canal therein enclosed, addressed to Colonel Mann, of the same date, and I have received his Excellency's commands to express to you his surprise and concern at the great excess of the annual expenditure on the work above the sum appropriated towards its progress, by the Imperial Parliament; and also, that the aggregate cost of the work will so much exceed the approved estimate.

His Excellency commands me to convey to you his decided opinion, that no expense should be incurred upon the Rideau Canal exceeding the annual appropriation for the year, which Government, by existing contracts, are not pledged to defray; and that no additional works of any magnitude, not included in the original estimate, should be undertaken until they have been previously approved by competent authority. The enclosures which accompanied your letter are herewith returned.

I have, &c.

(signed) *G. Couper*, M. S.

P

No. 126.—LETTER from Colonel *Durnford* to Colonel *Mann*,  
&c. &c. &c.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

SIR,

Royal Engineer Office, Quebec, 24th April 1830.

1.—IN obedience to General Mann's instructions, communicated to me by your Letter, No. 301, of the 7th October last, and with reference to your other letters, No. 281, of the 28th July, and No. 307, of 3d November last, to the several documents which accompanied them, and to my letter to you, No. 14, of the 8th February last, and enclosures, I have now the honour further to report, for his information, as follows:

2.—On receipt of the above instructions, I forwarded copies of them to Lieut.-Colonel By, and requested him to prepare every necessary information in his power to enable me to comply with them.

3.—As soon after the transmittal of my letter to you, above referred to, as laid in in my power, I proceeded to By Town, and accompanied by Lieut.-Colonel By, inspected the several works along the whole line of the Canal.

4.—Having business of importance to attend to, at the time, both at Grenville and Quebec, and the winter season being on the break up, it was out of my power to remain at By Town till Lieut.-Colonel By's Report was completed; but I have carefully examined and considered it in all its bearings, and beg to submit the following leading observations, which occurred to me in going through it, for General Mann's favourable consideration.

5.—The accompanying Report, Plans, &c. received with Lieut.-Colonel By's letter to me of the 15th ultimo, (of which I inclose a copy) only reached me on the 30th ultimo, and are very voluminous, but it is hoped they will afford a satisfactory detail of the expenditure up to the 31st December 1829, as well as of that which it is now considered will be further necessary to complete the work, showing the probable excess of the present Estimate upon that reported by the Committee.

6.—I cannot but consider the explanations afforded by Lieut.-Colonel By, in his letter to me, No. 32, of the 30th of December last, in remonstrating against the reduction of his Estimate, by the Committee, as reasonable, and trust they will be admitted to be so.

7.—Lieut.-Colonel By states, that there were errors in that Estimate amounting to £. 2,843, the corrections of which increased the amount from £. 576,757 to £. 579,600, but gives no explanation of them.

8.—Lieut.-Colonel By states that, although the amount of his present Estimate exceeds that given by him to the Committee (with the addition of the corrections) by £. 113,848, £. 83,714 of this sum are for additional works, neither contemplated by himself nor ordered by the Committee, and consequently not provided for in his Estimate, but the necessity of which has become apparent during the progress of the work; amongst which, waste weirs at each dam and nest of locks, are the most important and expensive, and which I am surprised should not have been considered necessary, after the particular attention called for to them by Major-General Sir J. C. Smyth, in his memoranda, dated 14th March 1826. On my visit of inspection of the Canal shortly after the failure of the Hog's Back dam, I expressed my opinions in favour of them to Lieut.-Colonel By, who having become equally sensible of their necessity, adopted them throughout the Canal, and their beneficial effects have already been satisfactorily proved in a great measure.

9.—The following is an Abstract of the Items of his present Estimate, viz.

To the amount of his Estimate as given to the Committee - £. 576,757  
Lieut.-Colonel By states there must be added the following sums, viz.

1. For errors in that Estimate	2,843
2. Excess on - ditto	30,134
3. Works not contemplated nor provided for in ditto	83,714
4. Blockhouses	33,000
5. Land for ditto	20,000
6. Reservoir at By Town	8,000
7. Bridges	8,230

Making a Total of - - - - £. 762,678

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

10.—From the foregoing Abstract it will appear, that in addition to the sum of £. 558,000, reported by the Committee, the further sum of £. 204,678 will be required.

11.—Lieut.-Colonel By reports, that he has expended £. 350,685 up to 31st December 1829, consequently there remains £. 411,993 required for the years 1830 and 1831, of which he proposes to expend £. 200,000 in 1830, and the remainder £. 211,993 in 1831.

12.—From the extract from Mr. Stewart's letter to the Secretary to the Ordnance, dated 18th September 1829, communicated to me with your letter, No. 301, above referred to, it appears that the sum of £. 296,000 had been granted by Parliament, including the grant for 1829, leaving £. 262,000 to be further granted to complete the amount of £. 558,000 reported by the Committee; and as it further appears, from the same extract, that a vote for the sum of £. 140,000 will be submitted to Parliament for 1830; it follows that £. 326,678 remain to be submitted, to make up the sum of £. 762,678, the amount of the present Estimate.

13.—The Plans show the quantities of land proposed to be taken, both for the immediate purposes of the Canal, as well as its defence.

14.—The extent of land that will be overflowed, cannot be fully ascertained before the completion of the work, but steps have been taken to ascertain its present value, with the view to prevent future litigation, as will be seen by the accompanying affidavits.

15.—By the fourth article of the Rideau Canal Act, it will be seen, that the claims of proprietors need only be settled as the several portions of the Canal are completed; and by the ninth article of the same, the benefits likely to accrue to them from the Canal are to be taken into consideration, in favour of Government, in estimating compensation, though not beyond the value of the land or property before the Canal was begun.

16.—The lands adjacent to the Canal were generally in the hands of private individuals or corporate bodies, previously to the commencement of the Canal.

17.—The Rideau Canal Act not appearing to include land required for works of defence, I applied to his Excellency Sir James Kempt, under date the 19th December last, No. 47, and Lieut.-Colonel By, by my desire, applied to his Excellency Sir John Colborne, under date the 26th December last, to procure a revision of the Act; by some accident my letter, No. 47, never reached the Military Secretary, of which I did not become aware till lately, when I immediately transmitted to him a duplicate of it, with my letter, No. 63, of the 13th instant, and received his reply, No. 136, of the 14th instant. Lieut.-Colonel By has not communicated to me any reply to his application, I am therefore unable at present to afford information as to what steps have been or may be taken.

18.—The accompanying correspondence, of which (I.) is an Index, together with the documents referred to in my fourteenth paragraph, will explain the present state of this case, as well as of the general question of the land and property.

19.—It appears to me advisable to form the reservoir at By Town at once, for the reasons assigned by Lieut.-Colonel By, and particularly to prevent litigation; and as this work is so intermixed with views of defence, I cannot (as I should otherwise have done) impute to him any want of foresight, in not having provided for it before.

20.—As the blockhouses, and land required for them, as proposed by Lieut.-Colonel By, considerably increase the amount of his present Estimate, and as the claims for the latter not being under the same legal control as those for the property taken for the immediate services of the Canal, would probably be very exorbitant, and more especially as the situations, necessarily proposed for these blockhouses as works of defence, would, in many instances, render them inconvenient as lock-masters' houses, I should recommend their being postponed until the general defences of the Canal shall hereafter come under consideration; and in the mean time to erect a smaller description of lock-master's house than at first proposed by Lieut.-Colonel By, similar to those on the Grenville Canal; or to take advantage of one of the log buildings of the contractors in the most convenient situation at each work, as a temporary measure. This arrangement would reduce the amount

of the present Estimate, and afford time for obtaining further local legal authority for taking such land as may be ultimately considered necessary for works of defence, including the blockhouses, which appear to be a suitable description of work, though those proposed are on rather a large scale.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

21.—Having reported that the sum of £.762,679, will probably be required to complete the Rideau Canal, it is but mere justice to Lieut.-Colonel By to observe, that in water works of such magnitude and variety, the usual allowance for contingencies appears to be inadequate, and that casualties may yet be expected over which he can have no control, one of which, sickness, has already been a serious obstruction, and consequent cause of increase of expense, having rendered it necessary to prosecute excavations to a great extent, both of earth and rock, during the winter; so that too much reliance should not be placed even on this present heavy Estimate, which may yet be expected to be exceeded by several thousand pounds; but should this happen, General Mann may rely on its not being attributable either to Lieut.-Colonel By, his officers or contractors, of whose unremitting assiduity and perseverance I cannot speak too highly; and as I have before reported, the whole of the works appear to be executing in the most substantial manner.

I have, &c.

(signed) *E. W. Durnford,*  
Col. Comm<sup>d</sup> R<sup>g</sup> Engineer, Canada.

*P. S.* I herewith forward, for General Mann's further information, a copy of my letter, No. 69, of the 24th inst. submitting the foregoing Report, &c. to his Excellency Sir James Kempt, together with a copy of his Military Secretary's reply, No. 142, of the 27th inst.

(signed) *E. W. Durnford,*  
Col. Comm<sup>d</sup> R<sup>g</sup> Eng<sup>r</sup>.

28 April 1830.

No. 127.—LETTER from *R. J. Routh*, Esquire, to the Hon. *J. Stewart*,  
&c. &c. &c.

SIR,

Commissariat, Canada, Quebec, August 4, 1830.

No. 854.

I HAVE the honour to lay before you, for the information of the Right honourable my Lords Commissioners of His Majesty's Treasury, the undermentioned Inspection Returns for the posts of

Montreal (Cash only)  
Grenville,  
By Town, and  
Kingston (Cash only).

I availed myself of this opportunity to pass through the line of the Rideau Canal, so that I might be more in possession of its localities, and judge of the nature of a service in which I am called to co-operate, and which has become nearly the most important in this command.

It is indeed a magnificent undertaking, worthy of the resources of Great Britain, and full of reputation to Colonel By, for the conception and boldness of the plan, and the promptitude of its execution. A vast tract of territory, much of it unexplored, will be opened to the enterprize of new settlers, and a new facility given to the development of the country. The term Canal is scarcely applicable to the Rideau, which is rather a chain of rivers and lakes, united and made navigable by means of dams and locks. In many instances, particularly at the summit level on the Rideau Lake, the expanse of water is very extensive, and generally flows through a luxuriant country, interspersed with fine natural views and scenery.

The first eight locks of this Canal, which raise the water to By Town, bring it to a level somewhat above the Chaudière Lake; and a future communication between them may be anticipated hereafter as a probable and perhaps a natural result, when the success of the Rideau Canal shall be in full operation.

There is every reason to conclude that this last event will be realized during the sonson of 1831, probably in the early part of it; and meetings have been already

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

advertized at Kingston, with a view of establishing steam-boats between that town and Montreal.

From the progress of the work, I was of opinion that nearly eighty miles above By Town, would be open to navigation towards the close of this season. The activity which prevails throughout the line is unremitting, and promotes the economy as well as the completion of the work. There are so many points that will become valuable posts on its termination, that I do not anticipate a reduction in the Rideau Commissariat; nor indeed is it to be desired, whilst the increasing resources and prosperity of the country are the causes which maintain the establishment.

The result of this work, uniting the great waters of the St. Lawrence and the Ottawa, and offering a safe internal navigation, will turn a large portion of the present trade of New York towards Canada; and this expectation should not be discouraged by heavy tolls. The increased trade would pay better than any imposition of taxes.

Whilst I am on this subject, it may be advantageous to submit to you a concise general view of the North American Canals.

The Ohio Canal, about 300 miles in length, communicating with the Ohio at Portsmouth, above Cincinnati, and with Lake Erie at Cleveland, will be opened towards the close of 1831, thereby establishing an uninterrupted inland navigation between New Orleans and Lake Erie. The trade of this Canal will naturally be directed towards New York, until the Welland Canal shall be practicable. The season is open earlier, and later, on the north side of Lake Erie, than it is on the south side towards Buffalo; and the expenses of the Erie Canal are high, and the voyage tedious. These are causes that will operate in favour of the Welland Canal; but some apprehensions are entertained in respect to this Canal, which it is feared will be a failure. It certainly appeared to me to be defective both in the course selected for it and its execution. The better direction would have been from the highest navigable part of the Grand River to Burlington Bay, being now so near the frontier, and so exposed; but notwithstanding these objections, it will be of great and important use to the country in its present direction, if it succeeds, as indeed any Canal would be, that would open the trade of Lake Erie and the upper country to the River St. Lawrence.

The Rideau Canal, from Kingston, will be the means of transport to Grenville.

The first six miles of this Canal (what is properly called the Grenville Canal) will be completed this year. To an unexperienced observer, some parts of it appear rather too serpentine for steam boats, and almost so for Durham boats, and much of its expense might have been avoided as well as this defect, if it is one, by cutting the upper part of this Canal through a ravine in its rear. It is understood that the locks are to be enlarged, being too narrow to admit a steam-boat. The work itself is admirable.

The excavation of the Chûte à Blondeau is in progress, and far advanced; and a public notice has been advertised for tenders to be received on the 13th of this month, for the excavation of the Carillon. It is possible that these Canals may be practicable by the close of 1831, but there are reasonable grounds for inferring that the Rideau Canal will be completed before them.

Between the Carillon and Montreal there are still several difficulties to overcome, rather of a serious nature; and, in order to obviate these impediments, it has been proposed to make the passage navigable through the Rivière des Prairies, between the Isle Jesus and behind the Island of Montreal. This is no new project, but has been formerly entertained, and an officer of the Engineer Department, Lieutenant Bruyeres, I believe in 1822, was employed to survey the passage. The survey itself is still preserved amongst the Engineer Records at Montreal. The rough estimate of the excavation, to avoid the Falls of the Recollet in this river, has been calculated at £. 100,000 sterling; and this work would complete the navigation to Quebec, and open the river St. Lawrence to the whole and unembarrassed trade of North America.

As it appeared to me to be desirable that My Lords should be in possession of authorized Plans of the Rideau Canal, I applied to Colonel By for the means of furnishing their Lordships' Board with this information. I enclose to you three  
Plans,

Plans, which afford a satisfactory detail of this work, accompanied by copy of a letter addressed to me by Colonel By on the occasion. In this communication you will perceive the views entertained by this officer, both to facilitate the settlement of the lands in the neighbourhood and on the banks of the Canal, and for the gradual developement of the Ottawa and the country above the Chaudière Lake.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

He appears to consider that the increase of the lumber trade would pay a very ample interest for the sums expended in these improvements, and that this trade requires only these facilities of transport to be increased in any proportion; the red pine particularly appearing to be inexhaustible in that direction. He wishes to convert the timber channels at the Chaudière into locks, which he calculates would cost £. 20,000, and that the revenue of these locks should be applied to forming others at the Chat Rapids, and so on gradually, whilst the resources of this great river should encourage the experiment. He supposes also that these operations would terminate in the establishment of a permanent communication between the Ottawa and Lake Huron, which would certainly be a result of extraordinary importance to these provinces. We know that these communications, though interrupted, do exist, both in the line towards Lake Simcoe, and in several directions towards Lake Huron. The north-west traders are well acquainted with the route from this lake through French River by Lake Nipissing, to the Mattawoen, where the Ottawa abruptly turns to the north. On this subject a paper was put into my hands at By Town, detailing a journey of discovery undertaken to ascertain these objects; and as a record of future reference in case the matter of it should ever be under discussion, I venture to lay it before you for their Lordship's information. It is an account of a journey to the Rapids of the Deux Rivières on the Ottawa, where the river separates the high lands of Upper and Lower Canada, and from thence to Penetanguishine, on Lake Huron, and is another proof of the imperfect information we possess of the extensive country so near our own settlements.

I have the honour to be, Sir,

Your very obedient servant,

*R. J. Routh,*

Commissary General.

No. 128.—LETTER from Lieut.-Colonel *By* to *R. J. Routh*, Esq.  
&c. &c. &c.

SIR,

Royal Engineer's Office, Rideau Canal, 10 July 1830.

I HAVE the honour of inclosing, agreeable to your wish, for the information of PLANS. the Lords of the Treasury, Three Plans to accompany your Report to their Lordships on the state of the works of the Rideau Canal, when I had the pleasure of showing them to you in June last; and I beg to state that the bridges erected across the Ottawa, at the falls of the Chaudière, cost only £. 3,316. 18. 3 $\frac{1}{2}$ .; their tolls are let for £. 200 per annum Halifax currency, and their construction caused a saving of upwards of £. 40,000 at the commencement of these works in the masonry of the locks, as the very persons who are now building the locks at 1s. 1 $\frac{1}{2}$ d. per cube foot, declared they could not be built for less than 4s. per cube foot before I commenced building the said bridges, on account of the difficulty of communication.

The Timber channel, which I formed in the winters of 1826 and 1827, by order of the Earl of Dalhousie, cost £. 2,000 H. C.; this sum was paid by the two provinces out of the duties collected on the timber, which amounts to between £. 4,000 and £. 5,000 per annum; and I am happy to state that this trade is so rapidly increasing, that although Mr. Wright has formed another timber channel on the Hull side, to pass which the lumberer has to pay 5s. per crib, there is more timber collected on each side of the river above the falls than can be passed this season, which plainly points out the necessity of something more being done to prevent this trade being shackled by individuals.

The Diagram shows the land purchased for the use of the Rideau Canal, and the Crown and Clergy reserves on the borders of the Canal, which I recommend

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

Government to keep in their own hands, and settle the Emigrants on them immediately, by giving Fifty acres to each at a low rent per annum; this would produce a dense population, and if they proved good settlers they might be moved to lots of 200 acres, and their fifty acres let to fresh emigrants; but on the present system the emigrants have no where to settle, and numbers wander to me in a starving state, asking for land, and when they are shown the back concessions, being afraid to encounter the wilderness, they pursue their journey until they reach the United States, which I trust my project would in a great measure check.

I have the honour to be, Sir,  
Your most obedient humble Servant,

(signed) *John By,*  
L' Col. R' Eng'.

No. 129.—LETTER from *R. W. Hay, Esq.* to the Hon. *James Stewart,*  
&c. &c. &c.

SIR, Downing-street, 2 Feb. 1831.

I AM directed by Viscount Goderich to transmit to you the copy of a letter from Mr. Byham, stating, by desire of The Master General and Board of Ordnance, that the undermentioned Sums will be required for carrying on the Works of the Rideau and Grenville Canals, in the present year; viz.

For the Rideau	£. 256,782
For the Grenville, and other Canals on the Ottawa	40,000
	£. 296,782

I am to request that you will lay the same before the Lords Commissioners of the Treasury, acquainting their Lordships, that Lord Goderich is disposed to recommend that Estimates for the whole sum proposed by the Ordnance, however large the amount, should be submitted to Parliament; and thus the necessity may be avoided of continuing the expenditure of public money, not voted by Parliament, on Works which from their advanced state may be expected to be completed in August next.

I am, Sir,  
Your obedient Servant,

*R. W. Hay.*

No. 130.—LETTER from *R. Byham, Esq.* to *R. W. Hay, Esq.*  
&c. &c. &c.

SIR,

Office of Ordnance, 24 Jan. 1831.

THE Master General and Board of Ordnance having taken into consideration the question as to the sums which will be required for carrying on the Works of the Rideau Canal and Grenville Canal in the present year, for which services the money is not voted in the Ordnance Estimates;

I am directed to acquaint you therewith, for Viscount Goderich's information; and to request you will submit to his Lordship, that upon considering the necessary reports and documents upon this subject, the two following Sums are those which the Master General and Board suggest should be voted in the Colonial Estimate for the year 1831, the works being all in progress and reported to be indispensably necessary; viz.

For the Rideau	£. 256,782
For the Grenville, and other Canals on the Ottawa	40,000
	£. 296,782

I have, &c. &c.

(signed) *R. Byham.*

No. 131.—A STATEMENT of the Amount granted and applied, and required to be granted, for completing the Canal Communications in *Canada*.

Correspondence  
relative to the  
Canal Communi-  
cation in Canada.

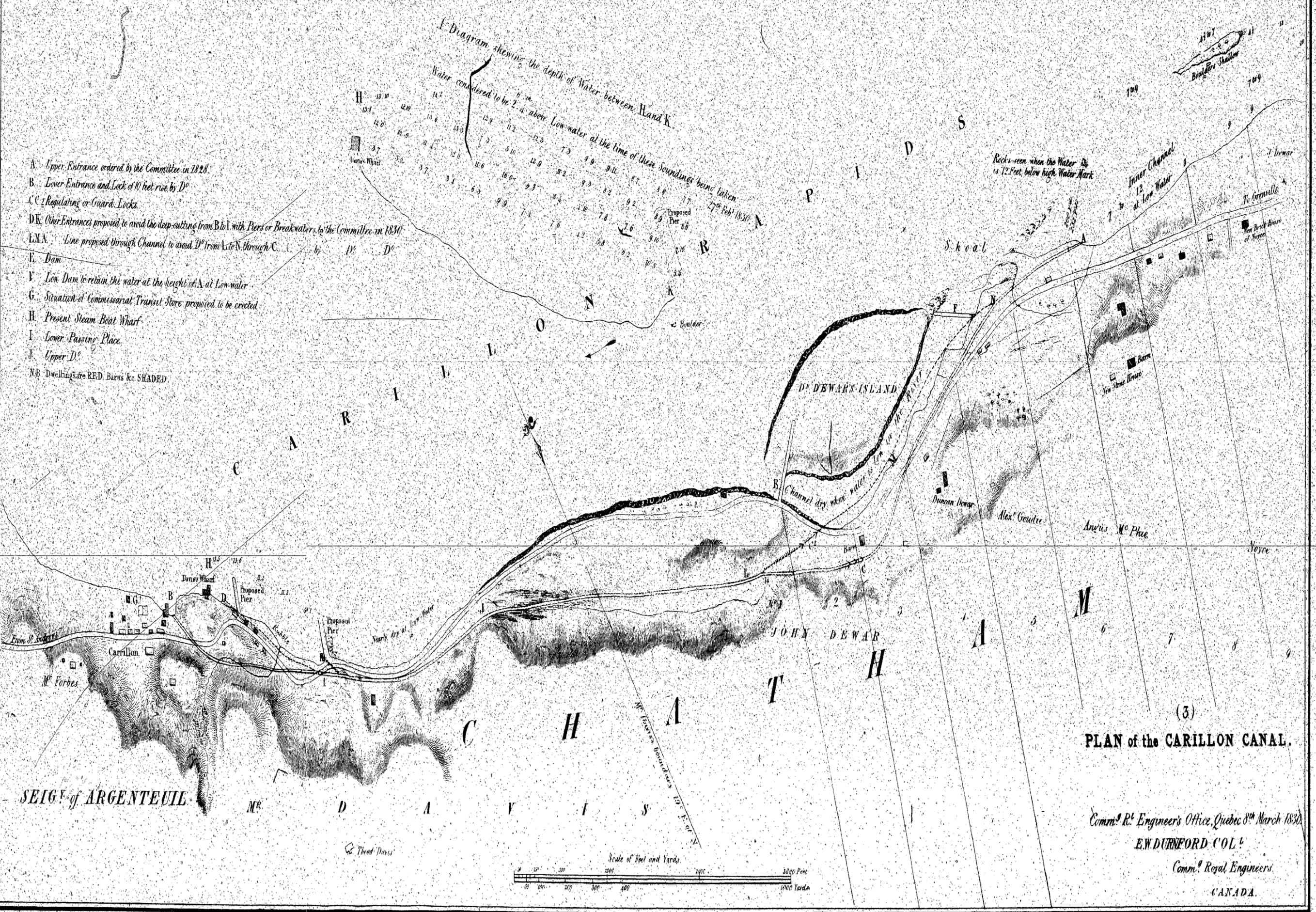
ESTIMATE for the Rideau Canal	£.	693,448
Estimate for the Grenville Canal, the Carillon Canal, and the Chute à Blondeau		282,274
	£.	975,722
Granted and applied on account of the Rideau Canal	£.	436,666
Granted and applied on account of the Grenville Canal, the Carillon Canal, and the Chute à Blondeau		169,099
		605,765
Probable Sum required to complete these Works, £.		369,957

The foregoing is exclusive of the St. Ann's Rapids, of which no Estimate has yet been received; and exclusive also of block-houses and other works for the defence of the Rideau Canal, on account of which an Estimate of £. 69,230. has been received.

Whitehall, Treasury Chambers, }  
8 February 1830. }

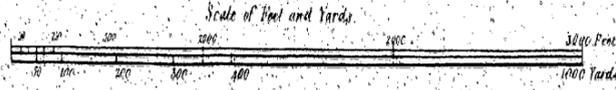
T. Spring Rice.

- A Upper Entrance ordered by the Committee in 1828
- B Lower Entrance and Lock of 10 feet rise by D<sup>c</sup>
- C C Regulating or Guard Locks
- DK Other Entrances proposed to avoid the deep-cutting from B to I with Piers or Breakwaters, by the Committee in 1830
- LMA Line proposed through Channel to avoid D<sup>c</sup> from A to N through C
- E Dam
- F Low Dam to retain the water at the height of A at Low water
- G Situation of Commissariat Transit Store proposed to be erected
- H Present Steam Boat Wharf
- I Lower Passing Place
- J Upper D<sup>c</sup>
- NB Dwellings are RED Bars & SHADED



PLAN of the CARILLON CANAL.

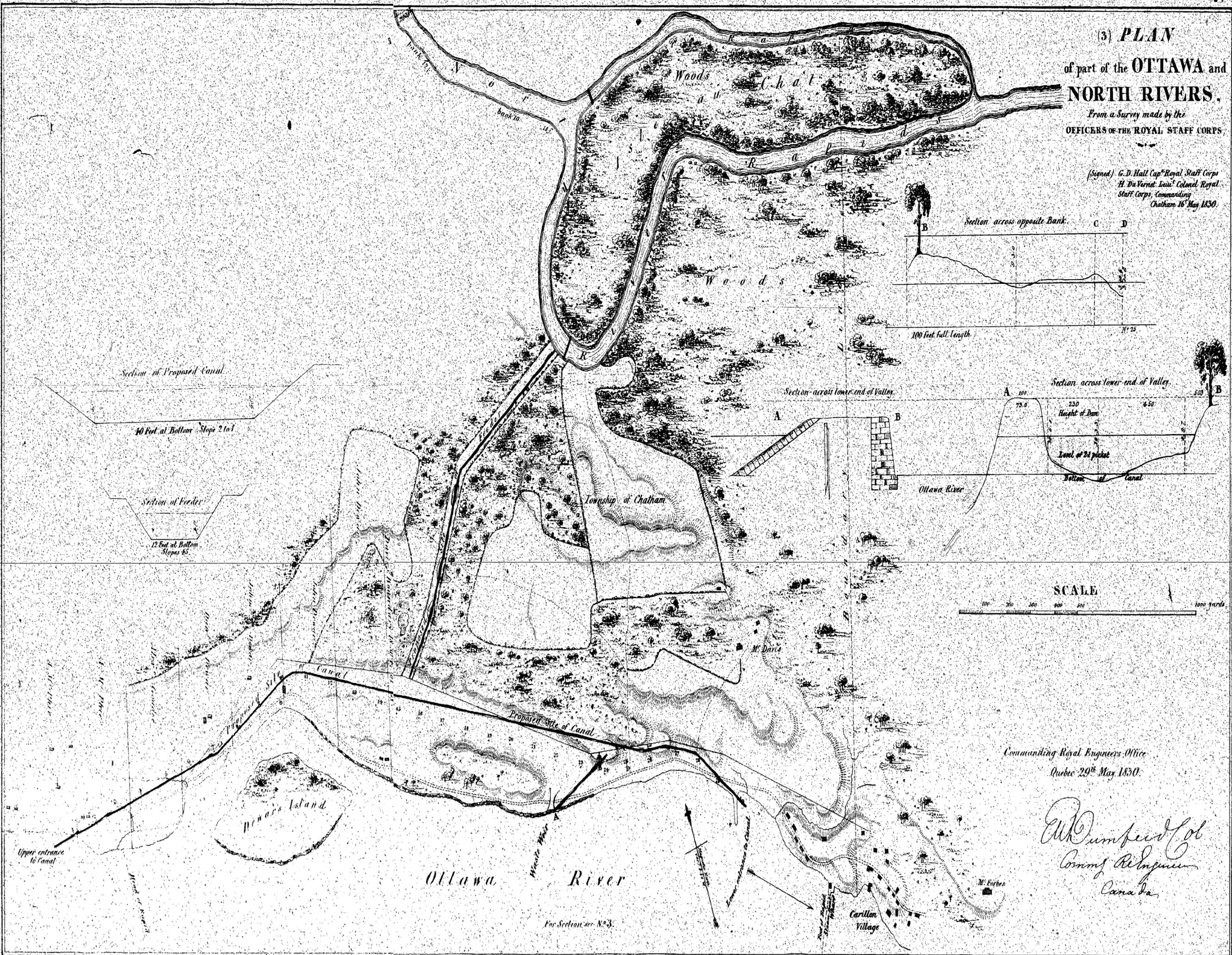
Comm<sup>d</sup> R<sup>l</sup> Engineer's Office, Quebec 8<sup>th</sup> March 1830  
 E.W. DURNFORD COL<sup>l</sup>  
 Comm<sup>d</sup> Royal Engineers  
 CANADA.



(3) **PLAN**  
of part of the **OTTAWA** and  
**NORTH RIVERS,**

From a Survey made by the  
**OFFICERS OF THE ROYAL STAFF CORPS**

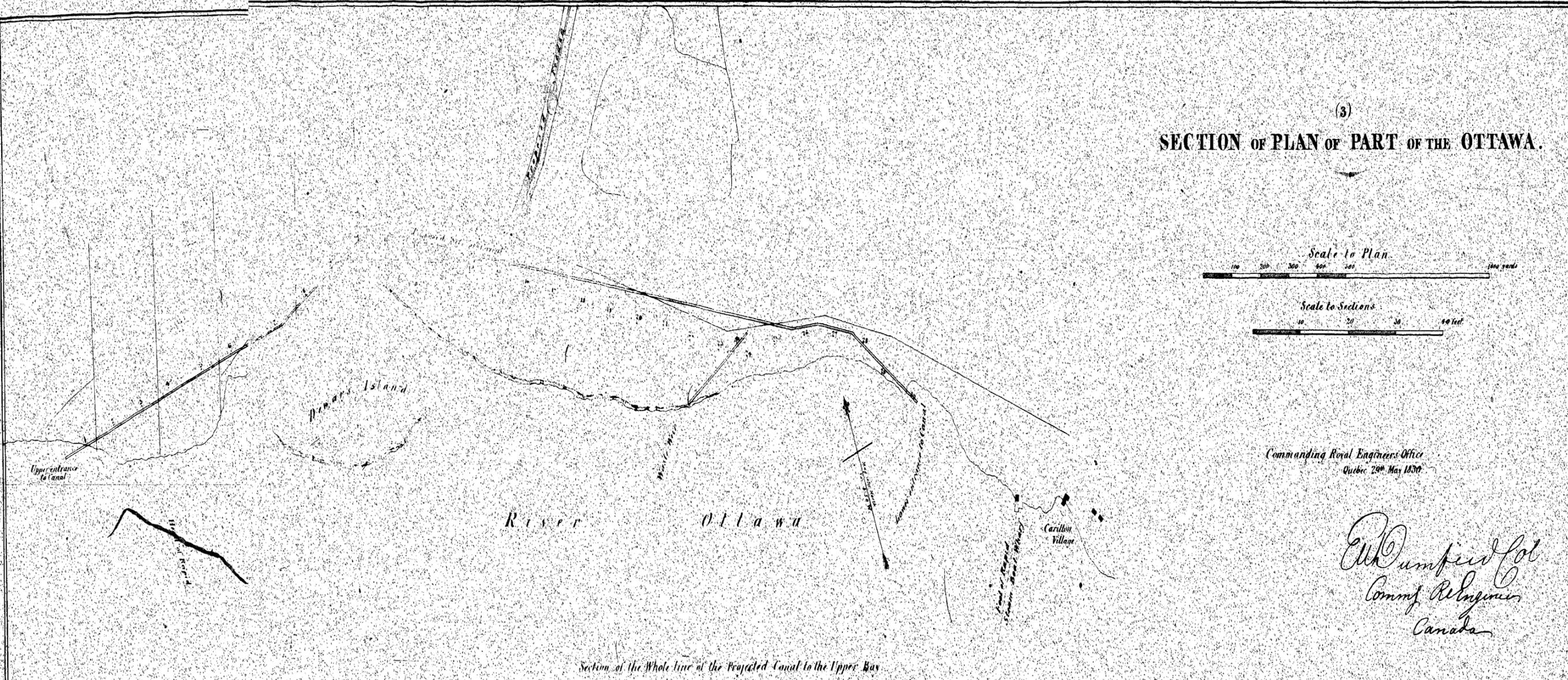
(Signed) G. D. Hall Cap<sup>t</sup> Royal Staff Corps  
H. DuVernet Lieut <sup>Colonel</sup> Royal  
Staff Corps, Commanding  
Chatham 16<sup>th</sup> May 1850.



Commanding Royal Engineers Office  
Quebec 29<sup>th</sup> May 1850.

*Wm. Dumbell Col*  
*Comd<sup>g</sup> R<sup>g</sup> Engrs*  
*Canada*

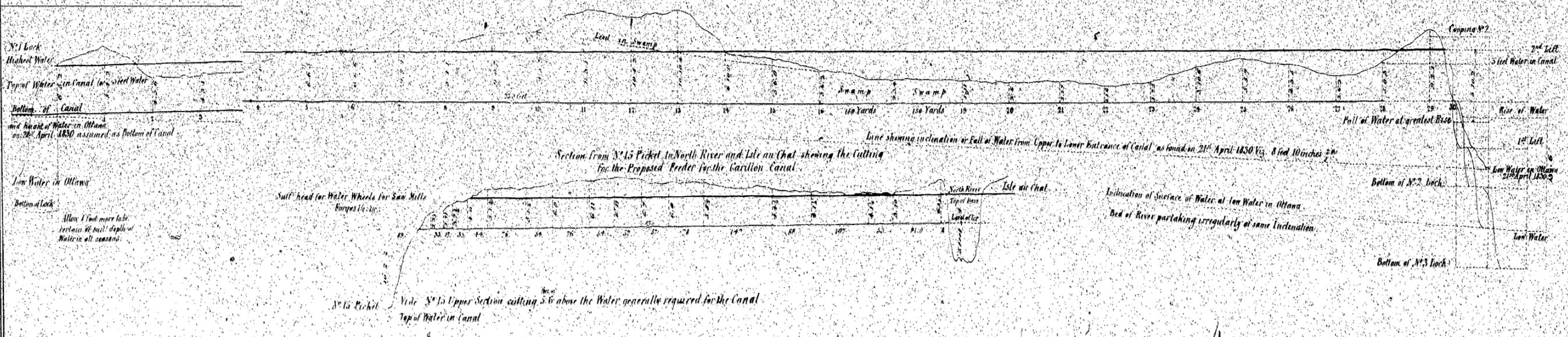
(3)  
SECTION OF PLAN OF PART OF THE OTTAWA.



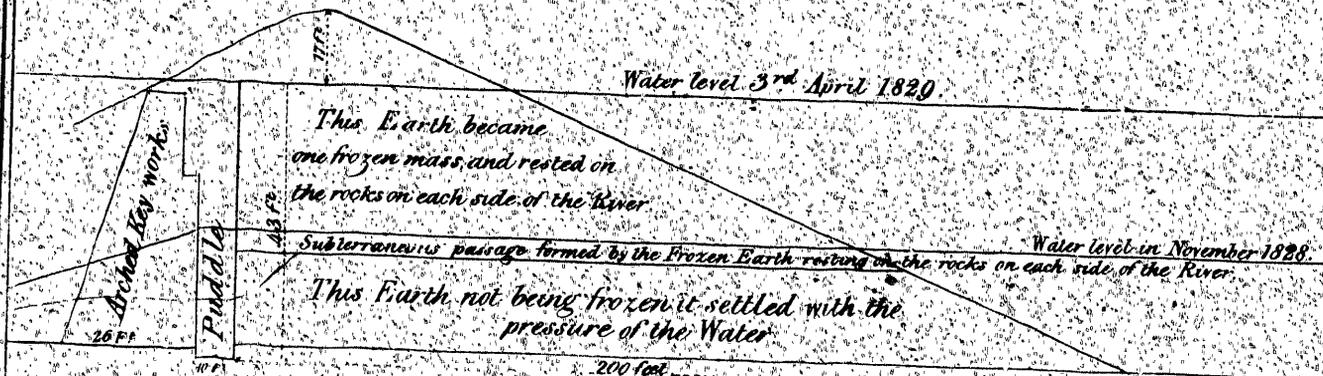
Commanding Royal Engineers Office  
Quebec 29<sup>th</sup> May 1850

*Edw. Dampford*  
Comd<sup>g</sup> R. Engin<sup>rs</sup>  
Canada

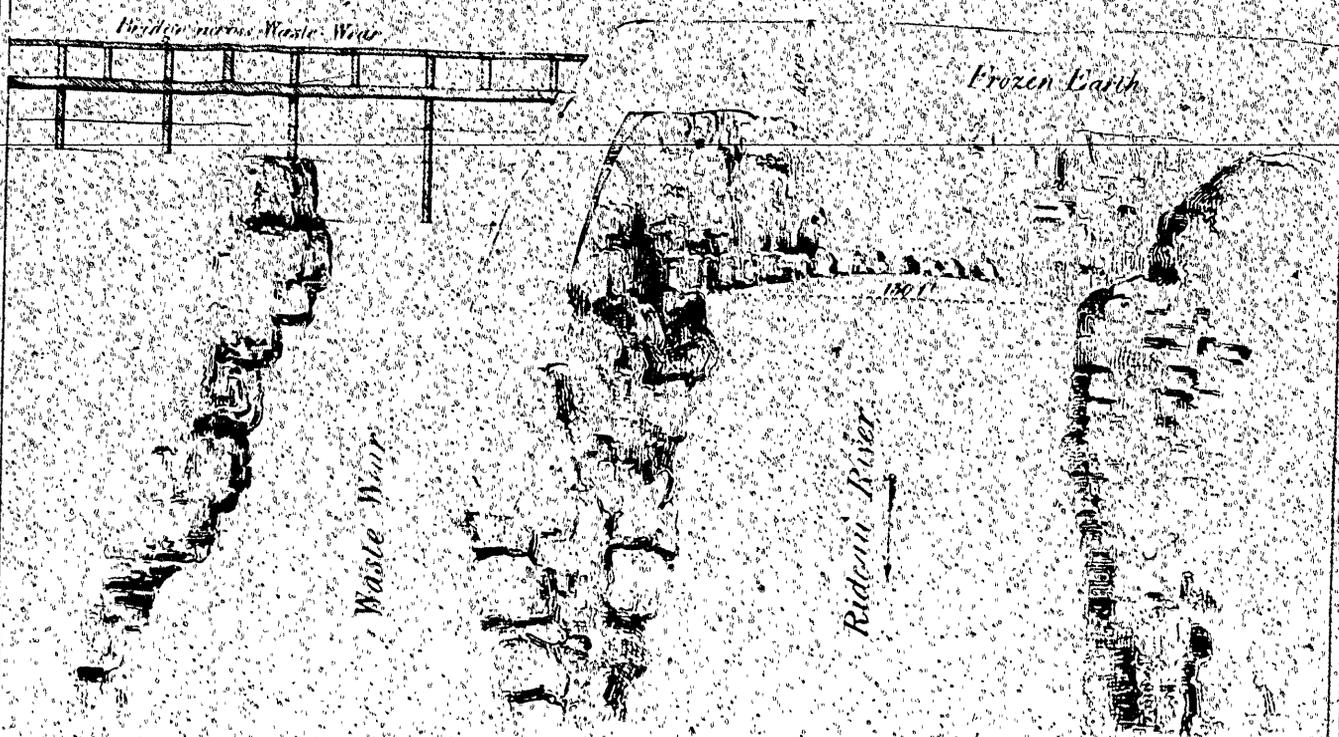
Section of the Whole line of the Proposed Canal to the Upper Bay



LONGITUDINAL SECTION

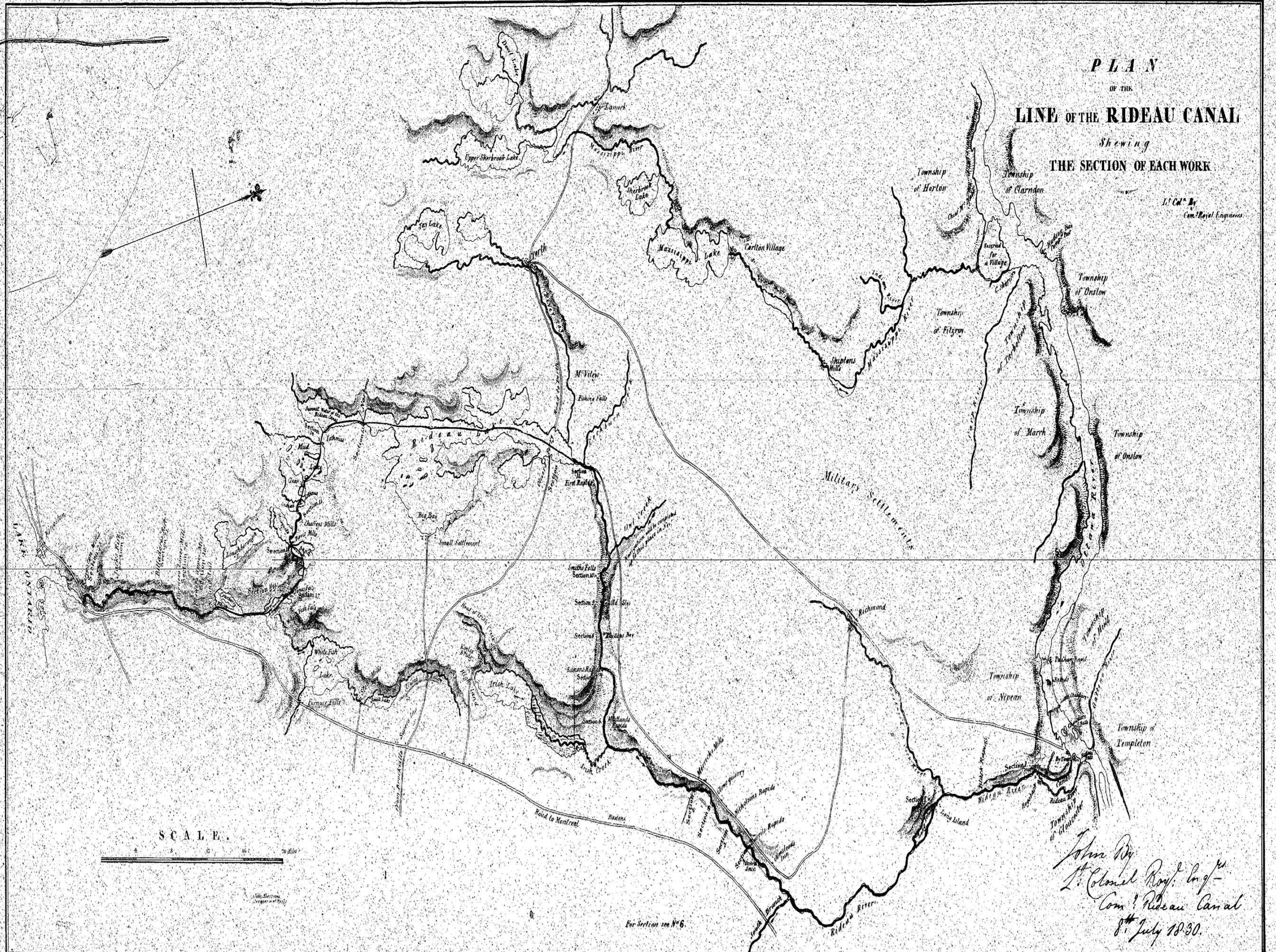


TRANSVERSE SECTION,  
Shewing the Dam after it had given way.



PLAN OF THE LINE OF THE RIDEAU CANAL Shewing THE SECTION OF EACH WORK

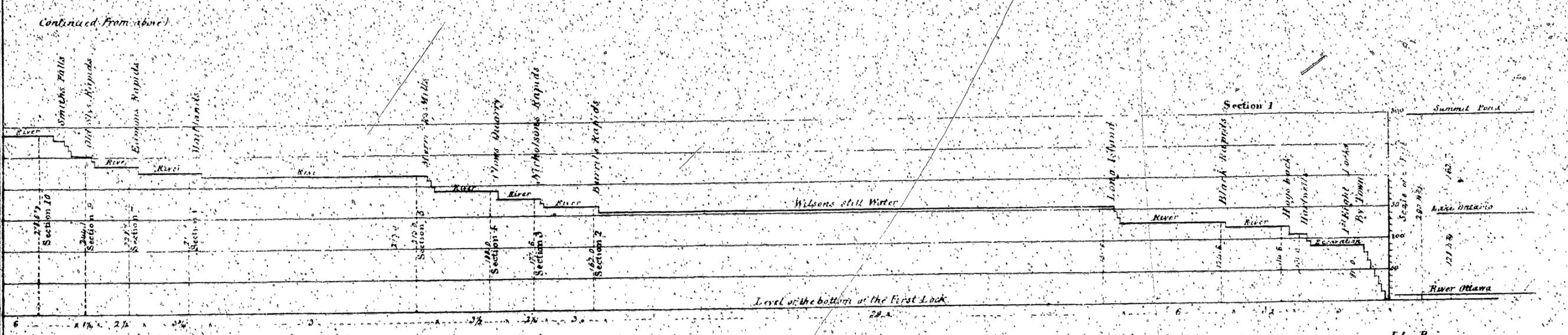
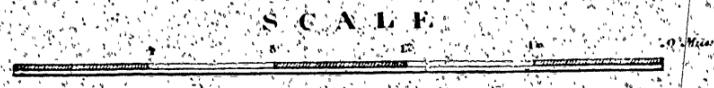
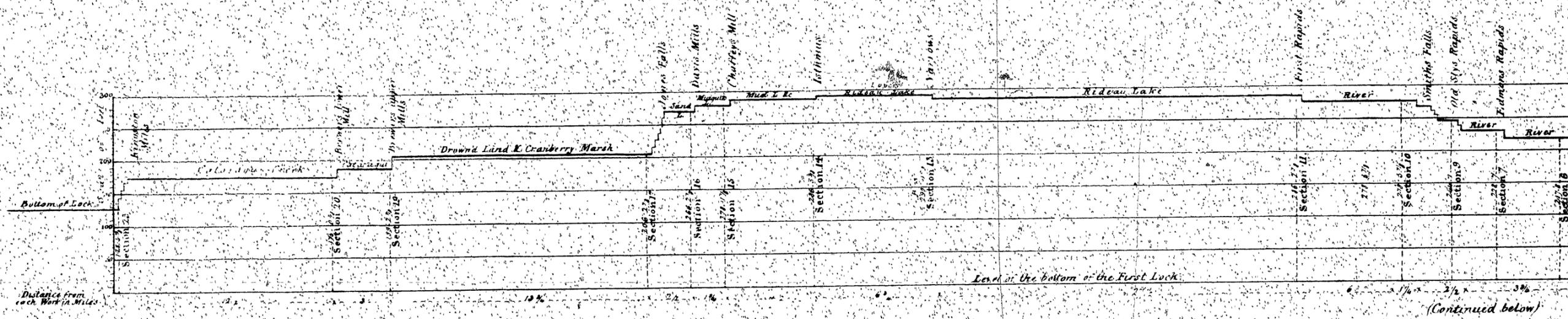
1. Col. By Com. Royal Engineers



SCALE 0 5 10 20 Miles

John By Lt. Colonel Royal Eng. Com. Rideau Canal 8th July 1830.

# SECTION OF THE LINE OF THE RIDEAU CANAL.



John By  
 Lt Colonel Roy Engineers  
 Com<sup>d</sup> Rideau Canal  
 1<sup>st</sup> July 1826