A Trip to Nova Scotia.

July, 1884.

W. J. Rich fecit.

Index

	I	II
Sigillaria	15	
Spring Hill Junction	35	
" " Mine	26	114
" " " Caucus	~~46~~ 44	
Spring Tide Bore	45	
St Andrews Mill	68	194
Steamers. Empress	76	
Forestleigh	65	
New Brunswick	4	
State of Maine	65	
Stellaton	47	
Stigmaria	15	
Stitbite	23·73	
St John	9·76	
Target Practice	62	
"Trilobites"	59	
Truro	44	
Two Islands	83	
Uniacke, Good Fields	65	199
Vale Shubrian Port	53	
Village Holet	71	
Wassons Bluff	32	
Waverly House	38	

Geological and Mining Excursion.
1884.

Part I.

Description of the Trip.

Trip to Nova Scotia.

About the middle of May 1884 a circular (circular No 1) was sent to each member of the classes of '84 and '85 taking the course in Mining or Chemistry, inviting him to be one of a party to visit the mining and mineral regions of Nova Scota, to start July 1st.

As the date of departure was somewhat late, it prevented some from joining the party, but the requisite number having answered in the affirmative, circular no 2 was sent later on, showing the places to be visited with the date, and the special attraction of the locality.

Still later, circulars no. 3 and 4 were sent, the former

Circular No 1

Mass. Inst. of Technology.
Boston, May 12. 1884.

Dear Sir:

The suggestion has been made that an excursion be arranged, to visit the mines and mineral localities in Nova Scotia and New Brunswick. to start July 1

The best data as to expense &c. that we have are from the expedition of '79, namely:- Left June 30th return July 18th cost average 53.00 each. party of 12 persons. no information is on hand as to what or the prices of board and travel have changed since that time. You are invited to join the party (provided it is organized) and you are requested to answer this invitation on or before Saturday May 17th. R. H. Richards

Enclosure No 2

Mass. Institute Technology.
Boston, June 11. 1884.

Dear Sir:

The Excursion to visit mines and mineral localities in Nova Scotia has been arranged, and will be carried out approximately as follows:—

Place.	Arrive.	Leave.	Purpose.
Boston.		Mon. June 30.	
St. John.	Tues. July 1.	" July 2.	
Moncton.	Wed. " 2.	Wed. " 2.	
Joggin's.	Wed. " 2.	Thurs. " 3.	Coal Mines & Geology.
Parrsboro.	Thurs. " 3.	Mon. " 7.	
Blomedon.	Fri. " 4.		Trap Minerals & Gypsum.
5 Islands.	Sat. " 5.		
2 Islands.	Sat. " 5.		
Partridge Is.			
Springhill.	Mon. " 7.	Mon. July 7.	Coal.
Londonderry.	Mon. " 7.	Mon. " 7.	
Acadia.	Mon. " 7.	Tues. " 8.	Limonite iron mines
Londonderry.	Tues. " 8.	Tues. " 8.	
Truro.	Tues. " 8.	Wed. " 9.	
Maitland.	Wed. " 9.	Wed. " 9.	Spring tide bore.
Truro	Wed. " 9.	Wed. " 9.	
N. Glasgow.	Wed. " 9.	Fri. " 11.	Coal Mines.
Truro.	Fri. " 11.	Sat. " 12.	
Enfield.	Sat. " 12.	Sat. " 12.	
Oldham.	Sat. " 12.	Sat. " 12.	Gold Mines.
Enfield.	Sat. " 12.	Sat. " 12.	
Halifax.	Sat. " 12.	Mon. " 14.	Glacial Markings
Windsor.	Mon. " 14.	Tues. " 15.	Gypsum & Fossils.
Middleton.	Tues. " 15.	Tues. " 15.	
Margarettville.	Tues. " 15.	Tues. " 15.	Trap Minerals.
Middleton.	Wed. " 16.	Wed. " 16.	
Annapolis.	Wed. " 16.	Wed. " 16.	
St. John.	Wed. " 16.	Thurs. " 17.	
Boston.	Fri. " 18.		

Circular No 3

Nova Scotia Excursion
June 1884.

Members of the party are advised to wear straw hats, strong old clothes and stout boots and in addition to what they carry on their backs to take:-

1 Squash hat
2 flannel shirts
2 undershirts
3 pairs drawers
Handkerchiefs
2 towels
2 night shirts
1 cake soap
1 woollen blanket and strap
1 pair pantaloons
1 pair slippers
1 ~~pair~~ rubber coat

note book
foot rule
tin dipper & spoon
bag for minerals
hammer & chisel
needle & thread
{ Chronometer & compass are will be useful.

The baggage of each member should if possible not exceed 1 hand valice and 1 blanket roll.

R.H. Richards

W. H. Niles.

Circular No 4

Nova Scotia Excursion
June 30 1884.

The party will start on the excursion to the mines and deposits of Nova Scotia on the boat leaving the end of Commercial Wharf, Boston, on Monday June 30. at 8.30 A. M.

Members of the party are requested to be on hand, 15 minutes before.

Each member of the party should hand to the undersigned the sum of $30.00 on or before Saturday, June 28 for the boat and R. R. tickets, and should come provided with the sum of $40.00 on June 30. for the other expenses of the excursion.

Special work will be assigned to every one, on each visiting day, and the members of the party are expected to make up their notes in the evening.

Each person will be expected to make out a full set of notes, in a suitable book to preserve and file away.

The objects of the expedition are to spread the reputation of the Institute and to benefit the members of the party; any thing that is feasible to further these objects should be done, while any thing that will hinder them should be avoided. We must aim to command the respect and good will of those we visit.

Robert H. Richards.
Wm. H. Niles.

Dear Sir:-

Will you please forward any mail matter you may have received for any of the persons named below to.

Mr. J. P. Adams.
Mrs. " "
Mr. G. H. Barton.
" H. V. Frost.
Everett Morss.
Prof. W. H. Niles
Mr. W. J. Rich.
J. B. Richards
Prof. R. H. Richards
Mr. N. C. Robertson
" C. Stanley Robinson.

containing a list of the baggage necessary, and the latter having the final directions about leaving.

The route of the excursion, as shown in circular No. 2, was followed very nearly, the principal exceptions being that we did not visit Blomidon, for reasons given later, and we visited Pictou and the gold region at Mt Uniacke, the two latter being additional to the circular list.

In response to circular No. 4, the party assembled Monday, June 30th, between 8 and 8.30 A.M., on board the steamer "New Brunswick" Capt David Lancing of the International line.

The party, as finally

made up, and under the charge of Prof. Richards, consisted of the following persons.

Prof. R. H. Richards Class of '68
Messrs. George H. Barton " '80
Howard V. Frost " '82
Frank B. Richards " '83
Wm. J. Rich " 84
Everett Morss " 85
Nathl G. Robinson " 85
Chas S. Robinson " 85
Mr Theo. P. Adams
Mrs " " "

Prof. Niles expected to be one of the party, but, owing to illness, he was reluctantly compelled, at the last moment almost, to abandon the scheme.

As the historian of the party did not join until the boat reached Eastport, but little, in the way of detail is

given of the journey from Boston to that place.

The steamer left Boston at 8.30 and reached Portland in the latter part of the afternoon. For a ~~great~~ part of the way, the route is quite near the land, so that a person, well acquainted with the looks of the towns that are passed by, will readily recognize the landmarks.

After passing Cape Ann, the shore is farther off, but in a clear day, Mt Washington is distinctly visible.

Portland is the largest city in Maine, having, according to the census of 1880, a population of nearly 34 000. It is reached by sailing up a harbor, past several forts, that were possibly

formidably in days gone by.

On the right can be seen Peak's island, a favorite summer resort, with a new skating rink, looking more like an enormous steam boiler than anything else.

Casco Bay, by whose shores Portland is situated, has, of course the usual number of islands - 365 - with possibly an extra one for leap year.

The boat leaves Portland at 6.00 P.M, making connections with the 12.30 trains from Boston on the Eastern and Boston and Maine Railroads. By this connections, eight hours of sea-sickness are saved to those who are thus afflicted when on the water.

Owing to fog, Eastport was not reached, until after

1 o'clock P. M. the next day. This is a town of from 4 to 5000 inhabitants, and enjoys the distinction of being the most easterly town in the United States. West Quoddy head, in the town of Lubec, is also called the most easterly point of the main land of the U. S. This is true, undoubtedly, but Eastport is on (and is) an island, slightly farther east than West Quoddy.

Several of the party went "up town" to get dinner, and one of them was the centre of attraction to all the small boys on account of his costume. They were evidently unaccustomed to knee breeches.

The principal industry of the place is fishing. It is also a centre of trade for all

the smaller islands in the bay all of which belong to the province of New Brunswick. "Russian" sardines are also put up here in large quantities. These are merely small herring.

We left Eastport at 2.15 P.M. and started in a dense fog for St John N.B. 60 miles distant. By reason of this fog, none of the scenery was observed, Occasionally a horn from some vessel was heard, and the fog horn on Point Lepreaux.

St John was reached at 6.30 PM. In going up the harbor several vessels were met, all sounding bells, Owing to the strong tide it took about one half an hour to get fastened to the wharf, the steamer backing

INTERCOLONIAL

RAILWAY

OF

CANADA.

TIME TABLE

JUNE 2nd,

1884.

THE

Inter-Colonial Railway

OF

CANADA.

Intercolonial Railway

SPECIAL NOTICES.

Trains Leaving HALIFAX at 6.05 P. M., and ST. JOHN at 10.15 P. M., arrive at PTE. LEVIS (Quebec) at 8.00 next evening, making close connections with Grand Trunk Railway, by which they reach Montreal at 6.05 the following morning, and Toronto 10.30 that evening.

☞ Express Train from Pte. Levis (Quebec), on Saturday, will run to destination on Sunday morning; and Express Trains from Halifax and St. John for Pte. Levis (Quebec), Saturdays, will remain over Sunday at Campbellton.

Passengers for Pictou and the East will leave Halifax at 7.00 A. M. by Through Express Train, and change cars at Truro.

Express Train from Pictou at 1.30 P. M. connects at Truro with Express for Halifax at 4.35 P. M., and with Express for St. John and Quebec at 8.35 P. M. Accommonation from Pictou at 4.40 P. M. also connects at Truro at 8.35 P. M , with Night Express for Saint John and Quebec.

The 5.50 A. M. Accommodation Train from Pictou connects at Truro with Trains for Halifax and St. John.

Passengers for Prince Edward Island, during the season of Navigation, will leave St. John at 7.25 A. M., by Through Express Train, changing cars at Painsec Junction.

Connections are made at Painsec to and from Point DuChene and Shediac, with Through Day Express Trains to and from St. John and Halifax.

There is no connection made at Painsec to or from Point DuChene with Night Express Trains.

Trains of the Kent Northern Railway connect at Kent Junction with Accommodation Trains leaving Campbellton at 5.50 A. M. and Moncton at 11.05 A. M.

Trains of the Cumberland Coal and Railway Co. connect at Spring Hill Junction, to and from Parsboro, with Day Express Trains to and from Halifax and St. John.

Trains of the Albert Railway connect at Salisbury Station with Accommodation Train from Pt. DuChene and with Day Express from St. John.

Intercolonial Railway

PULLMAN PALACE

SLEEPING CARS

RUN ON EXPRESS TRAINS

BETWEEN

SAINT JOHN, HALIFAX,

QUEBEC AND MONTREAL.

TARIFF BETWEEN THE FOLLOWING POINTS:

	Double Berth	Sections.
St John and Quebec.....	$3.50	$7.00
St. John and Montreal.....	4.50	9.00
Halifax and Quebec.....	4.00	8.00
Halifax and Montreal	5.00	10.00

PULLMAN SLEEPING CARS, leaving Montre on Monday, Wednesday and Friday, run through Halifax, and on Tuesday, Thursday and Saturday r through to St. John.

Sleeping Cars for Quebec and Montreal will le Halifax on Monday, Wednesday and Friday, and John on Tuesday, Thursday and Saturday.

First-Class Refreshment Rooms

—AT—

TRURO, AMHERST, MONCTON, SUSSEX, CAMPBELLTON, TROIS PISTOLES AND CHAUDIERE CURVE,

AND AMPLE TIME GIVEN FOR REFRESHMTS.

Baggage Checked to all Points in Canada and principal Points in United States.

Intercolonial Railway

THROUGH TICKETS FOR

QUEBEC, MONTREAL, OTTAWA,

TORONTO,

Niagara Falls, Winnipeg,

—AND—

ALL OTHER POINTS IN CANADA,

ALSO, TO ALL PRINCIPAL POINTS IN THE

UNITED STATES,

and during Season of Navigation for

Prince Edward Island & Cape Breton

CAN BE OBTAINED FROM

C. J. CARTEN, International Hotel Building, Hollis Street, Halifax, N. S.
GEO. PHILPS, 97 Prince Wm. Street, St. John, N. B.
JOHN RICHARDS, Fredericton, N. B.
E. JOHNSTON, Chatham, N. B.
T. LAVERDIERE, Quebec City Agent, 49 Dalhousie Street Quebec.
T. D. SHIPMAN, 32 Lewis St., Upper Town, Quebec.
GEO. W. ROBINSON, Eastern Freight and Passenger Agent, 136½ St. James Street, (opposite St. Lawrence Hall), Montreal.
R. B. MOODIE, Western Freight and Passenger Agent, 92 Rossin House Block, Toronto.
R. ARNOLD, Corner Yonge and King Sts., Toronto.
E. KING, 15 Elgin Street, Ottawa, and at the undermentioned Stations:

HALIFAX, ST. JOHN, WINDSOR JUNCTION, SHUBENACADIE, TRURO, NEW GLASGOW, PICTOU, LONDONDERRY, AMHERST, SACKVILLE, DORCHESTER, POINT DUCHENE, SHEDIAC, MONCTON, NEWCASTLE, BATHURST, DALHOUSIE, CAMPBELLTON AND SUSSEX.

INTERCOLONIAL RAILWAY OF CANADA.

General Passenger Time Table

IN EFFECT JUNE 2nd, 1884.

GOING WEST.

Trains and Connections from Halifax and St. John to Western Points.

Mls.	STATIONS.	Quebec Express.	Accom.	
0	**Halifax** .. ..D	6.05 p m		
5	Four Mile House ...	... .		
9	Bedford.	6.38 "		
14	Windsor Junction...	6.49 "		
31	Elmsdale	*7.20 "		
40	Shubenacadie.....	7.36 "		
62	Truro. (Dining-Room) A.	8.15 "		
	(Dining-Room) D.	8.35 "		
	Belmont	8.53 "		
	Debert.....	9.03 "		
	*East Mines.....	9.08 "		
79	Londonderry	9.15 "		
	[illegible]	9.43 "		
	Westchester.....	*9.54 "		
97	Greenville	9.57 "		
104	Thomson.	10.13 "		
108	Oxford	10.23 "		
111	River Phillip.....	10.30 "		
	Salt Springs..... ...*	10.38 "		
122	Spring Hill...	11 00 "		
127	Athol .....*	11.11 "		
131	Maccan	11.19 "		
	Nappan ....*	11.27 "		
139	Amherst (Din. R.) A.	.....		
	(Din. R.) D.	11 37 "		
145	Aulac	11.48 "		
148	Sackville	11.57 "		
160	Dorchester.....	12.25 a m		
	Rockland..... .....*	12.32 "		
168	Memramcook	12 42 "		
180	Painsec Junction....	1.07 "		
188	Moncton (Din. R.) A	1.25 "		
0	**St John**.....D	10.15 p m		
89	Moncton ....A	1.30 a m		
188	Moncton ....D	1.50 "	11.05 a m	
196	Berry's Mills.....	.....	11.21 "	
207	Canaan.....	.....	11.47 "	
216	Coal Branch.....	....	12.05 p m	
225	Weldford	2.59	12.28 "	
234	Kent Junction.....	.....	1.05 "	
245	Rodgersville..	.....	1.25 "	
256	Barnaby River.....	.....	1.48 "	
260	Chatham Junction...	4.10 "	2.00 "	
263	Derby	.....	2.06 "	
266	Newcastle.....	4.32 "	2.30 "	
276	Beaver Brook	.....	2.58 "	
287	Bartibogue.....	5.12 "	3.28 "	
290	Red Pine.....	.....	3.57 "	
310	Bathurst	5.59 "	4.45 "	
322	Petite Roche	6.22 "	5.19 "	
330	Belledune	6.38 "	5.43 "	
339	Jacquet River.....	6.55 "	6.10 "	
348	New Mills.....	7.13 "	6.37 "	
354	Charlo.....	7.25 "	6.55 "	
364	Dalhousie Junction..	7.45 "	7.41 "	
373	Camp'lton, (Din. R.) A	8.05 "	8.10 "	
	(Din. R.) D	8.25 "	6.30 a m	
	Moffat's.....	.....	6.53 "	
386	Metapediac.....	8.51 "	7.17 "	
396	Mill Stream.....	9.10 "	.....	
407	Assametquaghan.....	.....	8.30 "	
421	Causapscal	10.03 "	9.20 "	
434	Amqui	10.32 "	10.04 "	
442	Cedar Hall.....	.....	10.30 "	
449	Sayabec	11.03 "	11.13 "	
	St. Moise.....	.....*	11.36 "	
459	Tartague	.....	11.48 "	
469	Little Metis.....	11.47 "	12.22 pm	
473	St. Octave.....	11.55 "	12.36 "	
478	Ste. Flavie..... A.	12.07 p m	12.55 "	
	Ste. Flavie..... D.	12.12 "	1.30 "	
486	Ste. Luce.....	12.27 "	1.58 "	
491	St. Anaclet.....	.....	2.15 "	
496	Rimouski	12.47 "	2.44 "	
500	Sacre Cœur.....	.....	2.57 "	
507	Bic.....	1.13 "	3.17 "	
516	St. Fabian.....	.....	3.50 "	
526	St. Simon.....	1.47 "	4.15 "	
535	Trois Pistoles (Din R.) A	2.05 "	.. ..	
	Trois Pistoles (Din R.) D	2.30 "	4.40 "	
540	St. Eloie.....	.....	4.54 "	
545	Isle Verte.....	.....	5.10 "	
553	St. Arsene.....	.....	5.36 "	
556	Cacouna	3.10 "	5.43 "	
562	Riv. du Loup... A.	3.20 "	6.00 "	
	Riv. du Loup... D.	3.35 "	10.00 "	
568	Notre D. du Portage	*3.47 "	10.20 "	
574	St. Alexandre.....	3.57 "	10 40 "	
579	St. Andre.....	.....	10.56 "	
583	Ste. Helene.....	.....	11.08 "	
589	St. Paschal.....	4.25 "	11.27 "	
595	St. Phillippe De Ner	.....	11.47 "	
599	River Ouelle.....	4.43 "	12.00 a m	
605	Ste. Anne.....	4.57 "	12.24 "	
612	St. Roche.....	.....	12.51 "	
616	Elgin Road.....	.....	1.06 "*	
620	St. Jean Port Joli...	.....	1.20 "	
624	Trois Saumons.....	.....	1.36 "*	
628	L'Islet	.....	1.52 "	
634	L'Anse a Gile.....	.....	2.05 "*	
637	Cap St. Ignace.....	.....	2.16 "	
641	St. Thomas.....	6.12 "	2.42 "	
646	St. Pierre.....	.....	3.00 "	
649	St. Francois.....	.....	3.12 "	
654	St. Valier.....	.....	3.30 "	
657	St. Michel.....	.....	3.43 "	
663	St. Charles.....	.....	4.07 "	
671	St. Henri.....	7.13 "	4.39 "	
676	St.Jean Chrysostome	.....	4.52 "	
680	Chaud're Curve (Din. R.) A	7.30 "	5.05 "	
	Chaud're Curve (Din. R.) D	7.45 '	5.10 "	
	St. Romuald....	.....	.....	
686	Hadlow.....	7.57 "	5.38 "	
687	Pointe Levis.....A	8.00 "	5.45 "	
	Pt. Levis, G.T.R. D	8.00 p m		
	Montreal, " A	6.05 a m		
	Ottawa, Can.At. R. "	12.20 p m		
	" Can. Pac. "	12.15 "		
	Toronto, G.T.R. "	10.30 "		

{ Local Express between Ste Flavie and River du Loup will run only between June 23rd and Sept. 20th. }

Local Express.

6.10 a m
6.27 "
*6.37 "
6.47 "
*6.54 "
7.08 "
7.27 "
7.47 "
8.05 "
8.20 "
*8.30 "
8.40 "
8.54 "
9.02 "
9.10 "
9.20 "
9.33 "
9.46 "
*9.56 "
10.03 "
10.15 "
10.28 "
10.36 "
10.50 "
11.07 "
11.16 "
11.24 "
11.34 "
11.43 "
11.52 "
11.59 "
12.14 p m
12.26 "
12.33 "
12.45 "
12.52 "
1.07 "
1.25 "
*1.37 "
1.45 "
2.00 "
*2.09 "
2.12 "
2.15 "

GOING EAST.

Trains and Connections for Halifax and St. John.

Mls.	STATIONS.	Halifax & StJohn Express.	Accom.	Local Express.
	Toronto, G.T.R. D.	9.00 a m		
	Ottawa, Can. At. R.	4.50 p m		
	" Can. Pac. R	4.45 "		
	Montreal, G. T. R....	10.10 "		
0	Quebec (by Ferry) D	.....	.....	... .
0	Pointe Levis,.....	8.00 a m	6.00 p m	1.20 pm
1	Hadlow.....	8.04 "	6.05 "	1.23 "
	St Romuald.	.....	6.08 "	.....
7	Chaudiere (Din. Curve. R'm.) A.	8.16 "	.....	1.35 "
	Chaudiere (Din. Curve. R'm.) D.	8.31 "	6.20 "	1.45 "
11	St. Jean Chrysostome	.....	6.37 "	*1.52 "
24	St. Charles.....	8.47 "	7.13 "	2.03 "
30	St. Michel.....	.....	8.08 "	2.20 "
33	St. Valier,.....	....	8.20 "	2.42 "
38	St. Francois,.....	.....	8.38 "	2.53 "
41	St. Pierre,.....	.....	8.48 "	3.00 "
46	St. Thomas,...	9.41 "	9.06 "	3.10 "
53	Cap St. Ignace,.....	.....	9.29 "	3.26 "
56	L'Anse a Gile.....	....	9.40 "	*3.33 "
60	L'Islet.....	.....	9.52 "	3.40 "
63	Trois Saumons,.....	.....	10.07 "	*3.48 "
67	St. Jean Port Joli...	.....	10.21 "	3.58 "
71	Elgin Road.....	.....	10.34 "	*4.07 "
75	St. Roch..	.....	10.48 "	4.15 "
82	Ste. Anne.....,....	10.50 "	11.13 "	4.31 "
88	River Ouelle,.....*	11.01 "	11.35 "	4.43 "
92	St. Phillippe DeNeri	.....	11.47 "	4.52 "
98	St. Paschal.....	11.18 "	12.07 a m	5.04 "
104	Ste. Helene.....	.....	12.25 "	5.17 "
108	St. Andre.....	.....	12.36 "	*5.25 "
113	St. Alexandre...	.....	12.51 "	5.35 "
119	Notre D.du Portage*	11.53 "	1.10 "	5.47 "
125	Riv. du Loup... A.	12.05 p m	1.30 "	6.00 "
	Riv. du Loup... D.	12.20 "	7.20 "	6.10 "
131	Cacouna	12.30 "	7.42 "	6.22 "
134	St. Arsene,.....	.....	7.52 "	6.32 "
142	Isle Verte.....	.....	8.40 "	6.51 "
147	St. Eloie.....	.....	9 02 "	*7.03 "
152	Trois Pistoles (Din R.) A	1.10 "	.....	
	Trois Pistoles (Din R.) D.	1.30 "	9.20 "	7.30 "
161	St. Simon.....	1.47 "	9.53 "	7.48 "
171	St. Fabien.....	.....	10.29 "	8.10 "
180	Bic.....	2.23 "	11.02 "	8.30 "
182	Sacre Cœur.....	.....	11.28 "	*8.45 "
191	Rimouski.....	2.44 "	11.42 "	8.52 "
201	St. Anaclet.....	.....	11.59 "	*9.03 "
201	Ste. Luce.....	.....	12.27 pm	9.14 "
209	Ste. Flavie..... A	3.18 "	12.55 "	9.30 "
	Ste. Flavie..... D	3.23 "	1.15 "	
214	St. Octave.....	3.33 "	1.33 "	
218	Little Metis.....	3.42 "	1.48 "	
228	Tartague.....	.....	2.22 "	
	St. Moise.....*	.....	2.34 "	
238	Sayabec.....	4.24 "	2.58 "	
244	Cedar Hall.....	.....	3.23 "	
253	Amqui.	4 55 "	3.51 "	
266	Causapscal.....	5.22 "	4.36 "	
280	Assametquaghan.....	.....	5.25 "	
291	Mill Stream.....	6.15 "	6.25 "	
301	Metapediac	6.37 "	7.00 "	
	Moffats'..... ..	.....	7.25 "	
314	Campb'lton (Din R.) A	7.03 "	7.45 "	
	Campb'lton (Din R.) D	7.23 "	5.50 a m	
323	Dalhousie Junction..	7.41 "	6.16 "	
333	Charlo,.....	8.02 "	6.45 "	
339	New Mills.....	8 13 "	7.15 "	
348	Jacquet River...	8.32 "	7.45 "	
357	Belledune.....	8.50 "	8.15 "	
365	Petite Roche.....	9.07 "	8.38 "	
377	Bathurst.....	9.30 "	9.23 "	
390	Red Pine.....	.....	10.01 "	
400	Bartibogue..... ..	.....	10.30 "	
411	Beaver Brook.....	.....	11.02 "	
421	Newcastle.....	11.05 "	11.55 "	
424	Derby.....	.....	12.02 pm	
427	Chatham Junction...	11.17 "	12.13 "	
431	Barnaby River.....	.....	12.20 "	
442	Rogersville	.....	12.44 "	
453	Kent Junction.....	....	1.05 "	
462	Weldford.....	12.30 a m	1.26 "	
471	Coal Branch.....	.....	1.44 "	
480	Canaan.....	.....	2.00 "	
491	Berry's Mills.....	....	2.25 "	
499	Moncton (Din. R.) A	1.40 "	2.40 "	
0	Moncton .....D	2.20 a m	3.05 pm	
588	**St. John**.....A	5.30 "	6.45 "	
499	Moncton ....D	2.05 a m		
507	Painsec Junction.....	2 25 "		
519	Memramcook.....	2.51 "		
	Rockland.....	*3.00 "		
527	Dorchester.....	3.07 "		
539	Sackville...	3.32 "		
543	Aulac.....	*3.40 "		
548	Amherst (Din. R.) A	.....		
	Amherst (Din. R.) D	3.53 "		
	Nappan	*4.04 "		
556	Maccan.....	4.11 "		
560	Athol.....	*4.20 "		
565	Spring Hill.....	4.35 "		
576	River Phillip.....	4.58 "		
579	Oxford.....	*5.05 "		
585	Thomson.....	*5.13 "		
590	Greenville.....	5.29 "		
	Westchester.....	*5.32 "		
596	Wentworth	*5.43 "		
	Folleigh	5.52 "		
608	Londonderry.....	6.08 "		
	East Mines	*6.15 "		
	Debert.....	*6.19 "		
	Belmont	*6.28 "		
625	Truro (Dining-Room.) A	6.45 "		
	Truro (Dining-Room.) D	7.05 "		
647	Shubenacadie.....	7.53 "		
656	Elmsdale	8.12 "		
673	Windsor Junction...	8.48 "		
678	Bedford.....	8.58 "		
682	Four Mile House....	.....		
687	**Halifax**.....A	9.20 "		

{ Local Express between Riviere du Loup and Ste. Flavie will run only between June 23rd and Sept. 20th. }

GOING WEST.

Halifax to Truro, Pictou, Point DuChene and St. John.

Mls.	STATIONS.	St.John Day Express	Quebec and St. John Expr'ss	Truro Accom	Sp Hill Moncton.	Pictou Accom	Moncton Freight
0	**Halifax**.....D	7.00 am	6.05pm	4.00pm	.. ..	12.45pm	
5	Four Mile House	7.12 "	.....	4.13 "	.....	1.00 "	
9	Bedford	7.21 "	6.38 "	4.23 "	.....	1.12 "	
14	Windsor Junct'n	7.32 "	6.49 "	4.37 "	.....	1.28 "	
22	Wellington	7.50 "	....	4.58 "	.....	1.52 "	
29	Enfield	8.05 "	.....	5.17 "	... .	2.13 "	
31	Elmsdale	8.12 "	*7.20 "	5.22 "	....	2.20 "	
36	Milford	8.21 "	.....	5.37 "	.....	2.35 "	
40	Shubenacadie	8.30 "	7.36 "	5.45 "	. ...	2.47 "	
45	Stewiacke	8.42 "	.....	6.00 "	.....	3.03 "	
54	Brookfield.....	9.02 "	.....	6.23 "	.. ..	3.30 "	
62	Truro (Dining Room) A	9.20 "	8.15 "	6.45 "	.....	3.55 "	
	Truro (Dining Room) D	9.30 "	8.35 "				
70	Belmont	9.49 "	8.53 "				
74	Debert.	10.00 "	9.03 "				
76	East Mines	10.05 "	*9.08 "				
79	Londonderry	10.12 "	9.15 "				
87	Folleigh.....	10.32 "	9.33 "				
91	Wentworth	10.41 "	9.43 "				
96	Westchester.....	10.53 "	*9.54 "		Sp. Hill and Moncton Accom	{ See Pictou Branch. }	
97	Greenville....	10.56 "	9.57 "				
104	Thomson	11.13 "	10.13 "				
108	Oxford.	11.22 "	10.23 "				
111	River Phillip.....	11.30 "	10.30 "				
115	Salt Springs.....	11.39 "*	10.38 "				
122	Spring Hill	12.00pm	11.00 "		6.10am		
127	Athol	12.12 "*	11.11 "		6.27 "		
131	Maccan	12.22 "	11.19 "		6 37 "		
134	Nappan.....	12.28 "*	11.27 "		*6.52 "		
139	Amherst (D'g R'm) A	12 40 "	.....		7.10 "		
	Amherst (D'g R'm) D	1.05 "	11.37 "		7.20 "		
145	Aulac	1.18 "	11.48 "		7.45 "		
148	Sackville	1.27 "	11.57 "		8.00 "		
160	Dorchester	1.52 "	12·25am		8.45 "	St John Accom	
.....	Rockland	*1.58 "*	12.32 "		*8.58 "		
168	Memramcook.....	2.07 "	12.42 "		9.15 "		
180	Painsec Junction	2.37 "	1.07 "		10.03 "	7.20am	
188	Moncton (D'g R'm) A	2.55 "	1.25 "		10.35 "	7.45 "	{ First-class Car, Hampton to St. John. }
	Moncton (D'g R'm) D	3.05 "	2.20 "			8.15 "	
201	Salisbury.....	3.33 "	2.48 "			8.53 "	
211	Petitcodiac.....	3.57 "	3.10 "			9.23 "	
217	Anagance.....	4.08 "		Sussex Expr'ss		9.50 "	
226	Penobsquis.....	4.28 "				10.17 "	
233	Sussex (Din'g R'm.) A	4.45 "					
	Sussex (Din'g R'm.) D	5.00 "	3.58 "	30 am		10.38 "	
238	Apohaqui.....	5.12 "		6.43 "		10.52 "	
244	Norton.....	5.26 "	....	7.02 "		11.11 "	
250	Bloomfield.	5.40 "	....	7.18 "		11.28 "	
251	Passekeag	5.42 "	.....	7.22 "		11.31 "	
255	Hampton	5.50 "	4.44 "	7.32 "		11.42 "	1.30pm
260	Nauwigewauk.....	6.02 "		7.47 "		11.57 "	1.52 "
263	Model Farm.....	6.08 "		*7.53 "	.....*	12.04pm	*2.02 "
265	Quispamsis.....	6.14 "		8.00 "		12.10 "	2.10 "
268	Rothesay	6.23 "	5.13 "	8.07 "		12.20 "	2.24 "
274	Coldbrook.....	6.37 "		8.25 "		12.37 "	2.50 "
277	**St. John**.....A	6.45 "	5.30 "	8.30 "		12.45 "	3.00 "

GOING EAST.

St. John to Point DuChene, Truro, Pictou and Halifax.

Mls.	STATIONS.	Halifax Day Expr'ss	Quebec and Halifax Night Expr'ss	Sussex Expr'ss	Moncton and [illegible]	Point Du Chene Accom	Moncton Freight
0	**St. John** .....D	7.25am	10.15pm	4.35pm	.....	11.00am	5.40pm
6	Coldbrook.....	7.33 "	10.22 "	4.43 "	....	11.10 "	5.51 "
9	Rothesay...	7.50 "	10.34 "	5.00 "	.....	11.30 "	6.23 "
14	Quispamsis...	8.00 "*	10.42 "	5.10 "	....	11.41 "	6.35 "
24	Model Farm.....	*8.04 "	.. ..	*5.14 "	....*	11.48 "	*6.43 "
27	Nauwigewauk ...	8.10 "*	10.52 "	5.20 "	.....	11.57 "	6.53 "
32	Hampton.....	8.22 "	11.04 "	5.33 "	.....	12.14pm	7.15 "
36	Passekeag	8.30 "*	11.12 "	5.42 "	...	12.26 "	*7.30 "
37	Bloomfield	8.33 "*	11.14 "	5.44 "	....	12.29 "	*7.33 "
43	Norton.	8.47 "*	11.28 "	5.58 "	.....	12.48 "	*7.58 "
49	Apohaqui.	9.02 "*	11.43 "	6.14 "	.....	1.10 "	*8.24 "
59	Sussex (Din'g R'm.) A	.....	.. ..	6.25 "	.....	1.25 "	8.43 "
	Sussex (Din'g R'm.) D	9.12 "	11.53 "	....	.....	1.40 "	
61	Penobsquis.....	9.28 "*	12 11am	.....	.....	2.02 "	
70	Anagance	9.50 "*	12.30 "	....	.....	2.32 "	
76	Petitcodiac	10.02 "	12.42 "	.....	.....	2.49 "	
85	Salisbury	10.27 "	1.02 "	.....	....	3.33 "	
90	Moncton (D'g R'm) A	10.55 "	1.30 "	.....	.....	4.20 "	
	Moncton (D'g R'm) D	11.05 "	2.05 "	....	5.20pm	4.55 "	
96	Painsec Junction	11.28 "	2.25 "	.....	5.48 "	5.20 "	
99	Memramcook.....	11.53 "	2.51 "	.....	6.32 "		{ First-class Car to Sussex. }
103	Rockland.....*	12.03pm	*3.00 "	....	*6.47 "		
107	Dorchester	12.10 "	3.07 "	.....	6.58 "		
113	Sackville	12.35 "	3.32 "	.....	7.38 "		
119	Aulac	12.45 "	*3.40 "	.....	7.52 "		
124	Amherst (D'g R'm) A	1.00 "	.....	.....	8.13 "		
	Amherst (D'g R'm) D	1.20 "	3.53 "	.....	8.28 "		
132	Nappan.....	*1.30 "	*4.04 "	.....	*8.43 "		
137	Maccan	1.37 "	4.11 "	....	8.53 "		
142	Athol	1.45 "	*4.20 "	.....	9.07 "		
148	Spring Hill	2.00 "	4.35 "	.... ..	9.25 "		
153	Salt Springs..... ..	2.15 "	.....				
159	River Phillip	2.26 "	4.58 "				
167	Oxford	2.33 "	*5.05 "				
179	Thomson	2.42 "	*5.13 "				
186	Greenville..	2.58 "	5.29 "				
188	Westchester	3.01 "	*5.32 "				
192	Wentworth	3.12 "	*5.43 "				
199	Folleigh.....	3.22 "	5.52 "				
203	Londonderry.....	3.40 "	6.08 "				
213	East Mines.....	3.47 "	*6.15 "				
217	Debert	3.52 "	*6.19 "	Halifax Accom		Pictou Accom.	
221	Belmont.....	4.02 "	*6.28 "				
229	Truro (Din'g Room.) A	4.20 "	6.45 "				
	Truro (Din'g Room.) D	4.35 "	7.05 "	5 30am	.....	9.45am	
237	Brookfield	4.53 "	.....	5.50 "	....	10.08 "	
243	Stewiacke..	5.15 "	....	6.13 "	.....	10.34 "	
248	Shubenacadie.....	5.28 "	7.53 "	6.27 "	....	10.50 "	
253	Milford	5.37 "	.....	6.36 "	.....	11.00 "	
258	Elmsdale.....	5.47 "	8.12 "	6.48 "	.....	11.14 "	
263	Enfield	5.52 "	..... .	6.53 "	....	11.20 "	
275	Wellington	6.09 "	....	7.12 "	....	11.40 "	
283	Windsor Junct'n	6.26 "	8.48 "	7.32 "	.....	12.03pm	
288	Bedford	6.38 "	8.58 "	7.43 "	.....	12.18 "	
292	Four Mile House	6.50 "	.....	7.54 "	.....	12.30 "	
297	**Halifax**..... A	7.00 "	9.20 "	8.05 "	.....	12.45 "	

CONNECTIONS.

At Halifax (fortnightly) with Allan Line Steamers for Newfoundland, Queenstown and Liverpool; with Cunard Line (monthly) for Bermuda and Jamaica; and with Cromwell Line for St John's Newfoundland.

At New Glasgow, with Eastern Extension R'y, for Antigonish and Pt. Mulgrave where connection is made with steamer "Marion," on Tuesdays, Thursdays and Saturdays for St. Peters, Baddeck, and Sydney with steamer "Neptune," daily; for East Bay, and with steamer "Rimouski," for Arichat and Canso, on Mondays and Fridays. Port Hood, Chetcamp, Margaree and Mabou, on Wednesdays; and Guysboro, Tuesdays and Saturday.

At Pictou, with P. E. Island steamers on Mondays, Wednesdays, Fridays and Saturdays for Charlottetown, and on Thursdays for Georgetown, with S. S "Beaver," on Mondays, for Magdalen Islands, (calling at Georgetown and Souris, P. E I.) and on Thursdays for Port Hood and Mabou, C. B.

At Shediac with Stages to and from Cocagne and Buctouche.

At Petitcodiac with Trains of the Elgin Branch Railway.

Halifax to Pictou. PICTOU BRANCH. *Pictou to Halifax.*

Mls.	STATIONS.	Express	Accom.	Accom.	Mls.	STATIONS.	Express	Accom.	Accom.
0	**Halifax**.....D	7.00 am	12.45 pm	.....	0	Pictou (boat) D	1 30 p.m	5.50 a.m	4.40 p.m
					1	Pictou Landing	1.45 "	6.05 "	4.55 "
0	Truro.....D	9.35 "	4.40 "	5.15	7	New Glasgow....	2·13 "	6.43 "	5.24 "
4	Valley	9.45 "	4.55 "	5,30	12	Stellarton.....	2 23 "	6.58 "	5.38 "
9	Union .. ..*	10.00 "	*5.14 " *	5.47 "	18	Hopewell.....	2.35 "	7.18 "	5.58 "
13	Riversdale.....	10.10 "	5.29 "	6.00 "	24	Glengarry.....	2.50 "	7.40 "	6.22 "
21	West River.....	10.28 "	5.55 "	6.25 "	31	West River.....	3.12 "	8.05 "	7.00 "
28	Glengarry.....	10.48 "	6.22 "	6.55 "	39	Riversdale.....	3.30 "	8.26 "	7 24 "
35	Hopewell,.....	11.03 "	6.45 "	7.18 "	43	Union .....*	*3.40 " *	8.37 " *	7.35 "
40	Stellarton.....	11.15 "	7.09 "	7.40 "	48	Valley	3.55 "	8.55 "	7.52 "
43	New Glasgow....	11.30 "	7 34 "	8.00 "	52	Truro .....Ar	4.05 "	9.10 "	8.05 "
51	Pictou Landing	11.55 "	8.05 "	8.30 "					
52	Pictou (boat) Ar	12.10 pm	8 20 "	8.45 "	114	**Halifax**.....A	7.00 p.m	12.45 pm	.....

Pt. DuChene to Painsec. PT. DuCHENE BRANCH. Painsec to Pt. DuChene.

Mls.	STATIONS.	Accom.	Express	Express	Mls.	STATIONS.	Express	Accom.	Express
0	Pt. DuChene..D	6.40 am	10.45 am	1.50 p.m	0	St. John..... ...D	7.25 am	11.00 am	
2	Shediac..... ...	6.48 "	10 50 "	1.56 "		Halifax.....D	....	.....	7.00 a.m
6	DorchesterRoad	*7.01 "*	11.00 "*	2.07 "					
11	Painsec.....Ar	7.15 "	11.15 "	2.20 "	0	Painsec.....D	11.32 am	5.25 pm	2.40 pm
					5	Dorchester R'd *	11.47 "	*5.40 "	*2.55 "
107	St. John .....Ar	12.45 pm	....	6.45 p.m	9	shediac..... ...	11.57 "	5.50 "	3 04 "
191	Halifax.....	.....	7.00 pm	....	11	Pt. DuChene. Ar	12 02 pm	6 00 "	3.10 "

*TRAINS STOP ONLY WHEN SIGNALLED.

CONNECTIONS.

At Salisbury with Albert Railway for Hillsboro, Hopewell, Albert Mines and Harvey.

At Campbellton, during navigation, on Wednesdays and Saturdays with first-class steamer "Admiral," for Gaspe and way Ports on Bay Chaleur. Returning leaving Gaspe for Campbellton, and intermediate Ports at midnight Sundays and Wednesdays.

At Rimouski and Quebec, during navigation, weekly, with Allan Royal Mail Line to and from Liverpool.

At Kent Junction with Trains of the Kent Northern Railway for Kingston and Richibucto.

At Chatham Junction with Trains of the Chatham Branch Railway for Chatham.

At Newcastle with tri-weekly Stage for Derby, Blissfield, Doaktown and Fredericton. With steamers "Andover," and "Ripple," for Chatham (7 times each way daily) and for Derby, Indiantown and all points on South West Miramichi, once daily.

At Pt. Levi or Chaudiere Junction with trains of the Grand Trunk Railway for Montreal, Ottawa, Toronto, and all points in Western Canada and the United States.

At Windsor Junction, with Trains of the Windsor & Annapolis Railway for Windsor, Wolfville, Kentville, and all points in the Annapolis Valley.

At Shubenacadie with Stages for Maitland, Guy's River and Musquodoboit.

At Truro with Stages for Clifton, Black Rock and Maitland.

At Londonderry, with Stages for Acadia Iron Mines, Great Village, Economy and Five Islands.

At Wentworth, with Stages for Wallace and Tatamagouche, Daily.

At Greenville, with Mail Stages for Wallace and Wallace Bridge daily, and for Street's Ridge, Middleboro and Wallace Bay, Tuesdays, Thursdays and Saturdays.

At Thomson, with Stages for Pugwash daily.

At Springhill Junction, with Cumberland Coal & Railway Co. for Springhill Mines, Parrsboro' and Mill Village.

At Hampton, with St. Martins and Upham Railway.

An Maccan, with Stages for Joggins and Minudie.

At Aulac, with Stages for Bay Verte and Cape Tormentine.

At Riviere du Loup, with Turner's Mail Line for Madawaska, N. B.

At St. John, with Trains of the New Brunswick Railway for Fredericton, Woodstock, Houlton, Saint Andrews, Saint Stephens and Calais, and with "New England All-Rail Line" for Bangor, Portland, Boston and New York.

Also, with Steamers of the International Staamship Co., on Mondays, Wednesdays and Fridays, for Eastport, Portland and Boston.

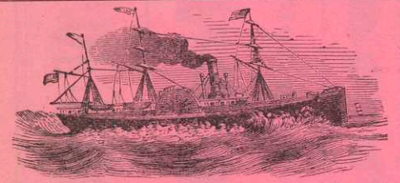
Trains of the Intercolonial Railway are run by Eastern Standard Time.

A. BUSBY, Gen. Pass. Agt., MONCTON. N. B.

D. POTTINGER, Chief Supt., MONCTON, N. B.

COLLINGWOOD SCHREIBER, Chief Eng. & Gen. Man. Gov't Railways, Ottawa

Intercolonial Railway



Steamship Connections.

Canadian European Mail and Passenger Route.

Close connections are made at Rimouski (weekly) with ROYAL MAIL STEAMERS of the ALLAN LINE to and from Liverpool, making THE SHORTEST OCEAN PASSAGE BETWEEN

AMERICA AND EUROPE

At Halifax (fortnightly) with ALLAN LINE STEAMERS to and from Newfoundland, Queenstown and Liverpool.

With CUNARD LINE (monthly) for Bermuda and Jamaica; and with CROMWELL LINE, three times monthly, for St. John's, New Foundland.

At Quebec with ALLAN and DONALDSON CLYDE LINES for Glasgow and DOMINION and BEAVER LINES to and from Liverpool.

Passengers from Nova Scotia, New Brunswick and P. E. Island for Great Britain or the Continent, taking Quebec Express, leaving St. John and Halifax, P. M., Fridays, will join Mail Steamers, at Rimouski, P. M., Saturdays.

Passengers from Montreal or the West leaving Montreal by Mail Special Saturday morning, will join Steamer at Rimouski same evening.

Fast Special Trains leave Rimouski on arrival of Inward Mail Steamers with Passengers and Mails for Quebec, Montreal, Ottawa, Toronto, Western Canada and United States, and when regular Trains do not connect, for St. John and Halifax.

Intercolonial Railway

Summer Excursions

Round Trip Excursion, Summer Tourist and Sea Bathing Tickets, to

River duLoup, Cacouna, Bic, Metis, Campbellton, Dalhousie, Bathurst, Newcastle, St. John, Fredericton, Shediac, Pictou and Halifax, and to Montreal, Ottawa, Toronto and Niagara Falls, also, to all P. E. Island and Cape Breton Points, for sale at all Outside Agencies and principal Stations of this Railway at Very Low Rates.

SATURDAY EXCURSION TICKETS

on sale at Halifax, St. John and Quebec.

The Salmon & Trout Fishing

IN THE RIVERS AND LAKES

ALONG THE INTERCOLONIAL

—IS THE—

FINEST IN AMERICA.

Intercolonial Railway.

CONNECTIONS FOR

Cape Breton Island.

Express Train leaving St. John at 10.15 p. m., and Express leaving Halifax at 7 a. m., connect at Truro with Pictou Express at 9.35 a. m., and at New Glasgow with Eastern Extension Train at 12 p. m. for Port Mulgrave.

Steamers of the Bras 'dor S. Nav. Co. leave Mulgrave daily on arrival of 3.30 p. m. train for East Bay, and on Tuesday, Thursday and Saturday mornings for Sydney.

Returning, leave East Bay for Mulgrave (in time to connect with 10.30 a. m. train) daily, and Sydney at 5.30 a. m., on Mondays, Wednesdays and Fridays for Mulgrave.

Connection is made to and from Sydney, daily, by Coach at East Bay, with Steamers to and from Port Mulgrave.

Through Tickets to all Cape Breton points for sale at all Agencies and at principal Stations of this Railway, and in Cape Breton, to all Intercolonial and connecting points by the undermentioned authorized Agents, viz.:—J. E. Burchill, Sydney; Wm. Proctor, North Sydney; Lauchlin Campbell, Baddeck; L. S. McKeen, Whycocomagh; Geo. M. Shaw, Arichat; Alex. Hawley, Mabou; J. D. Matheson, St. Peter's; G. C. Lawrence, Port Hastings; E. W. MacDonald, Port Hawkesbury, and by Thos McLeod, Port Mulgrave.

BAGGAGE CHECKED THROUGH.

Intercolonial Railway.

CONNECTIONS

—FOR—

Prince Edward Island.

Day Express leaving Halifax at 7 A. M connects at Truro at 9.35 A M. with Local Express for Pictou Landing, where connection is made every Monday, Wednesday, Friday and Saturday, with Steamers of the P. E. Island Navigation Co for Charlottetown, and on Thursdays for Georgetown.

Day Express leaving St. John at 7.25 A. M. connects at Painsec Junction with train for Point DuChene, where connection is made daily (during navigation) with Steamers of the P. E. Island Navigation Co to and from Summerside and Charlo tetown and P. E. Island Railway points.

Through Tickets to P. E. Island on sale at Principal Stations and at Agencies of this Railway and in P. E. Island, to Intercolonial and connecting points, by the undermentioned Agents of the P. E. Island Railway, viz.:—

G. A. SHARP.....Charlottetown
T. B. GRADY.....Summerside
I. H. BYRNE.....Georgetown
H. J. BROWNELL.....Souris
H. McEWEN.....Mount Stewart
D. McKINNON.....Hunter River
A. C. CLARKE.....Kensington
D. MONTGOMERY.....Alberton
W. A. McLEOD.....Bradalbane

BAGGAGE CHECKED THROUGH.

Department of Railways and Canals

CANADIAN GOVERNMENT RAILWAYS.

Intercolonial System.....840 Miles
Prince Edward Island System 200 do
Total.....1040 do

HON. JOHN HENRY POPE, Acting Minister of Railways and Canals, Ottawa.

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

INTERCOLONIAL SYSTEM.

General Officers Resident at Moncton, N. B.

D. POTTINGER.....Chief Superin'endent
P. S. ARCHIBALD.....Chief Engineer
THOS. WILLIAMS....Chief Accountant and Treasurer
H. A. WHITNEY.....Mechanical Superintendent
GEO. TAYLOR.....General Freight Agent
A. BUSBY.....General Passenger Agent
T. V. COOKE.....General Storekeeper

IN CHARGE OF DISTRICTS.

J. J. WALLACE. Truro, N. S., Superintendent Halifax and St. John District.

JAS. E. PRICE, Campbellton, N. B., Superintendent Moncton and Ste. Flavie District.

A. R. McDONALD, Riv. du Loup, P Q., Superintendent Ste. Flavie and Quebec District.

PRINCE EDWARD ISLAND SYSTEM.

General Officers Resident at Charlottetown.

JAMES COLEMAN.....Superintendent
W. T. HUGGAN.....Accountant
JOSEPH UNSWORTH, Mechanical Superintendent and General Storekeeper.

and going forward time after time.

Finally we landed, the baggage was all put ~~into~~ on a hack, in which Mr and Mrs Adams rode, and the remainder of the party walked to the Royal Hotel on King St.

After supper, most of us walked out; a band was playing in King Square, fire-works were going off in several places, and it seemed to be a general holiday. Upon inquiry we found it was "Dominion Day", the 17th anniversary of the union of all the colonies.

After breakfast the next morning, we started for the train, Intercolonial Railway, which left at 7.25 (railroad time). Standard time, we found, had not been

generally adopted in the provinces. The railroads, in adopting it, took, instead of their proper time, Eastern U.S. time, which is one hour slower than their own "Standard" time should be, and considerably slower than local time. This discrepancy between railroad and local time increased the farther east we went, and, at Halifax it was one full hour.

Our destination, as far as the railroad was concerned was Maccan, 138 miles from St John from which place we were to ride in stages to Joggins

The country through which the railroad runs is quite pretty, from a quiet

point of view, nothing being noticed that could be called "fine scenery. The houses generally seemed to be going to decay.

Mr Barton was out of the car at every station to examine the geological formation. He found the country pretty well covered by the drift. The rocks were chiefly sandstones, shales and conglomerates.

At Dorchester, 117 miles from St John is a copper mine, from which samples of the ore have been sent to the Institute. It is chiefly chalcocite.

At Sussex, 44 miles out, we were told by Prof. Richards that possibly specimens of manganese ore might be

obtained, as there was a mine a few miles away and this was the shipping station. Sometimes a heap of the ore is left by the track. Consequently, all the party left the car and hunted for specimens. One or two found some; the rest did not.

At one of the stations a quantity of wild strawberries were purchased by Mr Adams. They tasted very nice.

At Amherst, the train stopped 20 minutes for refreshments. Here the party was met by Mr. B. B. Barnhill, a former Institute man, and the Superintendent of the coal mine at Joggins.

At Maccan we left the train, and rode across the country, 12 miles to Joggins.

On the way we were shown several places where mines had been worked, but afterwards abandoned.

We arrived at Joggins about 4 o'clock, and went directly to the hotel, a small affair, located about ½ mile from the wharf. Here some of the party played ball until joined by Prof Richards and Mr Barnhill.

All then, with hammers, chisels and bags for specimens went down to the beach, and walked around it for some distance.

The cliffs here are over 100 feet high and are nearly vertical. The trend of the coast is somewhere near east and west, and the dip of the

strata is South. Hence, from the beach can be seen as complete a system of stratification as exists anywhere in the world. The dip of the strata here is about 25° S. but diminishes going toward the south.

For a long distance can this stratification be observed, making a total thickness of several miles. On the shore, where the ~~strata~~ ~~are~~ surface is worn down, can be seen projecting above the ground, specimens of sigillaria, stigmaria, calamites &c., and occasionally one is able to get, intact, a large specimen. Small ones can be taken from the beach by picking away the soft sandstone, but the large

ones are generally found up the side of the cliff. It was from this shore that the large specimen was obtained that is now in the Natural History museum (Boston). This was found by Mr Barnhill.

Prof. Dawson spent months at a time for several years on this shore, examining the formation, and it was from specimens obtained here that it was first discovered that the stigmaria was not a distinct fossil tree but was only the root of the sigillaria.

The strata here are made up of sandstone, shale, limestone and coal. A very large number of seams of coal can be seen; most of them are

very thin, and poor. The limestone is of two varieties. One kind is dark, fossiliferous and carbonaceous. It burns to a good, white lime. It is said to contain about 35 pounds of phosphoric acid to a ton of the rock, and on that account said to be good as a fertilizer.

At a distance we could see grindstone reefs. From these reefs come the well known Nova Scotia grindstones. The rock is quarried nearly to low water mark, and the detached rock is fastened, nearly at low tide, to large flat-bottomed boats floating above. As the tide rises, these stones are lifted from the bottom, and floated to the shore, where they are prepared. We did not have

time to visit the place.

Quantities of clay-iron stones (Siderite - $FeCO_3$) were found. In breaking a specimen, Prof. Richards severely crushed a finger, so much so that it did not get completely well for several weeks.

Going up the shore by the wharf, we examined the endless cable for hauling the empty cars up to the mine. This is described further on. Owing to some difficulty with the engine, the cable was not working. The first time it had been idle in working hours since first put in.

Had supper about 7.30. The food, in quality and variety was very far removed from that of the Royal Hotel.

After supper we amused ourselves as best we could until bed time. The rooms were rather small. Mine was just 7½ feet square by actual measurement, with a small window so high up that I could not see out of it.

July 3.

At about 8 o'clock we all went to Mr Bamhills' house (where Mr and Mrs Adams had found a home). After examining curiosities &c, we went to the mine. This is about 1¼ miles distant and has been opened but a short time, the old one being much nearer.

After examining the mine we went back to dinner. Four of the party preferred to ride on the coal cars instead

of walking. When nearly down a wheel broke, and every one alighted with more haste than grace. Fortunately no one was hurt.

After dinner we went again to the beach, where more specimens were collected. Then we left in two teams for Parsboro, 32 miles distant, accompanied by Mr. Barnhill.

For several miles we drove along the crest of a ridge known as the "Boa's back." This is about 50 feet high, and at different places are smaller ridges nearly parallel with it.

We reached Parsboro village about 9 o'clock, after having been informed for several miles that it was

"8 miles" away. At the village we found Prof Richards and Mr. Barnhill, who had ridden on ahead. They had met there, Mr. R. G. Leckie, the managing director of the Spring Hill mine, who extended a cordial invitation to us to visit that mine.

Our destination was the Ottawa House, at "Partridge Island" 2½ miles farther on. This hotel is owned by the Cumberland (Spring Hill) Coal and Railway Co. This Co also owns the railroad from Parrsboro to Spring Hill Junction.

We drove to the hotel aroused Mrs Pettis, the landlady who had given up expecting us, had supper and after waiting a considerable time

rooms were prepared and all gladly retired.

July 4.

Our intention had been to go to Blomidon this day; but as there was no wind, and the tide rushes by the Cape at the rate of 8 or 9 miles per hour, we were informed that the project was impossible, so we went to Partridge "island". This may at one time have been an island, but has been joined to the mainland, and is now a peninsula. The cliffs, on all sides except towards the land, are nearly perpendicular and 200 feet or more high. This island is part of an immense trap dike that extends all along the northern shore

of Nova Scotia, and

Inclosed in this trap rock are many minerals. The frosts of Winter, and the action of the waves disintegrates the rock, and masses of it fall on the beach, thus permitting one to find the minerals. Many specimens were found, mostly of stilbite, with some chabazite, acadialite and natrolite. It was a rare chance for cliff climbing, but Mr. Morse found it easier to climb up a cliff than to get down again.

After dinner was over, we went again to the island. The specimens found were more of the same sort as were discovered in the forenoon. A quantity of acadialite was

procured for blowpipe analysis.

Some of the party had pistols, and a few fire-crackers were found, and, in honor of the day, considerable noise was made. After supper some more larger practice, together with throwing the hammer (or pick), and stones was indulged in. In the evening, a caucus on the Joggins mine was held in the parlor.

Mr Barnhill left for home in the afternoon, much to our regret.

The plan of our movements was slightly changed. We decided to go on Saturday, July 5th, to the Spring Hill mine, and return the

same night. Monday we were to try to get to Blomidon, and leave for Spring Hill Junction that night. We were to stop at the Junction all night and leave on the early train for Londonderry, and the Acadia mines.

Saturday July 5.

In the morning we walked to Parsboro village. A number of the party went to the Post office to mail letters. The postmaster was making up the mail in a hurry, as the train was about starting, and we had some delay in buying stamps. At this place I found that a "dime" was only 8 cents, and our small cents were no good. The old fashioned, large cents, were however all right. I had, before

this, in St John, discovered that a quarter dollar was only 24 cents. Cause - Discount on American silver

At mine, we took the train for the mine. Mr Leckie accompanied us. Before we reached the place, it began to rain, and that rain continued, with but few intermissions until the return to the "States".

Spring Hill is a town of about 3000 inhabitants. The industry is solely in the mines. The town itself has sprung up lately, as the mines have been opened but a few years. It is, notwithstanding, one of the largest, if not the largest mine in Nova Scotia.

After a lunch, given

to us by Mr Leckie, we put on our rubber coats and started for the mine, a short distance away. Here, with Mr Leckie, Mr Hall, the underground manager, and others, we were shown over the mine.

The workings are very extensive, and there is a fine chance for a new-comer to get lost, if his lamp should go out. The mine itself is wetter than at Joggins, the latter was declared to be a model mine.

We were underground about 3 hours; after coming to day we went to the office, and were shown plans of the mine. These plans, by the colonial law, have to be drawn upon a projection, perpendicular to the plane of the horizon. This

causes a foreshortening, particularly when the dip is quite large.

After another lunch we rode back to Parrsboro in a special train, provided for us by the kindness of Mr. Leckie. We started about 6 p.m and arrived at 7.30, stopping on the way to see a tame cow moose.

We walked back to the hotel. It rained, and, the road being principally clay, was very slippery and muddy. After supper we were all glad to retire.

July 6.

As the day was Sunday, and, beside, all the party were tired from the visit to Spring Hill, we breakfasted rather late, about

half past ten. After breakfast several wrote letters.

Later in the day a caucus was held to decide on the future plans. Prof. Richard had calculated the time to see the box at Maitland, and found it to be early in the morning, at a rather inconvenient time. We wanted to go to Blomidon, and as Mr. Leckie had offered us a special train on Monday night to go to Spring Hill Junction, we decided to remain at Parrsboro over Monday and go to Blomidon, then leave Monday evening for Spring Hill Junction, spend the night there, and leave for Londonderry and the Acadia Iron Mine early the next morning. We would visit the mine and blast furnace

as quickly as possible, and take the afternoon train for Truro. Wednesday morning early we would drive to Maitland, eleven miles, to see the bore, and that night we would remain at Truro to recuperate. Thursday morning we would go to New Glasgow, and visit the Acadia and Halifax co's coal mines.

As we were a little ahead of time, the question arose what to do. Some wished to spend Sunday in Halifax, others wished to go to Pictou, and all wanted to visit the gold mines at Mt Uniacke. It was finally decided to try and do all. We could go to Pictou Friday, go to Truro again that night, and on Saturday morning, leave for Halifax, stopping over from the

morning to the afternoon train at Enfield, and visiting the Oldham gold district. We would have time to visit Mr Uniacke, and take out part of the time we had intended to spend at Windsor.

We would finally leave Annapolis for St John on Thursday July 17th.

During the remainder of the day, the members of the party walked about, and amused themselves in the best way they could, and, quite early, all retired, after making an agreement with Capt Petris to call us early enough to take advantage of the tide, and go to Blomidon

July 7.

By a misunderstanding

between standard time and local time, or for some other reason, we were called about an hour too late to go to Blomidon by the tide, and there was not enough wind to go across the current. So it was decided to go to the two islands instead.

We started about half past six. The wind was very light, so that we did not reach our destination until after eight o'clock. Distance, six miles.

We landed first at Wasson's Bluff, on the mainland, abreast of the two islands. Much red chabazite in clusters was found here, but it crumbled upon being disturbed. Some fine specimens of analcite were found by Mr Barton. Other

specimens were also found by different members of the party.

We then started for the larger island, notwithstanding the suggestion of Capt Pettis that we should land again, borrow a coffee pot, and have dinner. The wind was almost gone, and the tide was about at its turn, so that the prospect of reaching the island, though only a short distance away, was rather poor. Rowing was suggested, and by persistent efforts of Prof. Richards in insisting upon attempting to reach the island, a row boat was sent ahead to tow, and two small oars were put out in the large boat - "The Sailor Boy." On the way, we ate our lunch

thus saving precious time

Finally we reached the island. We were set ashore in the small boat on a small beach. In this place we found no minerals, but as soon as the tide was low enough, we went round to the other side of the island. Here we found some gmelinite, and analcite. A few of the specimens of gmelinite were large and fine.

The cliffs here were very rotten; one piece falling quite near me, and one portion of the beach looked as though a very large piece of the cliff had fallen only a few days before.

An eagle's feather was found by Mr Moss and presented to Prof. Richards, who carefully carried it back to his home.

Between two and three o'clock we started for the hotel. Here all hands began to pack specimens. They were to be sent in boxes by a vessel, and were left in charge of Capt. Pettis.

After 7 we rode to the village. Here we found a special train waiting for us, and Mr Leckie on hand to say "good bye" As we started, three cheers were given for him by the boys, who were on the rear platform.

The distance to the junction is 32 miles, but we did not arrive there until about 10 o'clock, since the train had to go slowly on account of the track not being fenced in, and cows were apt to walk on the track. It began to rain by the time

we started, and when we arrived at the junction it was pouring. We had only a few steps to walk to the hotel.

Here we found that a supper had been ordered for us, and after that, we were ready to retire. But all the rooms except two or three small ones were occupied. So Messrs Barton and Frost camped in the parlor and the rest of us managed to find resting places in the small rooms.

Mr & Mrs Adams had remained at Partridge Island, intending to make another attempt to get to Blomidon. So our party was reduced to eight.

Noises were, during the night, heard below, as if a fight were going on, and a man apparently

drunk, stumbled in one of the rooms, but, notwithstanding these little episodes, we slept until nearly four o'clock. We dressed, had a hasty lunch, and went to the depot. The train was due at 4.35 but was nearly an hour late

The ride from Spring Hill to Londonderry would have been very fine had it not been for the rain, which came down in torrents; as it was, it was very interesting. For a great part of the way the road was over the Cobequid Mts. and the scenery was quite picturesque. In some places the road ran through gorges and deep cuttings and here were a number of long snow sheds.

We arrived at Londonderry

at 7 A. M. Stages had been ordered to convey us to the mines three miles distant, but a car had been sent for us by the Superintendent, and into that we climbed (It was a box car) We rode on a short road, owned by the mining & furnace company, and used to connect their place with the main railroad.

At the Waverly House we found breakfast awaiting us, and that done we walked to the office of the "Steel Company of Canada - Limited" Arriving there, we found that, with the exception of the blast furnace, no work was being done that day, as all the people were going on a grand picnic, which, however was, on account of the rain, postponed.

We were given a letter

to Mr Boutilier, the superintendent of the washing house, who was about the only man available to show us the mine.

We accordingly trudged in the mud and rain to the mine. The distance seemed over 2 miles and the road was very crooked. One noticeable characteristic of the place was the number of high bridges over a small river.

When we reached the mine, Prof Richards went on a search for Mr Boutilier. He was enjoying a late nap, but very goodnaturedly dressed himself and soon appeared.

He first showed us the wash house, where the fines and the impure ore are washed. Then he was to show us into

the mine. Some empty cars at the foot of the inclined slope were brought to the top. This was done by sending down some full cars from the top which more than balanced the empty ones, the speed being controlled by a brake.

After a while we were all seated, or rather kneeling, in the cars, and were drawn into the mine by one horse. The mine here is only large enough to permit the car and horse to pass through it, so we were obliged to keep our heads quite low down. Neglect to do this gave me a small bump. After riding some distance, the car got, at a junction of two tracks, on the wrong one, and as it did not readily permit itself to move

back to the right one, and as we were only a short distance from the shaft we got out and walked. The mine was wet, bottom, top and sides. The "paint" was everywhere abundant, and whenever we touched the wall, that place was covered with the yellow limonite stains. We had all taken the precaution to wear our rubber coats.

I should have mentioned before that the mine is in a high hill; in fact it nearly makes up the hill. It has a vertical shaft sunk from the top of the hill, and adits are also driven from the side of the hill. One of these was made a passage-way for hauling out the ore, and near the mouth of it was the top

of the incline down which the cars were sent. It was in this adit that we rode, and by riding and walking, reached the shaft. Here we were lowered to the bottom, and walked a short distance to the stoping, which we examined to our satisfaction and then returned to the shaft, were carried to the top of the hill, and walked back to the wash house. On the way down the hill were seen plentiful signs of the iron ore, and also a number of shallow holes in the ground

When we returned to day we were a sorry looking party. All parts of our clothing were covered with iron rust. Fortunately there was a brook near by, and in this we washed our rubber

coats as well as possible, but still we were hardly presentable. We walked back to the hotel and had dinner.

This company owns two mines about six miles apart, the East and West mines. We visited the East mine. The other was not then being worked.

After dinner, a messenger was sent by Mr Jamme, the supt, to inform us that the blast furnace was about to be tapped. Over we went, and saw the tapping, and were shown all over the furnace, and its accessories. Wet as we were, it was pleasant to stand round the hot furnace, and on the warm sand.

At 4.20 we started on

the car to Londonderry where we were to catch a freight train for Truro. The train was due at 4.58 and was on time.

The ride to Truro was without incident. We arrived at 5.38 and went directly to the Prince of Wales hotel, kept by A.S.(?) Mackenzie.

In the evening a meeting was called in Prof Richards' room to hold a caucus on the Spring Hill mine, and for consultation.

As we were to leave for Maitland very early in the morning, it was proposed at about 9 o'clock to adjourn and finish the mine at another time. The question was put to vote.

Yea. F B Richards - Robertson and Robinson

Nay Frost - Rich.

Not voting Barlow - Moss - Prof. Richards

Adjourned.

July 9.

The party were called at about 4 o'clock. All arose except myself. It was raining hard and I had a cold and sore throat and concluded to be careful that day. So I stopped in Truro, went to the post office, and passed away the time as best I could.

It partially cleared up in the forenoon, but occasionally rained throughout the day.

The party returned from Maitland at 1 o'clock. They had seen the bore but instead of being several feet high, it was only a few inches. There was a strong Easterly wind against it, and something or other was said to be the matter with the "perigee", at least, so the party

was told.

The evening before, upon arriving at the hotel, Prof Richards had met an acquaintance, Mr. J. Fraser Torrance.

At 3.30 P.M. another Spring Hill caucus was held in the hotel parlor. This was finished at 4.15 and the Acadia Blast Furnace and mine were taken up.

July 10.

After breakfast we left the hotel and went to the depot where we took, at 9.42, the train for New Glasgow, a distance of 43 miles.

For nearly all the distance the road ran through a country with very few villages. The houses were scattered about at some distance from each

other. The country was rather undulating. Some of the hills were quite high.

At New Glasgow we were joined by Mr Whitney Conant, an Institute graduate of '68 who was there in connection with a proposed railroad.

We started for the Lorne House, where the excursion of 1879 stopped, but by some means or other found ourselves in the Royal Hotel, kept by S. G. Graham. Think the Lorne House had closed.

After dinner we started for Stellarton, 3 miles distant, accompanied by Mr Conant, and a young man, Mr. McColl, who proposed entering at the Institute in the fall. Just before the train was expected some of the party went to a photograph

saloon, opposite the hotel, to have some pictures taken, and as a consequence, came near losing the train, which was, strange to say, a little ahead of time.

Reaching Stellarton, we went first to the office of the Acadia coal mine, where an arrangement was made to visit that mine on the following morning.

From there, we went to the office of the Halifax Mining Co, formerly the Albion mine. This mine was the one where an explosion had taken place some years before, and was peculiarly interesting on that account.

We were received very cordially by Mr John Rutherford, the manager, who showed us over the premises. We looked down

the Ford pit, where the water rose within 400 feet of the top and tried to see it. It was hard work. We also saw two of the oldest locomotives in the country One of them was, I believe, the second one made, This had been in use until within a few years, The other was still in active service

We then walked to the new mine, about 1½ miles from the old, We were so late, as not to have time to enter it, but we saw their methods of handling the coal above ground, and weighing it.

We then returned (walked) to New Glasgow, where we had supper and afterwards we held a caucus on this mine, in a small parlor.

The shipping place of

this company is on the East river, 6 miles away, and is connected with the mine by a private railroad.

July 11.

At 7 o'clock we started for the Acadia mine. We went first to Stellarton as on the preceding day from here we rode 3 miles to the mine which is located at Westville. We rode on an engine. The railroad (private) has an up grade nearly all the way to the mine.

Here we were met by Mr. Johnson & Mr Maxwell, underground manager (Maxwell) and head overman (Johnson) We were taken into the mine by the shaft used by the men. It slopes 25° to 28° and is 1900 feet to the first level worked. When we got to

this level, our legs were pretty tired. By the side of the steps we could see the pump rods.

Half of the party, under the guidance of Mr Johnson, went down to the lower level while the remainder were shown the upper level by Mr Maxwell.

After examining this mine, we rode to day, and returned to Stellarton. There was no difficulty about going down as the grade, of itself, was nearly enough to allow the cars to go down by gravity.

We left Stellarton at 11.15 and rode by New Glasgow to Pictou. At Stellarton we were joined by Mr Conant who went with us to Pictou, and returned as far as Truro.

At Pictou landing we took a steamer across the harbor for the town of Pictou. This is a place of about 4000 inhabitants and was some years ago a port from which a large amount of coal was shipped to the states. Lately not so much coal has been sent. We arrived at Pictou at 12.35, although only 12 miles from Stellarton. As we stepped from the train we saw the steamer St Lawrence depart for Prince Edwards Island. At Pictou we also saw the Steamers Northern Light = a winter boat for the island route - Buena Vista - steamer for Newfoundland and other ports - Mayflower - for Halifax.

We took dinner at the Eureka House, where some tough mutton was provided. Otherwise

the dinner was very good.

At 2.15 we embarked in the two mast boat "Marquis of Lorne" - P. A. McKenzie for a sail around the harbor, and a visit to the Vale shipping port. We had a very pleasant sail, with a good breeze, good boat, and a good man to handle the boat.

At the shipping port we saw the manner in which the vessels were loaded with coal direct from the cars. The cars are run upon a platform above the wharf, and the coal dumped into chutes, that lead it into the vessel's hold.

Back to the train which left at 4.55 P.M. We rode directly to Truro, where we arrived at 8.05. On reaching the hotel we

found Mr & Mrs Adams, who had just arrived from Parrsboro, and were going to Prince Edwards Island to spend Sunday. After passing away the time as best we could, we retired.

July 12.

We were aroused soon after 4 o'clock. Ate breakfast and started for the station where we started at 5.30 towards Halifax At Enfield, 33 miles from Truro, we stopped over, engaged teams, and rode to the Oldham gold region.

We arrived at Enfield at 6.53 but had to wait until 7.30 before we could procure teams for Oldham, where we arrived at 8.20. The distance, according to our driver was 4 miles going and 2 miles

coming back." So he called it 3 miles each way. The cause of his reasoning was that going to the mine the way was almost entirely up hill, while, of course, coming back, the down grade would be driven over faster.

We were told that there was an antimony mine at Rawdon, in the same county. The outlet was Elmsdale, the station next (towards Truro) to Enfield. Rawdon, (Hants Co) was 22 miles from Elmsdale.

Arriving at a small hotel we left our extra coats, and started for the principal mines, about one mile distant. On the way we passed a small mine that was being sunk directly in the road. Upon

inquiry we found that it just about paid the wages of the man was working it.

Arriving at McDonald's mine we found no one above ground, and looked around at what we could see. Soon a man appeared, who seemed quite frightened at the sight of us. Upon being assured that we had no object except to see the workings of the mine for educational purposes, he showed us the ore as it came out of the mine, and conducted us down into the mine. The way was rather difficult, having to slide and clamber down on two poles laid about a foot apart.

The country rock here

is chiefly slate and quartzite. The chief minerals are quartz with some calcite, arsenical and copper pyrites, and also galena.

Leaving this place, we went, by a short cut across a rough country, with plenty of underbrush to another mine or rather, where another mine had formerly been worked. We were told that Mr Hardman (M.S.T. 77) was attempting to concentrate tailings from the former workings, although he was absent at the present time.

When we reached the place, Prof. Richards recognized it as the place where the party of '79 made a stay. It was then called Baker's mine and mill, and considerable work had been

done in years gone by. From the mill, the tailings, containing a great amount of mispickel had flowed out, and this, by the rains and brook had concentrated, so that the Prof thought that they would assay $10.00 to the ton. It was the further working of these tailings that Mr Hardman proposed.

Upon a great dump heap some good specimens of dog-tooth spar were found.

The mill was locked so that we could not get an idea of the way it was run.

We returned to the hotel, where we found prepared for us a dinner of salt pork (or bacon) fried, and fried eggs. After dinner we went to view the

St. Andrews' mill, run by a Mr. Schochenzee. He was away but his boy showed us as well as he could.

Upon returning to the hotel it began to shower, but soon after we started for Enfield it cleared up. We left at 4.20, and reached the station at 5 o'clock.

While waiting here, a raid was made upon a small store near the station. But nothing could be found but some raisins and "trilobites" The proprietress thought that the boys were trying to make fun of her.

At 5.52 we boarded the train and reached Halifax at 7 o'clock. We went directly to the Halifax Hotel, and had

supper.

After supper a caucus on the Acadia coal mine was held in Messrs Barton & Frost's room.

Sunday July 13.

Rained all day, as usual. A few of the party went to church, but the larger number stopped at the hotel, reading, writing letters and notes &c.

July 14.

The day was variable as regards weather. In the morning it was foggy, but cleared up later, and in the evening it rained

Most of the party went with Prof Richards to the Province building to see Mr. Edwin Gilpin Jr. government inspector

of mines. Mr Gilpin was not in at that time but we met Dr. David Honeyman, the director of the provincial museum, and an old and very enthusiastic geologist, who offered to go with us to Point Pleasant to examine the glacial markings.

The point was about a couple of miles distant, and a very pleasant walk it was, although a little muddy. The glacial striae were seen in great abundance, and were very distinct. The whole top of the hill on which they were, was covered with them. There seemed to be two sets, intersecting at a sharp angle.

Around the point, we were shown by Dr. Honeyman

rocks which he said came from Blomidon and the Cobequid mts. He said he had traced these pebbles and boulders over most of the intervening space.

Near the Martello tower a masked battery of the Royal Artillery was practicing firing at a target down the harbor. The target was 1300 yards away. We stopped a short time and watched them. Standing in range of the ball (behind the gun) we could very plainly see it in its passage.

At about 12 we returned to the hotel and had dinner. At the hotel we met a Mr Phillips, who was interested in the mining at Mt Uniacke

and who was going there the following morning.

At two o'clock we went again to the Province building to see Mr Gilpin, He was in, and showed us maps of the mining districts of Nova Scotia, and gave us considerable information about them. He also gave us quite a number of pamphlets.

He showed us into the legislative chambers, though the legislature was not in session.

After looking around the chambers for a time, we went to the Provincial Museum. Here we found Dr Honeyman, who was examining sections of stones under a microscope. On the table, among other pamphlets

and books, I noticed a copy of the latest Institute catalogue.

Dr H. very kindly showed us everything of interest in the museum. Some fine specimens of ores and minerals were collected here. Among other curiosities was a deep sea fish, a very peculiar looking creature.

We then returned to the hotel, and soon had supper. After supper, some of the boys played chess, and the rest amused themselves as best they could. Later in the evening we were again joined by Mr & Mrs Adams, who had spent Sunday at Prince Edwards Island.

Several of the party visited the citadel during the day, and

The "Land of Evangeline" Route.

1884. SPRING ARRANGEMENTS. 1884.

GOING WEST. HALIFAX TO ANNAPOLIS.

Miles.	Fares.	STATIONS.	Express Daily.	Passenger. M. W. F.	Passenger Daily.
	$ c.		A. M.	A. M.	P. M.
		HALIFAX ..... Lv.	7.20	....	2.30
1		Richmond ..... "	....	7.35	2.33
9	.27	Bedford ..... "	7.43	8.06	2.55
14	.42	WINDSOR JUNC. ..... "	8.00	8.30	3.30
17	.51	Beaver Bank ..... "	8.07	8.42	3.39
27	.81	Mount Uniacke. ..... "	8.30	9.20	4.10
37	1.11	Ellershouse ..... "	8.52	9.55	4.43
40	1.20	Newport ..... "	8.59	10.05	4.55
46	1.38	WINDSOR ..... "	9.15	11.00	5.35
48	1.50	Falmouth ..... "	9.20	11.08	5.43
53	1.65	Hantsport ..... "	9.35	11.30	6.03
58	1.80	Avonport ..... "	9.48	11.50	6.20
60	1.85	Horton Landing ..... "	9.53	11.59	6.28
61	1.85	Grand Pre ..... "	9.56	12.06	6.33
64	1.95	Wolfville ..... "	10.05	12.24	6.46
66	2.00	Port Williams ..... "	10.10	12.36	6.55
71	2.15	KENTVILLE ..... Ar.	10.23	12.56	7.10
		" ..... Lv.	10.40	1.25	
76	2.30	Coldbrook ..... "	10.50	1.40	
78	2.40	Cambridge. ..... "	10.54	1.51	
80	2.45	Waterville ..... "	10.58	2.02	
83	2.55	Berwick ..... "	11.05	2.17	
88	2.65	Aylesford ..... "	11.18	2.40	
90	2.75	Morden Road ..... "	....	2.48	
95	2.90	Kingston. ..... "	11.33	3.22	
98	3.00	Wilmot ..... "	11.40	3.35	
102	3.05	MIDDLETON ..... "	11.48	3.47	
108	3.25	Lawrencetown. ..... "	12.03	4.12	
111	3.30	Paradise.. ..... "	12.11	4.28	
116	3.45	Bridgetown ..... "	12.23	4.52	
124	3.65	Roundhill ..... "	12.43	5.25	
130	3.80	ANNAPOLIS. ..... Ar.	1.00	5.50	

N. B.—Trains are run on 75° Meridian Standard Time. One hour added will give Halifax time.

Seventeen Minutes for Refreshments at Kentville.

— Passenger Trains are Equipped with —
— WESTINGHOUSE AUTOMATIC AIR BRAKES, AND MILLER PLATFORMS.

For further information as to Fares, Routes, &c., apply to Station Agents of the Company, or to P. INNES, Genl. Manager, Kentville, N. S.

The "Land of Evangeline" Route.

1884 SUMMER ARRANGEMENTS. 1884

GOING EAST. ANNAPOLIS TO HALIFAX.

Miles.	Fares,	STATIONS.	Passengers Daily.	Passengers T. T. S.	Express Daily.
	$ c.		A. M.	A. M.	P. M.
		ANNAPOLIS ..... Lv.		5.30	1.45
6	.20	Roundhill ..... "		5.55	2.02
14	.45	Bridgetown ..... "		6.25	2.23
19	.60	Paradise ..... "		6.45	2.35
22	.70	Lawrencetown ..... "		7.00	2.43
28	.85	MIDDLETON ..... "		7.25	2.57
32	.95	Wilmot ..... "		7.43	3.07
35	1.05	Kingston ..... "		7.57	3.14
40	1.20	Morden Road. ..... "		8.17	....
42	1.30	Aylesford ..... "		8.32	3.30
47	1.45	Berwick ..... "		8.55	3.43
50	1.50	Waterville ..... "		9.10	3.50
52	1.60	Cambridge ..... "		9.20	3.55
54	1.65	Coldbrook ..... "		9.30	4.00
59	1.80	KENTVILLE ..... Ar.		9.45	4.10
		" ..... Lv.	5.40	10.40	4.20
64	1.95	Port Williams. ..... "	6.00	11.00	4.33
66	2.00	Wolfville ..... "	6.10	11.10	4.38
69	2.10	Grand Pre ..... "	6.25	11.22	4.46
70	2.10	Horton Landing ..... "	6.30	11.27	4.49
72	2.20	Avonport ..... "	6.37	11.35	4.54
77	2.35	Hantsport ..... "	6.55	11.55	5.08
82	2.50	Falmouth ..... "	7.13	12.15	5.23
84	2.55	WINDSOR ..... "	7.45	12.45	5.30
90	2.70	Newport ..... "	8.05	1.05	5.45
93	2.80	Ellershouse ..... "	8.25	1.20	5.52
103	3.10	Mount Uniacke ..... "	9.15	2.00	6.15
113	3.35	Beaver Bank ..... "	9.43	2.30	6.38
116	3.45	WINDSOR JUNC. ..... "	10.00	3.10	6.50
121	3.60	Bedford ..... "	10.15	3.25	7.02
129		Richmond ..... "	10.42	3.51	....
130	3.80	HALIFAX ..... Ar.	10.45	3.55	7.25

N. B.—Trains are run on 75° Meridian Standard Time. One hour added will give Halifax Time.

Ten Minutes for Refreshment at Kentville.

ASK FOR TICKETS

Via the WINDSOR & ANNAPOLIS RAILWAY, at the Eastern and Boston & Maine R. R. Offices at Boston; at the Maine Central R. R. Offices at Portland, Danville Junc., Bangor, &c.; on board the Steamers of the International, Nova Scotia, and New England & Acadia Steamship Co's; at Reed's Wharf, St. John, N. B.; at North Street Depot, and at 126 Hollis Street, Halifax, opposite the Halifax Hotel.

The "Land of Evangeline" Route.

1884. CONNECTIONS. 1884.

At HALIFAX and WINDSOR JUNC. with Trains of the INTERCOLONIAL RAILWAY, for Truro, Pictou, Moncton, Quebec, Montreal, Ottawa, Toronto, and for CAPE BRETON and PRINCE EDWARD ISLAND daily.
At NEWPORT with Stages for BROOKLYN daily.
At WINDSOR with S.S "HIAWATHA" for KINGSPORT and PARRSBORO'.
At HANTSPORT with S.S. "HIAWATHA" for KINGSPORT and PARRSBORO'
At PORT WILLIAMS with Stages for CANNING daily
At KENTVILLE with Stages for CANNING daily, and for CHESTER every Monday and Thursday.
At AYLESFORD with Stages for BRIDGEWATER, every Thursday.
At ANNAPOLIS, on arrival of Express Train from Halifax, as follows:

Tuesday, Wednesday, Thursday and Saturday with Steamer "EMPRESS" for DIGBY, YARMOUTH, and Intermediate Stations on Western Counties Railway.

Tuesday, Thursday and Saturday with Str. "EMPRESS" for ST. JOHN, N.B.

Tuesday, Thursday and Saturday with Str. "FRANCES" for EASTPORT, and BAR HARBOR, connecting at Mount Desert Ferry with Express Trains of the MAINE CENTRAL RAILROAD for PORTLAND, BOSTON and Intermediate Stations.

Wednesday, via Western Counties Ry and Yarmouth, with S.S. "SECRET" for BOSTON.

Saturday with S. S. "SECRET," for Boston direct.

Daily with Stages for Liverpool, N. S.

HALIFAX, N. S., AND ST. JOHN, N. B.

THE MAIL STEAMER "EMPRESS,"

LEAVES **ANNAPOLIS FOR ST. JOHN** every **Tuesday, Thursday,** and **Saturday,** on arrival of Express Train from HALIFAX, and

LEAVES **ST. JOHN FOR ANNAPOLIS** at 8 a. m. every **Monday, Wednesday,** and **Friday,** connecting at 1.45 p. m. with Express Train for HALIFAX.

TRAVELLERS and VISITORS to the MARITIME PROVINCES should avail themselves of the special inducements offered by this old established and popular Route. It is shorter than any other by 86 miles and is

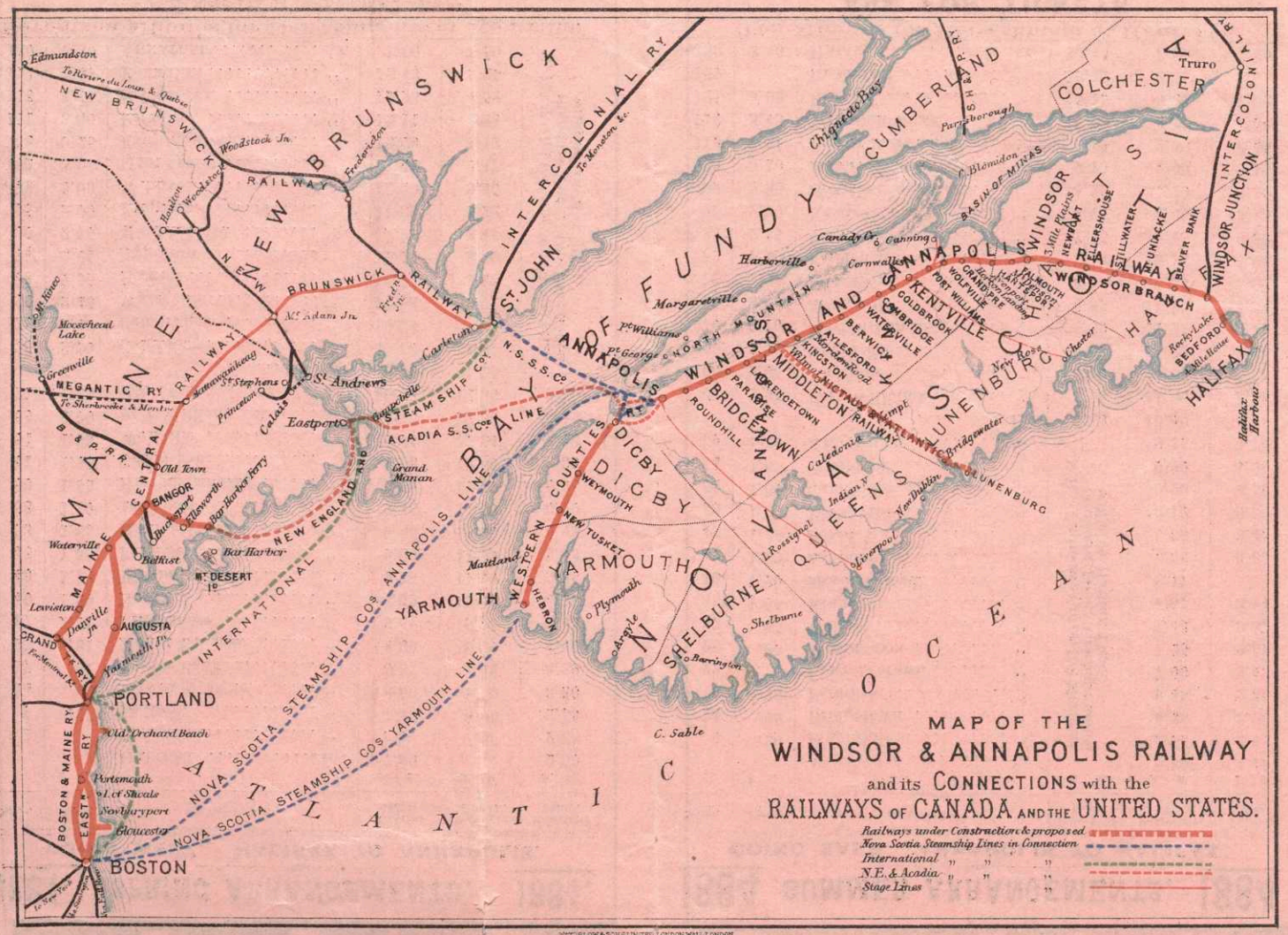
UNRIVALLED IN BEAUTY AND VARIETY OF SCENERY.

The Railway traverses the fertile and picturesque Valleys of the ANNAPOLIS and CORNWALLIS RIVERS, the widely famed "GARDEN OF NOVA SCOTIA," and the romantic and celebrated

LAND OF EVANGELINE

immortalized in LONGFELLOWS' pathetic story. The sail by Steamer down the lovely Basin of Annapolis River to Digby, and thence across the Bay of Fundy to ST. JOHN, is delightful and invigorating, and agreeably varies the monotony of the journey.

FARES BETWEEN HALIFAX AND ST. JOHN:
First Class $5.00. - - - - Return $7.50.



WATERLOW & SONS LIMITED, LONDON WALL, LONDON

TOURISTS AND VISITORS TO THE MARITIME PROVINCES in search of a Summer Excursion would do well to pass a couple of weeks amidst the exquisite scenery along the Line of the **WINDSOR AND ANNAPOLIS RAILWAY.** Starting from Halifax the Railway runs for eight miles round the lovely Bedford Basin, a magnificent sheet of water surrounded by hills, and in its azure calmness reminding one of the scenery of the Scottish lakes. At its head lies the little village of

BEDFORD

much frequented by shade-seeking Haligonians. Here there is excellent hotel accommodation and good fishing. After traversing miles of wild forest scenery we emerge at

WINDSOR

standing on a large hill, and commanding extensive views of the Basin of Minas and the neighbouring country. The oldest university in the Province. King's College, is situated here; here also is "Clifton," the late residence of the great humourist, Judge Haliburton (Sam Slick.) Just outside the town the river Avon is crossed by a fine iron railway bridge, reckoned second to none in the Dominion; and soon we enter the charmed land which every reader of Longfellow's "Evangeline" has so often seen in imagination, and longed to see in reality. We are first reminded of our whereabouts by a grand view, across the Basin of Minas, of

CAPE BLOMIDON,

and presently we draw up at a little way station and find ourselves, where—

"In the Acadian land, on the shores of the Basin of Minas,
Distant, secluded, still, the little village of Grand Pre
Lay in the fruitful valley."

Still running through the same lovely country, we pass

WOLFVILLE,

a thriving village, possessed of a college, and situated in the midst of a fertile agricultural district. Nearly all the country through which we are now travelling is protected from the high tides of the Bay of Fundy by huge dykes, mostly built by the original Acadian French. We next arrive at

KENTVILLE

where the offices and workshops of the Railway are situated. For beauty of situation and of surrounding country, and for healthful atmosphere Kentville is unsurpassed. It lies in a valley bounded by the Cornwallis River, and contiguous to the far famed "Garden of Nova Scotia." The tourist should alight here, and he will find excellent hotel accommodation, and plenty of agreeable recreation. Salmon and trout fishing may be enjoyed in season, and the gunner will find abundant game—such as woodcock, snipe, partridge, and duck—should he be here in the autumn. Soon after leaving Kentville the railway enters the valley of Annapolis, the great apple-growing country; and for miles we are enchanted by a landscape rich in cultivated and fertile magnificence and backed by the dark vendure of uncleared mountains. Passing Berwick, Aylesford and Kingston, we arrive at

MIDDLETON,

where another halt may be made. An excursion by road to the falls on the Nictaux River, and the Iron Mines, close by, offers sufficient inducements; and another day may be agreeably spent in driving over the beautiful North Mountains to the Bay Shore, visiting *en route* the Wilmot Mineral Springs, whose waters are accounted a certain cure for

"The thousand natural shocks that flesh is heir to."

Middleton is also the point of departure for the projected Nictaux and Atlantic Railway.

Resuming our journey by rail we now pass Lawrencetown, where there is salmon fishing; and crossing the Annapolis River at Bridgetown we follow its winding course through a lovely vale to

ANNAPOLIS ROYAL,

the site of the first town settled in Acadia. In this interesting old town the remains of fortifications still show signs of the many sieges to which it has been subjected. This is the terminus of the Railway, where we take the Steamer for the charming watering place of

DIGBY

or Steamers by the various Routes for St. John, N.B., Eastport, Bar Harbor (Mount Desert), Portland and Boston.

PRINTED BY JAMES BOWES AND SONS, BEDFORD ROW, HALIFAX

The "Land of Evangeline" Route.

THE WINDSOR AND ANNAPOLIS RAILWAY
AND ITS CONNECTIONS

GIVE A CHOICE OF **FIVE** DIFFERENT ROUTES

BETWEEN

NOVA SCOTIA AND THE UNITED STATES,

EACH CHEAPER, MORE ATTRACTIVE, AND MORE VARIED

Than by any other Line.

No. 1. THE ANNAPOLIS DIRECT ROUTE.

By the Nova Scotia Steamship Co's S.S. "SECRET" direct to BOSTON.

No. 2. THE MOUNT DESERT ROUTE.

By the New England and Acadia Steamship Co's S.S. "FRANCES" to EASTPORT and BAR HARBOR, connecting at Mount Desert Ferry with Maine Central R.R. Express Trains for BANGOR, WATERVILLE, AUGUSTA, LEWISTON, DANVILLE JUNC., BATH, BRUNSWICK, PORTLAND, GLOUCESTER, SALEM, LYNN, and BOSTON.

No. 3. THE YARMOUTH ROUTE.

By S. S. "EMPRESS" to DIGBY, and Western Counties Railway to YARMOUTH, thence by the Nova Scotia Steamship Co's. S.S. "SECRET" to BOSTON.

No. 4. THE ST. JOHN & INTERNATIONAL ROUTE.

By S. S. "EMPRESS" to ST. JOHN, N. B., thence by the International Steamship Co's Steamers to EASTPORT, PORTLAND and BOSTON.

No. 5. THE ST. JOHN AND ALL RAIL ROUTE.

By S. S. "EMPRESS" to ST. JOHN, N. B., thence by the Express Trains of the Provincial and New England All Rail Line to DANVILLE JUNC., PORTLAND and BOSTON.

THE WINDSOR AND ANNAPOLIS RAILWAY Express Trains leaving HALIFAX at 7.20 a. m. and Intermediate Stations at the times shown on Time Tables herein, will make connections at ANNAPOLIS as follows:

TUESDAYS	" "FRANCES"	" MOUNT DESERT ROUTE.
"	" "EMPRESS"	" ST. JOHN & INTERNATIONAL ROUTE.
"	" "	" ST. JOHN & ALL RAIL ROUTE.
WEDNESDAYS	" and "SECRET"	" YARMOUTH ROUTE.
THURSDAYS	" "FRANCES"	" MOUNT DESERT ROUTE.
"	" "EMPRESS"	" ST. JOHN & INTERNATIONAL ROUTE.
"	" "	" ST. JOHN & ALL RAIL ROUTE.
SATURDAYS	" "SECRET"	" ANNAPOLIS DIRECT ROUTE.
"	" "FRANCES"	" MOUNT DESERT ROUTE.
"	" "EMPRESS"	" ST. JOHN & INTERNATIONAL ROUTE.
"	" "	" ST. JOHN ALL RAIL ROUTE.

Baggage Checked Through by all Routes.

The "Land of Evangeline" Route.

To Tourists and Travellers.

The following NEW, SHORT, CHEAP, and PICTURESQUE ROUTES Via THE WINDSOR AND ANNAPOLIS RAILWAY, between

NOVA SCOTIA AND THE UNITED STATES

Are now open.

THE ANNAPOLIS DIRECT AND YARMOUTH ROUTES.

THE NOVA SCOTIA STEAMSHIP COMPANY'S

Thoroughly Equipped and Commodious Steamer,

Will leave ANNAPOLIS and YARMOUTH for BOSTON as follows:
"SECRET" every **Saturday** p. m. from Annapolis Direct.
"SECRET" " **Wednesday** p. m. " Yarmouth.

RETURNING;

Will leave Lewis' Wharf, BOSTON for ANNAPOLIS, as follows:
"SECRET" every **Friday** at 8.00 a. m. for Annapolis Direct.
"SECRET" " **Tuesday** " " Annapolis via Yarmouth.

FARES BETWEEN BOSTON AND

	Via ANNAPOLIS DIRECT.		Via YARMOUTH.	
KENTVILLE	Single $6.25,	Return $11.50	Single $7.25,	Return $13.50
WINDSOR	" 6.75,	" 12.50	" 7.75,	" 14.50
HALIFAX	" 7.50,	" 14.00	" 8.50,	" 16.00

And principal Intermediate Stations at corresponding reductions.

THE MOUNT DESERT ROUTE.

The New England and Acadia Steamship Company's

Splendid Iron Side-wheel Steamer

"FRANCES"

Will leave ANNAPOLIS every **Tuesday, Thursday** and **Saturday** p. m. after arrival of Express Train from Halifax.

for EASTPORT, BAR HARBOR, and MOUNT DESERT FERRY,

where connection is made with MAINE CENTRAL R.R. Express Trains.

for BANGOR, WATERVILLE, AUGUSTA, LEWISTON, DANVILLE JUNCTION, BRUNSWICK, BATH,

PORTLAND, GLOUCESTER, SALEM, LYNN and **BOSTON**.

RETURNING;

Will leave MOUNT DESERT FERRY every Monday, Wednesday & Friday p.m. after arrival of EASTERN and MAINE CENTRAL R.R. Express Trains from BOSTON, PORTLAND and Intermediate Stations.

for BAR HARBOR, EASTPORT and ANNAPOLIS,

where connection is made with WINDSOR & ANNAPOLIS Express Trains for MIDDLETON, KENTVILLE, WOLFVILLE, WINDSOR, HALIFAX, and Intermediate Stations.

FARES BETWEEN BOSTON AND PORTLAND AND

	BOSTON.		PORTLAND.	
KENTVILLE	Single $7.25,	Return $13.50	Single $6.75,	Return $12.50
WINDSOR	" 7.75,	" 14.50	" 7.25,	" 13.50
HALIFAX	" 8.30,	" 16.00	" 8.00,	" 15.00

And principal Intermediate Stations at corresponding reductions.

The "Land of Evangeline" Route.

THE ST. JOHN & INTERNATIONAL ROUTE.

THE INTERNATIONAL STEAMSHIP COMPANY'S

Magnificent Steamers

"STATE OF MAINE" AND "NEW BRUNSWICK"

Will leave ST. JOHN, N. B. at 8.00 a.m. every **Monday, Wednesday and Friday** for EASTPORT, PORTLAND and BOSTON, and

RETURNING:

Will leave Commercial Wharf, BOSTON, at 8.00 a. m. on same days for ST. JOHN, N. B., where connection is made with S. S. "EMPRESS" for ANNAPOLIS, and thence by WINDSOR & ANNAPOLIS RY. Express Trains for KENTVILLE, WINDSOR, HALIFAX, and Intermediate Stations.

FARES BETWEEN BOSTON AND PORTLAND AND

	BOSTON.		PORTLAND.	
KENTVILLE	Single, $7.25,	Return, $13.50	Single, $6.75,	Return, $12.50
WINDSOR	" 7.75,	" 14.50	" 7.25,	" 13.50
HALIFAX	" 8.30,	" 16.00	" 8.00,	" 15.00

And principal Intermediate Stations at corresponding reductions.

THE ST. JOHN AND ALL RAIL ROUTE.

THE PROVINCIAL & NEW ENGL'D ALL RAIL LINE'S

Fast Express Trains will leave ST. JOHN, N. B. daily at 6.30 a.m. & 8 p.m. (Except Saturday evenings and Sunday mornings)

for BANGOR, DANVILLE JUNCTION, PORTLAND and BOSTON.

RETURNING;

will leave BOSTON daily at 9 a.m. for ST. JOHN, N. B., where connection is made at 8.00 a.m. on Mondays, Wednesdays and Fridays for ANNAPOLIS, and thence by WINDSOR AND ANNAPOLIS RAILWAY Express Trains for KENTVILLE, WINDSOR, HALIFAX, and Intermediate Stations.

FARES BETWEEN HALIFAX AND

BOSTON $12.00. — — — — PORTLAND $10.50.

PASSENGERS for NOVA SCOTIA and the MARITIME PROVINCES

Leave **BOSTON** as follows:

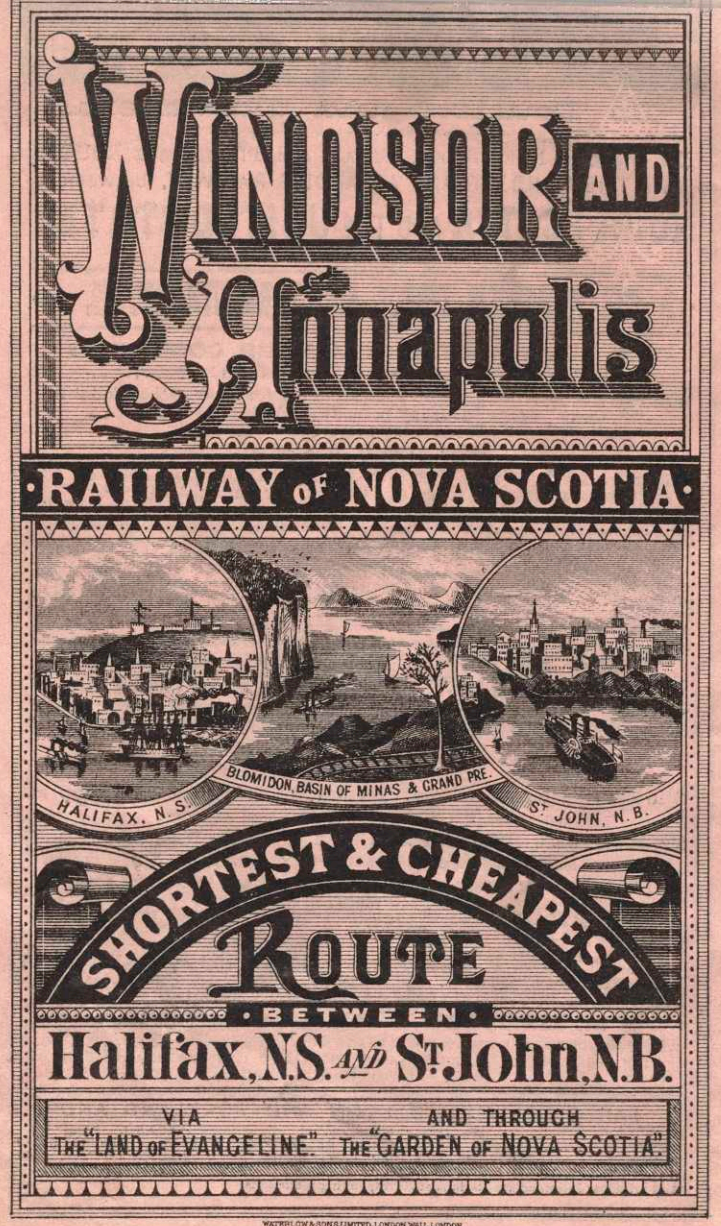
to connect with WINDSOR & ANNAPOLIS RAILWAY Day Express Trains.

Mondays,	from East'n or B. & M. Stations	at 9 a. m.	via MOUNT DESERT ROUTE.	
"	" Commercial Wharf	" 8 a. m.	" ST. JOHN & INTERN'L ROUTE.	
Tuesdays,	" E. or B. M. Stations	" 9 a. m.	" ST JOHN & ALL RAIL ROUTE.	
"	" Lewis Wharf	" 8 a. m.	" YARMOUTH ROUTE.	
Wednesdays,	" E. or B. M. Stations	" 9 a. m.	" MOUNT DESERT ROUTE.	
"	" Commercial Wharf	" 8 a. m.	" ST. JOHN & INTERN'L ROUTE.	
Thursdays,	" E. or B. M. Stations	" 9 a. m.	" ST. JOHN & ALL RAIL ROUTE.	
Fridays,	" " "	" 9 a. m.	" MOUNT DESERT ROUTE.	
"	" Commercial Wharf	" 8 a. m.	" ST. JOHN & INTERN'L ROUTE.	
"	" Lewis Wharf	" 8 a. m.	" ANNAPOLIS DIRECT ROUTE.	
Saturdays,	" E. or B. & M. Stations	" 9 a. m.	" ST. JOHN & ALL RAIL ROUTE.	

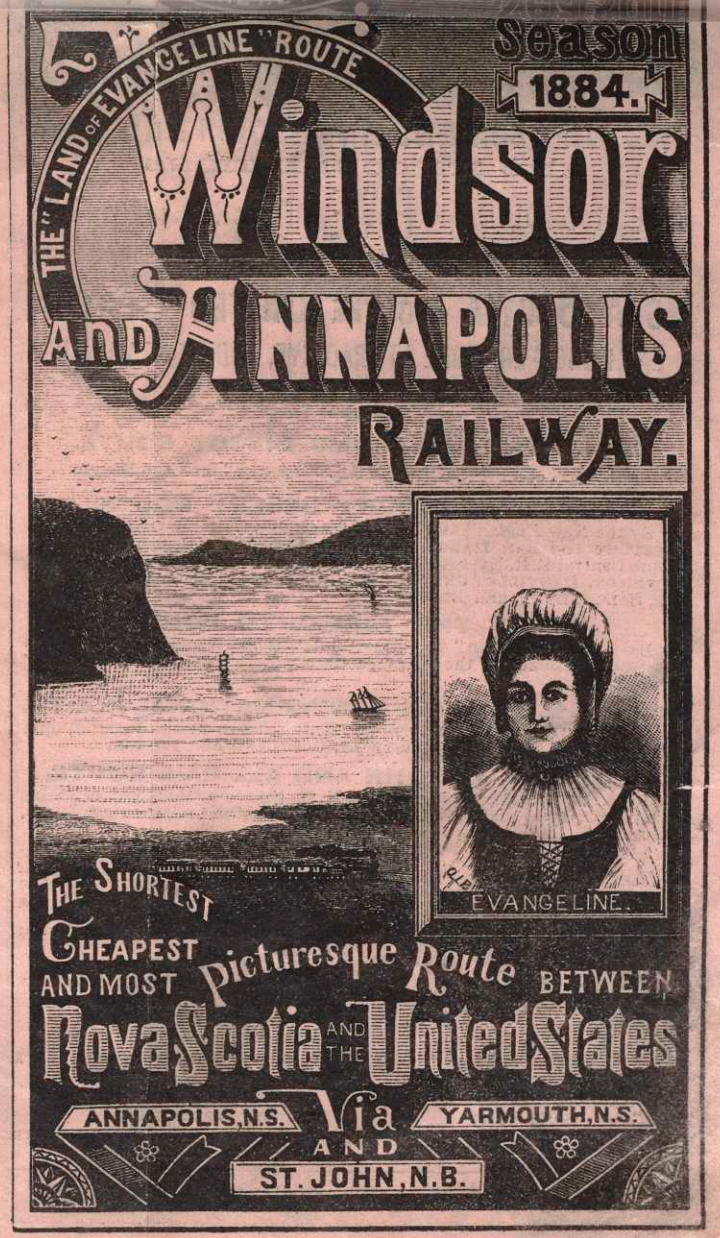
COME AND SEE THE GARDEN OF NOVA SCOTIA.

LIST OF HOTELS AND BOARDING HOUSES
ON THE LINE OF THE
WINDSOR & ANNAPOLIS RAILWAY.

PLACE.	NAME.	PROPRIETOR.	TERMS. pr. Day	TERMS. pr. Week.
HALIFAX	"Halifax,"	H. Hesslein & Sons,	$2.00	Agree't.
	"International,"	A. Nelson	1.50	$6.50 to $9
	"Waverley,"	Misses Romans	2.50	Agree't.
	"Acadian,"	F. Gastongnay	1.25	$7 to $10
	"Royal,"	D. C. Stuart	1.25	$5 " $7
	"Mansion,"	Edward Harris	1.50	"
	"Albion,"	P. P. Archibald	1.25	"
	"Globe,"	Mrs. M. E. Colwell	1.25	"
BEDFORD	"Claremont,"	H. B. Sellon	1.00	7.00
	"Belle Vue,"	T. Beech	1.50	10.00
MT. UNIACKE	"Uniacke,"	W. Clements	1.00	5.00
NEWPORT	"Newport,"	W. Gibson	1.50	5.00
WINDSOR	"Victoria,"	John Doran	1.25	7.00
	"Clifton,"	John Kilcup	1.25	5.00
	"Avon,"	John Cox	1.25	5.00
	"Somerset,"	Mrs. O'Shaughnessy	1.25	6.00
	"Delmonico,"	Mrs. H. A. Crowel.	1.25	5.00
HANTSPORT	"American,"	E. W. Dalton	1.25	5.00
	"Hantsport,"	James Wall	1.25	5.00
HORTON LANDING.	"Dunedin Cottage	W. A. Curry.	1.50	10.50
	"Brookside House	Thos. Tuzo	1.25	6.00
WOLFVILLE	"Acadia,"	E. D. Bishop	1.50	6.00
	"Wolfville,"	H. D. Farrell.	1.50	6.00
	"American,"	John Harris	1.25	5.00
PT. WILLIAMS	"Port Williams,"	M. A. Orr	1.00	5.00
CANNING	"Waverley,"	A. B. Baxter	1.50	6.00
KENTVILLE	"Kentville,"	James Lyons	1.50	Agree't.
	"Revere,"	Mrs. W. Redden	1.00	"
	"Porter,"	Rufus Porter	1.25	"
	"Lyon's."	Jos. R. Lyons	1.50	"
	"American,"	Jas. MacIntosh	1.50	"
WATERVILLE	"Waterville,"	Ambrose Burke	1.00	4.00
BERWICK	"Clifton,"	G. W. Eaton	1.00	4.00
	"Murphy's,"	C. Murphy	1.00	4.00
AYLESFORD	"Aylesford Hotel,	John Franey	1.25	8.00
	"Aylesford House	D. Corbin	1.00	6.00
KINGSTON	"Kingston,"	F. H. Northup.	1.25	6.00
MIDDLETON	"Middleton,"	C. C. Dodge	1.00	6.00
	"American,"	D. Feindel	1.50	7.00
	"Morton's,"	James Morton	1.50	6.00
LAWRENCETOWN	"Elm House,"	J. H. McLeod	1.50	$5 to $7
BRIDGETOWN	"Revere,"	Mrs. Russell	1.25	6.00
	"Grand Central,"	W. J. Glencross	1.25	5.00
	"Bridgetown,"	J. R. Buckler	1.00	4.00
	"Chute's,"	Mrs. A. M. Chute	1.50	5.00
ANNAPOLIS	"Hillsdale,"	E. Ryerson	2.00	$5 to $10
	"Dominion,"	A. H. Riordan.	1.50	Agree't
	"American,"	W. McLelland	1.50	$5 to $7
	"Foster,"	D. McLelland	1.25	$4 to $7
	"Commercial,"	H. Salter	1.25	$4 to $7
DIGBY	"Myrtle House,"	J. Morrison	2.00	$7 to $10
	"Royal Hotel,"	J. Daly	1.50	5.00
	"Digby"	J. Smith	1.50	$5 to $7
	"Shorts"	Mrs. Short	1.50	$5 to $7
	"Burnham's"	Mrs. Burnham	1.25	6.00



WATERLOW & SONS, LIMITED, LONDON WALL, LONDON



Mr Frost attempted to go on board of a German man-of-war in the harbor, but could only get the answer "bad time - come tomorrow".

Sunday we heard of the loss of the steamer "State of Maine" on which we were planning to go from St John Prof. Richards telegraphed to see if any steamer would sail on that day (Friday next) and received an answer that the Forest City would make the trip.

July 15th

Up bright and early. Had breakfast and left Halifax at 7.20 for Mt Uniacke (or Uniacke as it is called here) Windsor, & Annapolis by the Windsor and Annapolis Railway. We arrived at Uniacke

at 8.30, accompanied by Mr Phillips, left the train, and rode in poor wagons over detestable roads to the mines. The distance was said to be 3 miles, but it took us an hour and a quarter.

Before dinner we visited a stamp mill (Foster's) The day was rainy and the walking poor, but the distance was not long. The mill seemed to be managed in a very rough way.

Near the hotel was the Montreal mine, which we examined. This mine is all open to day.

For dinner we had about the same fare as at Oldham except that some of the pork was boiled.

After dinner we visited

the Eugene mine, in which Mr Phillips and Mr R.M. Davidson (whom we met at Unalaska) were interested. This mine is entered by a vertical shaft. We went down on ladders, changing from one ladder to another at every 20 feet or so. The rounds of the ladder were wet and very cold. After clambering around in the mine for some time we returned to day, (or "on deck" as it was called there). Here we were shown some very fine specimens of quartz with free gold scattered through. Some of the party attempted to buy some of these specimens but Mr. Davidson would not sell, although he gave Prof. Richards one of the finest.

We returned to the hotel and started for the depot in

time to take the train at 4.10. It still rained.

At 4.55 we reached Windsor and engaged rooms for the night at the "Clifton" kept by John Kilcup. After washing, we had supper, and then sailed for the wharves to see if we could find good specimens of gypsum. The first heap we saw, we looked over, but were soon told by a gentleman passing by (Mr. Charles Howard) that this heap had been lying there for some years, and that much better specimens could be found farther on. So we proceeded to that wharf, and were soon tumbling over the big lumps. Some good specimens of celestite were found, but no ulexite. We then went to the shore to hunt after fossil shells. A large number were found

in one stratum. Back to the hotel, where a caucus was held on all mines not before reported. Then to bed.

Wednesday July 16.

Finished breakfast at 7.45. All baggage was packed, and made ready for the train. The party then started for an old, abandoned gypsum quarry, about one half a mile away.

We had not time to see any one of the quarries that was being worked, as these were situated several miles away, and, by reason of staying over Monday at Halifax, and visiting Uniacke, we had cut our time at Windsor to just stopping over night and seeing what we could.

We found the old quarry with a quantity of water, but man-

aged to see tolerably well how the work had been done. Holes were drilled into the plaster, and a blast fired. This brought out the material in large lumps. It was then broken up by hand hammers.

Back to the hotel, and depot, where we took the train at 9.20. Checked our baggage for Annapolis, but kept our blankets, as it was possible we might need them.

From here, for some distance we rode in the "Land of Evangeline". We couldn't help knowing it, as we saw the statement all around us, even on the Railway time-table. At a stop between Grand Pré and Wolfville, I got out and picked some cat-o-nine-tails to take home

but forgot them, and left them at Margaretville.

We reached Middleton at 12. A telegram had been sent for a dinner and conveyances to Margaretville. We had dinner at the American House, D. Trindel proprietor. Afterwards we departed in two teams for Margaretville, 9 miles distant. The road was over the North mountain to the shore of the Bay of Fundy. The drive was a long one (pm 1 to 2.50) as because of the large amount of rain, the roads were miserable, very muddy.

At Margaretville there are two small hotels. We drove first to the Village Hotel, and the Professor went in to inquire about rooms. There was quite a party there already, and they could ac-

commodate but two; so Messrs Moss and Richards stopped there. Then to the Margaretville house, where there were two vacant rooms, one with two beds in it. Messrs Robinson and Robertson took the single-bedded room, while the Professor, with Messrs Barton Frost and myself, found quarters in the other. A compliment was here paid to our sex by the landlady, who said she had rather put up twenty men than one woman.

We went directly to the beach. Margaretville (at St. Peters Point) is a small fishing village on the shore not quite half way from Blomidon to Digby. The same trap formation as at Blomidon is here found, but the cliffs instead of being 600 feet high, are only about 30. We went to the south

of the lighthouse. Here we found much white stilbite, heulandite and a fine piece of agate was chipped from the rock by Mr Robinson. After going as far as practicable we returned to the hotel and had supper.

After supper, a quantity of small bags were made for specimens to take back for future blowpipe work at the Institute. Mr Frost went also on a tour of exploration to some small schooners lying at the wharf.

Thursday. July 17.

We arose at 5.15 as we wished to still farther explore the coast, and get back to Middleton in time to take the noon train for Annapolis.

Because of the late heavy rains, a great many

small cascades were falling over the bank. Standing in the hotel doorway, seven or eight of these could be counted.

After breakfast, we started for the beach north of the lighthouse. A boat was hired in order to bring back specimens if found in any quantity; also to help us around the cascades, which, at that stage of tide, forbade walking by without getting wet.

We found fine specimens of white stilbite, laumantite, and apophylite, especially the latter; of these, the best were found about one half mile north of the second cascade. This cascade was about abreast of the church.

When we started back we found the boat aground; be-

there by the ebb tide. We pushed it afloat, and finally arrived at the hotel, where we packed our minerals.

At 9.45 we started for Middletown. The roads were even worse than the day before, if that were possible; and, as the road was half up hill, and then down, we didn't reach the station until 11.35.

At 11.55 the train came along, and we started for Annapolis where we arrived at 1 P.M. The road runs through what is called the "Garden of Nova Scotia" and it is a very beautiful ride on a pleasant summer day. The whole distance (and also the boat ride to Digby) is in the Annapolis valley, between the South mountain on one side and the North mountain

on the other. These are from six to ten miles apart and the latter shuts out the fogs that are such a nuisance in the bay of Fundy.

From the train we went directly on board the steamer "Empress" of the N. S. S. S. Co. Here we had dinner and left Annapolis at 1.45 for Digby and St. John. We reached Digby at 3. and were joined by Mr & Mrs Adams who had come there the day before. We then passed through Digby gut into the bay of Fundy, and headed for St John. The bay was remarkably smooth and the passage fine, although the boat was rather slow. At 6.30. a shower came up, but lasted only a few minutes. At 7.10 we reached St John, went to the Royal Hotel and had sup-

per.

At 5.05 on the Empress, a caucus was called to finally settle up all accounts, and to calculate expenses. These amounted to a little over $50.00, the amounts varying.

Friday, July 18th.

We were called at 6 o'clock, had breakfast and packed for the last time. Then to the steamer "Forest City" Capt. Colby. chartered by the International Steamship Co. to take the place of the State of Maine. Here good-bye was said to Messrs Morss and Richards who were to stay for a time in St John.

Left at 7.45. The day was pleasant, the water was smooth and a delightful sail was the result, (although rather slow) At 9.45 we passed Point Lepreaux where

the State of Maine had gone ashore. We stopped for a time and took on board some of that steamer's property.

About noon we reached Eastport where I left the party. The rest remained by the boat and arrived safely in Boston the next morning where they separated.

"All's well that ends well"

Arrivals and Departures.

	Arrived	Left	Hotel.
Boston		June 30. 8.30 AM	
St John	July 1. 6.30 P.M.	July 2 7.25 AM.	Royal Hotel
Maccan	" 2. 1.37 P.M	" 2 2.00 P.M.	0
Joggins	" 2. 4.00 P.M.	" 3. 3.30 PM.	— —
Parrsboro	" 3. 9.00 P.M.	" 5. 7.00 A.M.	Ottawa House
Spring Hill Mine	" 5. 10 AM (about	" 5. 6.00 P.M	0
Parrsboro	" 5. 9.00 PM	" 7. 6.00 A.M.	Ottawa House
Two Islands	" 7. 1.00 P.M.	" 7. 2.30 P.M.	— 0
Parrsboro	" 7. 4.30 P.M.	" 7. 7.00 P.M.	Ottawa House
Spring Hill Junction	" 7. 10.00 P.M.	" 8. 5.30 A.M	?
Londonderry	" 8. 7.00 A.M.	" 8. 7.00 A.M.	0
Acadia	" 8. 7.30 A M	" 8. 4.20 P.M.	Waverly House
Londonderry	" 8. 4.45 P.M.	" 8. 5.00 P.M.	0
Truro	" 8. 5.38 P.M.	" 9. 5.00 A.M.	Prince of Wales
Maitland	" 9. 7.00 A.M.	" 9. 11.00 A.M.	0
Truro	" 9. 1.00 P.M.	" 10. 9.42 A.M.	Prince of Wales
New Glasgow	" 10 11.40 A.M.	" 10. "after dinner"	Royal Hotel
Halifax Mine	" 10 ?	" 10 ?	0
New Glasgow	" 10 ?	" 11. 6.43 A.M	Royal Hotel
Stellarton + Acadia Mine	" 11 6.58 AM. (Stel)	" 11 ?	0
Stellarton	" 11. ?	" 11. 11.15 A.M	0

	Arrived	Left	Hotels
Pictou	July 11. 12.10 P.M.	July 11. 4.50 P.M.	Eureka House
Truro	" 11 8.05 P.M.	" 12. 5.20 A.M.	Prince of Wales
Enfield	" 12. 6.35 A.M.	" 12. 7.30 A.M.	0
Oldham	" 12. 8.20 A.M.	" 12. 4.20 P.M.	—
Enfield	" 12. 5.00 P.M.	" 12. 5.32 P.M.	0
Halifax	" 12. 7.00 P.M.	" 15. 7.20 A.M.	Halifax Hotel
Mt Uniacke Station	" 15. 8.30 A.M.	" 15. 8.30 A.M.	0
" " Mine	" 15. 9.45 A.M.	" 15. 2.40 P.M.	—
" " Station	" 15. 4.00 P.M.	" 15. 4.10 P.M.	0
Windsor	" 15. 5.35 P.M.	" 16. 9.15 A.M.	Clifton
Middleton	" 16. 11.48 A.M.	" 16. 1.00 P.M.	American
Margaretville	" 16. 2.50 P.M.	" 17. 9.45 A.M.	Margaretville House + Village House
Middleton	" 17. 11.35 A.M.	" 17. 11.55 A.M.	0
Annapolis	" 17. 1.00 P.M.	" 17. 1.45 P.M.	0
St John	" 17. 7.10 P.M.	" 18. 7.45 A.M.	Royal Hotel
Boston	" 19.		

Distance Table

Boston to Portland	110 miles
Portland to Eastport	190
Eastport to St John	60
St John to Maccan	146
Maccan to Joggins	14
Joggins to mine & return	3
Joggins to Partridge Island (Pawsbro)	32
Partridge Island to Spring Hill Mine & rt.	58
" " " 2 islands and return	12
" " " Spring Hill Junction	34
Spring Hill Junction to Londonderry	43
Londonderry to Acadia Furnace & mine and return	12
" " Truro	17
Truro to Maitland and return	24
" " New Glasgow	43
New Glasgow to Halifax Mine and return	7
" " " Stellarton	3
Stellarton to Acadia Mine and return	6
" " Pictou	12
Pictou to Truro	52
carried forward	878

Brought over	878 miles
Truro to Enfield	33
Enfield to Oldham and return	7
" " Halifax	29
Halifax to Mt Uniacke	27
Uniacke to mine and return	6
" " Windsor	19
Windsor to Middleton	56
Middleton to Margaretville and ret	18
" " Annapolis	28
Annapolis to St John	61
St John to Eastport	60
Eastport to Portland	190
Portland to Boston	110
Total	1522

Daily Weather Report

Monday June 30. Pleasant. Foggy at night.

Tuesday July 1. Cool, with a very thick fog.

Wednesday July 2. Warm and pleasant all day.

Thursday July 3 Pleasant and warm all day.

Friday July 4 Pleasant, Hot, and calm.

Saturday July 5. Showery during the day. Occasionally the sun would appear, when it would be warm. In the evening it poured.

Sunday July 6 Rained in showers during the forenoon, but cleared up in the afternoon.

Monday July 7. Clear and pleasant during the day. Began to shower about 6 P. M, and two or three hours

later poured hard and so continued.

Tuesday July 8. Rained all day somewhat intermittently, but over half of the time.

Wednesday July 9. Rained hard in the morning. Showered at intervals throughout the day.

Thursday July 10. Rather pleasant, but slight showers occasionally.

Friday, July 11. Quite pleasant, with the exception of one slight shower.

Saturday, July 12. Sunny in the forenoon. Thunder shower in the afternoon.

Sunday, July 13 Rained all of the day.

Monday, July 14 Rained about all day.

Tuesday July 15 Rained most of the day, cleared off somewhat

in the afternoon.

Wednesday July 16. Pleasant all day. A slight shower, of only a few minutes duration, in the latter part of the afternoon.

Thursday, July 17. Pleasant.

Friday July 18 Pleasant.

Summary.

Rainy days (including those with slight showers)	12
Pleasant days	5
Foggy "	2
Total	19
Pleasant days with exception of slight showers	4

From the "Eastern Chronicle"
New Glasgow, N.S. July 10, 1884

A Visit of the Students of Mining and Engineering from Boston, Mass.

A party of the students of Mining and Engineering from the Massachusetts Institute of Technology of Boston is now visiting the Provinces of New Brunswick and Nova Scotia.

While Boston is admirably adapted to further the cause of literary and scientific education from its many facilities, fine libraries, &c. It is found necessary for the mining students that they should have some outside experience in addition to the school training to complete and round out their course in mining. The Provinces are admirably adapted to give them an insight into the mining of the great variety of deposits here to be found. Coal, iron, gold, gypsum, manganese taken together with the great geological and mineralogical advantages offer an unusual combination for study and investigation.

The Massachusetts Institute of Technology was founded in 1865. It has been graduating classes in Engineering each year since 1868. General Francis A. Walker, well known for his work on the United States Census and his work on Political Economy, is President of the School, and under his management the School is growing very rapidly, and apparently filling an important place in the education of the youth of the country.

The party has visited the Joggins, where they were hospitably entertained by Mr. B. B. Barnhill, the Manager of the Mining Company. They then visited the Spring Hill Mine, with its wonderful show of coal "in sight." Here every facility was placed at their disposal, both in the Mine and on the railroad, through the kindness of Mr. R. G. Leckie.

The party are now anticipating pleasant and profitable trips to Cape Breton, Londonderry, New Glasgow, Oldham, Umacke, Windsor, Margaretville and Halifax.

Notices similar to the above also appeared in the St John Telegraph, the Halifax Herald, Windsor News and Pictou Times.

Part II.

Description of Mines visited.

When a mine was to be visited, one of the party was appointed Captain for the day. A papyrograph sheet, of which a copy is given below was handed to him, and assignments of subjects were made by him.

In the following description, the assignments will be designated by the number, instead of the full name, of the subject, except when, as occasionally happened, special subjects had to be prepared.

Copy of Circular.

"The captain of the day will assign subjects to the party. He will keep with the showman, and when any subject is being examined, the assignee must be at hand to ask questions and take notes.

1. Geology of the deposit, relation of the hills, ridges and valleys to the coal, general trend, strike, dip, thickness

list of strata and formations above and below the main bed, with thickness; other workable seams, their character, most noticeable characteristics fossils.

2. The seam, section, slate bands, holing ply, character of roof and floor, potholes, mode of attacking the face, i.e. above or below first, or all to-gether.

3. Shafts, levels, rooms, pillars boom, dimensions, sketch.

4. Hoisting; face of room to level, level to shaft, shaft to surface, surface to rail-car, amount hoisted per day, coal burnt in doing it, total cost per day, per month.

5. Sorting; in the room, on the surface, washing, coal breaker, disposition of slack, cost of mining per ton, per month.

6. Cost of drifting, of driving levels,

of driving rooms, per ton of coal mined, by contract or by day; How are these contractors inspected and followed up. Cost of getting to market, New York, Philadelphia, Baltimore.

7. Draining, Pumping: kind of pump, dimensions, steam cylinder, water cylinder, height of lifts, coal burnt per ton or per gal. of water lifted, total height of lift, total cost of lifting water per day, per month. Amount lifted per day.

8. Ventilation, motor, form, dimensions, coal burnt per day, rate, velocity of air, quantity of air, area ventilated, cost per day, per month, number of men ventilated, fire damp, inspection, division of current, guards against accidents.

9. Men, number of grades, pay

to each, average of a contractor, supervision, measuring or weighing inspecting.

10. Lamps, kinds, pits, cost per man, per mine, per month, for the mine, guards against dangers from each.

11. Timbering, kind used, life of it, cost per room, cost per mine, per month, per ton.

Joggins Coal Mine.

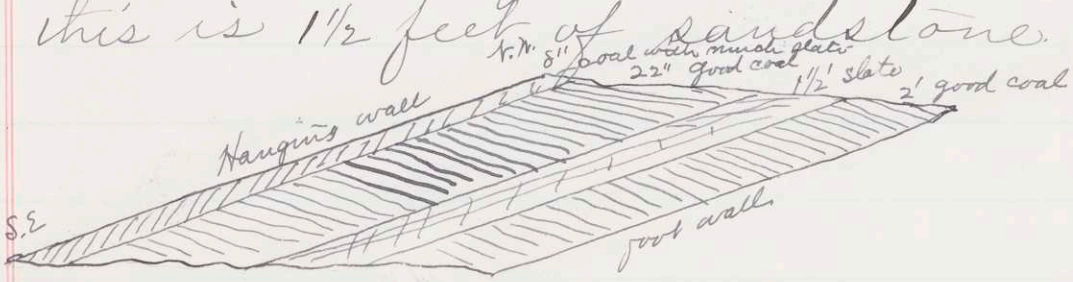
Captain of the day - Robinson who made the following assignments.

1. Geology.	Barlow.
2. Seam, section &c.	Morss.
3. Shafts.	Robertson.
4. Hoisting.	Richards
5. Sorting.	Rich.
6. Cost of drifting	Frost.
7. Draining	Richards.
8. Ventilation.	Robinson.
9. Men.	Robinson.
10 Lamps.	Morss.
11 Timbering	Rich.

The strike of the strata is N. 65° W. The dip is at right angles to this, or S. 25° E. The slope of the strata has no effect upon the topography of the surrounding country, as the surface is

entirely covered by drift.

The thickness of the coal seams is 5½ feet, and within this is 1½ feet of sandstone.



Formations above.

Above the coal seam are alternations of ~~limestone~~ sandstones, shales, small seams of coal or carbonaceous shale, of which some are quite rich, while others are quite poor. Also two kinds of limestone, one variety being very carbonaceous, containing nearly 50% of carbon; and besides these are some small thin veins of conglomerate.

Formations below.

The formations below the coal seam are very much like

those above, and are principally sandstones and shales.
There is another workable seam about 2000 feet (stratigraphically) below the Joggins seam. This has been worked.

The coal is bituminous and of very good quality. It contains quite a large percentage of pyrites, so much as to render the coal unsuitable for making of illuminating gas.

The fossils found are principally sigillaria, stigmaria, calamites and various ferns.

The seam consists of first 3½ feet of coal. Second, 1½ feet of sandstone and 3rd 2 feet more of coal. Above the coal is about one foot of soapstone. The upper part of the coal for about 8 inches is poor, being intersected by slate

bands, the middle is good, and the bottom again poor. There are none, or very few potholes in the roof. In the old mine, now abandoned, considerable trouble was made by potholes.

Mode of Attack.

In the rooms the miners work "with the grain" of the coal. They undercut first, propping up the coal to prevent it coming down too quickly, and when enough undercutting has been done, they knock out the props and all the coal falls down.

In the back balances they work across the grain, and it is more difficult to get out the coal. The miners first undercut and then pick down the coal. No powder or blasting of any kind is used in the coal

but only in the sandstone.

The slope of the seam is 17½°. The main slope shaft is 14 feet wide from wall to wall, and 12 feet clear. From the hanging wall to the foot wall is 8 feet in the clear.

The shaft was built by contract, the management paying, for the coal, 35 cents for every car of 1600 lbs, and, besides this, $4.00 per running yard. The contractors furnished everything. The track was laid as the work progressed. The shaft is 1328 feet deep. At the foot of the slope, levels are run both ways, and back balances are driven from these levels, up the slope.

The hoisting is done by a double cylinder engine. By this means, dead centres are avoided.

The length of stroke is 36 inches, and the diameter of the cylinder 18 inches. The shaft is geared to the hoisting drum at the centre of the drum. On the drum the teeth are of wood, and on the shaft of iron or steel. The diameter of the drum is eleven feet; this drum revolves once while the shaft revolves three times.

The cable was made by Wright Brothers, Manchester England. It is of galvanized steel, one inch in diameter, and weighs 2.39 lbs per foot. It is made by a patent process, and is so made that each strand is supposed to bear an equal strain. Its length is 1350 feet.

Four cars are drawn up at once. The average weight of the car is 750 lbs, and of the coal 1700 lbs is generally loaded on one car. This

makes the total weight to be drawn up 9800 lbs. To partially counterbalance this load is the weight of the four empty cars going down.

The amount of coal lifted per day varies according to the sale For the first 18 days of May, the quantity averaged 100 tons per day.

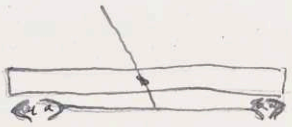
The cost of this was $1.12 per ton, delivered on board the vessels. The price per ton is, however, greater when a smaller amount of coal is mined.

At the head of the slope shaft, the coal is dumped into cars that convey it directly to the wharf. The wharf is about 1¼ miles from the mine, and on a lower grade. Between the two is laid a track whose average inclination from the mine is a little more than one degree.

The cars sometimes contain 4500 lbs of coal, and move from the mine to the wharf by the force of gravity, the speed being controlled by a brake. They are drawn up to the mine by an endless cable, at a rate of about four miles per hour.

The cable is made of galvanized steel wire, 3/4 of an inch in diameter, it is 2 1/2 miles long. The pulley at the mine, around which the cable passes is arranged so as to clutch the cable tightly when it bears on the pulley, and thus prevent its slipping.

On the cars is arranged a clutch to catch hold of the cable. The clutch is made in this way. It is placed at one

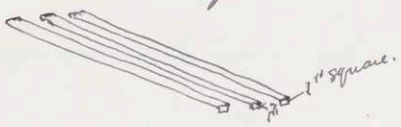


end of the car, and in the space a are placed pieces of broken pick handles, renewed as often as necessary.

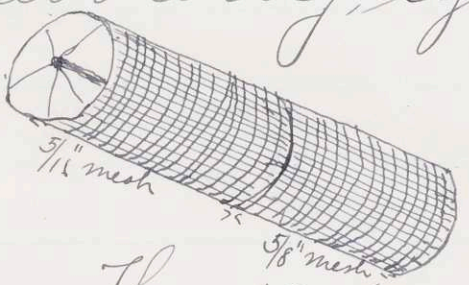
At the back balances the lowering is done by a counterpoise weight.

About three tons of coal per day are used for fuel. For this purpose they use the pea coal, and they make just about enough of this for themselves.

The coal is sifted in the mine, on a round sieve of 3/4 inch mesh. The coal not passing through is sent out of the mine. No account is taken of the fine stuff which is left in the mine. On the surface all the coal is dumped on an inclined grating ~~made~~

of iron bars one inch square placed one inch apart, after this fashion 

The coal remaining on this grating is called "round", and in quantity is about 83 per cent of the total amount mined.

The coal passing through this grating is then raised by an elevator and dumped on a "riddle", which is a revolving cylindrical screen 

The screen is made of two sizes of sieve, First a screen of 5/16 inch mesh, and then one of 5/8 inch. The coal passing through the 5/16 screen is called culm, duff, or

slack. That passing through the 5/8, but not the 5/16 screen, is called pea, and that remaining on the 5/8 is called nut coal.

The cost of this sorting is about three cents per ton. The coal is neither washed, nor broken, In fact it breaks rather too easily as it is.

"Drifting," "Drawing levels" and "Driving rooms" are different names given to the same work. The two latter terms are used at the Joggins mine.

The cost of driving rooms is $4.90 per running yard for the full height of the seam (7 1/2 feet) and 9 feet wide. The cost per ton of coal mined when put on board vessels varies from $1.12 to $3.00, according to the quantity mined. Perhaps a fair

average would be from $1.50 to $2.00.

All work is done by contract. No day work. The contractors are overlooked by the underground mining engineer, assisted by his deputy.

The cost of getting the coal to market varies, more or less according to the distance. No coal is sent south of New York. Prices are as follows.

To St. John	85 ¢ per ton.
Dorchester	67
St Andrews	90
Annapolis	90
Yarmouth	$1.25
Windsor	82
Ports in U. S. east of Portland	1.40
Portland	1.50

West of Portland and east of Cape Cod $1.60 per ton
New York 1.90

Vessels are chartered by the company for the season, and can be sent anywhere with cargoes, and freights be paid according to the rates agreed upon at the time of chartering

The draining takes only five or six hours every Saturday night. The water during the week flows to a pit about fifty feet below the working level. About 600 feet above the working level is another level leading to the sea. The water is drawn in a peculiarly shaped water car to this level, and allowed to flow out.

The water car is made of

an old boiler. In the lower end is placed a valve that opens by the pressure of water from the outside ~~and~~ as the car is lowered into the water When the car is full and is drawn out, the pressure from within closes the valve

The valve is simply part of the end hinged so as to open inside, and made water tight when closed.

When the car has arrived at the proper place, a wedge underneath opens another valve, and the car is very quickly emptied.

The cost of draining the mine is about five dollars per week.

To ventilate the mine a small furnace with a chimney

is placed at the mouth of the shaft used by the men. The whole arrangement is called a "lamp". The air goes down the main slope, and comes up this other shaft.

Even this is not used all the time, as the natural ventilation is oftentimes sufficient. The cost of this lamp is very small, a boy being paid 50 cents per day to tend it, and the daily amount of fuel used being one third of a low of poor coal that could not be sold.

The quantity of air supplied is about 11000 cubic feet per ~~hour~~ minute, which is to be increased to 18000. They allow 100 to 150 cubic feet per man per minute.

The number of men and animals ventilated is 75. 56 of the men are cutters.

The mine is inspected every morning by the "sulphur boss" with a safety lamp. If he finds any gas in a room, he makes a mark on the miner's shovel, and places it in front of the door. The miner, before going to work, leaves his lamp outside, goes in and beats down the gas with, perhaps, his coat, or other piece of cloth. The air current then carries it away. If the miner is a new hand, and afraid to go in and drive out the gas, an experienced miner is sent in with him.

There are employed about the mine 55 cutters, 30 fillers, and, besides these, boys to run cars &c. One man generally sends out

5½ car loads per day, each car being supposed to contain about 1600 lbs. The men are paid for such a car load 43 cents. Two cars per day of each miner are weighed, and the weight of these is taken as an average. If a car holds more than 1600 lbs, he is paid for the extra weight. The miners can guess very nearly at the proper amount, and sometimes the cars don't vary 30 lbs for a week.

The grades of coal mined are round, nut, pea, and culm. The pea is all burned at the mine, and the prices of the other grades are as follows,

Round	$2.50	per ton
Nut	1.50	" "
Culm	.75	" "

83% of the coal is round.

Common miners' lamps are used. The oil used is fish oil, mixed with a little mineral oil.

The guard against gas is good ventilation and inspection.

The timbering is by sluts. An upright piece on each side of the level or room, and a cap across the tops. These have to be not more than three feet apart, as required by the Nova Scotia law. The timbers are furnished by the company, cut into proper lengths by them, and put in by the men. The life of these timbers is about five years on the slope, and ten years in the levels. The cost of timbering

is from $\frac{1}{8}$ to $\frac{1}{4}$ cent per ton of coal mined.

DAILY REPORT.

JOGGINS COLLIERY.

..... *day of* *188*

Cost per Ton.

Cutting,.....

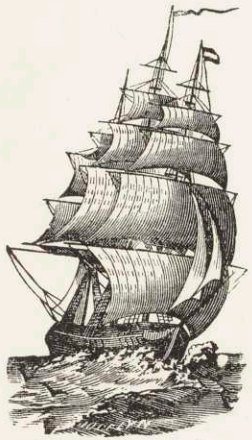
Underground Exp......

Total Exp. per Ton,

.....

Manager.

Shipped, *in good Order and Condition by the* **Joggins Coal Mining Association,**
on account of , *in and upon the*
called the *whereof*
is Master for the present voyage, now lying in the Port of Joggins, and bound
for *viz.:--A Cargo of* **Joggins Coals,**
consisting of *Tons*
more or less, to be delivered in like good order and condition, at the aforesaid
Port of *(the dangers of*
the seas only excepted,) unto *or to*
Assigns, he or they paying freight for the said Coals
Tons *Coal.* *per Ton, Mines measure.*



Daily Sun Steam Print.

In Witness Whereof, *the Master or Purser of said Vessel hath affirmed to Bills of Lading, all of this tenor and date; one of which being accomplished, the rest to stand void.*

Dated at JOGGINS MINES, this *day of* *188*

DAILY REPORT.

Loggins Mines, N. S., ... 188

Arrivals, ...

.....

.....

Sailed, ...

.....

.....

Vessels on berth ..... *loading* ..... *coal,*

.....

will finish .....

Vessel next in turn, to load ..... *coal,*

TONS.

Coal mined, ...

" *banked,* .....

Coal shipped, { *From the Pit,*
" *Bank,*

..... *Agent.*

Blanks used at Joggins Mine.

DAILY REPORT.

DAILY REPORT.

JOGGINS COLLIERY.

..... *day of* *188*

Cost per Ton.

Cutting, ...

Underground Exp. .....

Total Exp. per Ton,

.....

Manager.

..... *Agent.*

Blanks used at Joggins Mine

112

ALLOCATION.

Date.	Items.	Enlargement.		New Works.		Mining Expense.		Repairs.		Total.	

Printed and Sold by Barnes & Co.

CHARTER PARTY.

Saint John, N. B., 18

It is this day mutually agreed between
Owners of the good Ship or Vessel called the

Master of the measurement of Tons,

or thereabouts, now
and JOGGINS COAL MINING ASSOCIATION.
THAT the said Ship being tight, staunch, and strong, and every way fitted for the Voyage, shall proceed, with all despatch, to Joggins Mines, Nova Scotia, and there load in turn from charterers, their agents or assigns, a full and complete cargo of coal under deck, not exceeding what she can reasonably stow or carry, over and above her Tackle, Apparel, Provisions, and Furniture; and being so loaded, shall therewith proceed to Saint John, N. B., Moncton, N. B., Sackville, N. B., Dorchester, N. B., Saint Andrews, N. B., Hillsboro', N. B., Annapolis, N. S., Yarmouth, N. S., Windsor, N. S., Digby, N. S., Wolfville, N. S., any port in the United States east of New York, as may be ordered on signing Bills of Lading, or so near thereunto as she may safely get, and deliver the same on being paid Freight as follows: If ordered to:—

Saint John, N. B., 85 P
Moncton, N. B., 67
Sackville, N. B., 67
Dorchester, N. B., 67
Saint Andrews, N. B., 90
Hillsboro', N. B., 75
Annapolis, N, S., 90
Yarmouth, N. S., 125
Windsor, N. S., 82
Digby, N. S., 82
Wolfville, N. S., 82
Port in the United States, east of Portland, Me., 140
Portland, Me., 150
Port in the United States, west of Portland, Me., and east of Cape Cod, 160
Port in the United States, west of Cape Cod as far as New York and including New York, 1.90

(The act of GOD, the Queen's Enemies, Fire, and all and every other Dangers and Accidents of the Seas, Rivers, and Navigation, of whatever nature, and kind soever, during the said Voyage, always mutually accepted.)

Freight payable in cash on right delivery of cargo.

Charterers not to be held liable in case of delay caused by accidents or the refusal of the miners or men to work, strikes at the mines or on the railroad.

It is agreed that as this Charter Party is entered into by the Charterer for account of another party, his or their responsibility ceases as soon as the cargo is on board; the vessel holding a lien upon the cargo for freight and demurrage.

The usual custom of each Port is to be observed by each party in cases where not specially expressed.

Days are to be allowed the Merchant (if the Ship be not sooner despatched (for loading, and Days for discharging Cargo. If longer detained, Demurrage to be paid Vessel at the rate of Dollars per day, day by day.

Penalty for non-performance of this agreement, estimated amount of Freight.
This Charter to be subject to per cent. commission, due on signing this Charter Party, vessel lost or not lost, payable to or order.

Witness.

Blanks und at Jeffins Mine

JOGGINS COAL MINING ASSOCIATION.

Month ending *188*

Date.	Items.	Enlargement.		New Works.		Mining Expense.		Repairs.		Chaldrons Raised.	Shipped.			Local Sales.			Colliery Dwellings.			Used at Works.			Stock.			Remarks.
											R.	N.	C.	R.	N.	C.	R.	N.	C.	Engine	Shops	Furnace	R.	N.	C.	

Spring Hill Mine.

Captain of the day

Morse.

Assignment of subjects.

1. Geology.	Barton.
2. Seam, Section &c.	Barton.
3 Shafts, Levels &c	Rich
4. Hoisting	Morse.
5 Forling.	Robinson
6 Cost of drifting &c.	Robinson
7 Draining &c.	Robertson.
8 Ventilation &c.	Richards
9 Men.	Frost.
10 Lamps	Rich.
11 Timbering	Robertson

The relation of hills, ridges and valleys to the coal is the same as at Joggins. All the effects are obliterated by the drift

The dip of the strata at

the mine is from 30° to 32°. Farther away, but in the immediate vicinity it varies from 15° on the S.W. side to 76° on the N.E.

The strike of the strata is from N.E. to S.W.

The thickness of the coal seams varies. On the upper bed it is eleven to twelve feet. On the central bed it is eleven feet, while the lower bed is thirteen feet thick.

The strata above are largely composed of sandstone with a slight mixture of shales. The strata below are composed of sandstones and shales in about equal portions.

There are a large number of coal seams in

the vicinity. These vary in thickness, some being about one foot thick, while one of the seams is nearly as thick as any now worked. None of these seams have, as yet, been worked.

The principal fossils are Sigillaria and Stigmaria. Calamites are not very abundant. There are also found quite a number of ferns.

The stratigraphical distance between the middle and upper seams is about 75 feet; between the middle and lower seams, 350 or 400 feet.

The coal is brittle; more so than at Joggins. There are slate bands certainly in the middle seam, perhaps in

the upper, and possibly in the lower, although it was said that there was none in the lower seam.

The character of the roof and floor is generally good. There are a few pot holes but these are very rare.

"Mode of work;"

The holing-ply in the middle seam is 2½ feet from the top. The drifts are carried in fourteen feet. On removing the coal, the men cut in at the holing-ply and remove the upper portion. Then they cut away in the lower part of the bench, and put in a charge more than two-thirds of the way to the top. By this means all of the coal is obtained.

There are three shafts.

The slope of the upper one is 32°, of the middle one 29° and of the lower 30°. The length of the upper shaft is 650 feet, of the middle more than 800 feet, while the lower shaft is 1300 or 1500 feet deep, both of these latter figures being given to different members of the party by different mine employees.

The shafts are 9 feet wide, 9 feet high at the lower part and 7 feet near the ground. The levels are 8 feet wide where there is a single track, and widen out to 12 feet where there is a double track. The balances are 10½ feet wide.

The levels and rooms are 6 to 7 feet high on the lower side, and on the upper side are higher, as the roof follows

the slope of the seam.

The single balances are 350 feet apart, the double balances 700. These balances are 400 feet long, with rooms 340 feet long, 12 feet wide, and 34 feet between the rooms.

The cost of labor for the shafts is $18.00 per running yard and the cost for timbering is about 25¢ per yard. From this should be deducted the value of the coal mined.

Hoisting.

Not much information upon this subject was obtained as the managers seemed rather reluctant to impart the knowledge, and give the figures. The engine is in the 1300 foot level, West slope (South seam). The engine is similar

to the one at Joggins. There are two cylinders, 22 inches in diameter, and 36 inches stroke. The rope is 1⅛ inches in diameter. As it comes from the cars it runs over two pulleys 6 inches in diameter, and from these it passes on a drum 9 feet in diameter. The drum has no brake, but is driven by maple cog wheels in the centre of the drum. The cogs on the driving shaft are of steel. These steel cogs last nine years; the wooden cogs last longer than iron.

The rope is 1⅛ inches in diameter. It is made in Montreal by a new process. The wires are made into strands, and the strands

into a rope, all at the same time. By this means, the strain on the fibres is uniform.

A mark of white paint is made on the rope, as a guide to the engineer, that he may know when the car is at the proper spot.

The hoisting engine in the east slope, middle seam is like the other one, except in the size of the cylinder. This is 18 inches in diameter the size of the one at Joggins. The hoist is 800 feet.

On the north slope, the diameter of the cylinder is 15 inches. Otherwise the apparatus is like the others. This latter machinery came from the Albert mine.

Four cars hoisted

together are called a "rake"
The cars weigh 800 lbs, and the average load is 1600 lbs. This makes a total load of 9800 lbs coming up. To partially counterbalance this is the weight of the four empty cars going down, which is 3400 lbs, making a dead hoist of 6400 lbs.

The amount of coal hoisted per day averages 1000 tons, and it is proposed to increase this yield to 2000.

The slack is used in the boilers.

The only sorting done is to run the coal down a chute, having a grating about 12 feet long, made of iron bars inch sq bars, set on edge, and ½ inch apart.

The slack goes through. The slate is picked out below before the coal goes into the car. There is no washing, no breaking, nor no sorting in the mine.

The slack sells at 85¢ per ton. It is used at the mine for steam purposes and for coke. It is used somewhat in Moncton for gas making, but is not particularly good for that purpose.

The most of the coke is now sent to Montreal where it is used in sugar refineries.

The cost of mining is $1.00 per ton. Screened the coal sells in the cars at $2.45. Counting in the slack, the selling price would average $1.95. The cost of sorting is 2½¢ per ton.

No coal is shipped to the U. S. All is sent to Montreal, Moncton, Quebec, St John, Londonderry &c.

The cutting is done by contract. The cost is 35 ¢ for 1600 lbs. This price varies slightly. The cars are filled by laborers. Other laborers are paid by the day.

The inspection is the same as at Joggins.

The cost of shipping was not obtained.

There are two pumps, a Blake, and a Cameron, which are 800 feet from the surface. The Cameron pump was idle. The size of each of these pumps is 16 inches diameter and 24 inches stroke, with a capacity of 350 gallons per minute.

Steam is brought down from the surface, and is condensed as it leaves the machinery. A loss of 5 pounds in pressure is noticed between the surface and the pump.

A new pump is being put in, 1300 feet below the surface. It is an Allison pump, made in Pittsburg, Pa. It is 6 feet stroke, and 30 inches diameter of steam cylinder. The water cylinder is 15 inches in diameter and 6 feet stroke. The capacity, at 12 strokes per minute was calculated at 16.200 gallons per minute.

The ventilation of the upper and lower levels is by means of fans. The middle level is ventilated by a lamp, as

at Joggins.

The size of the lower fan is 14 feet diameter, and 7 feet wide, and it makes about 40 revolutions per minute, furnishing about 50000 cubic feet of air. It sends the air down the shaft. The width of the shaft gradually increases towards the bottom, and by this means, compression of the air is done away with.

The air, upon entering the mine, is allowed to follow its own course, going where it will.

The size of the engine is as follows. Cylinder, 12 inches diameter, 36 inches stroke.

The fan for the upper level is a little smaller than the one just described.

The cost of ventilation is about $80.00 per month.

The rooms are 360 feet long, and are inspected every morning by the "fire boss" The precautions against explosions of gas are the same as at Joggins.

The number of men and boys ventilated is about 700. The day shifts are 10 hours long, and the night shifts 14. The shifts change every week.

There are about 700 men and boys employed about the mine: The grades and wages are as follows:

Superintendent.

An Underground mining engineer who gets $70.00 per month.

Foremen, who get about $1.60 per day, some $50.00 per month.

Coal cutters, $2.75 to $3.00 per day.
Coal fillers, $1.25 to $1.50 per day.
Bankmen $1.20 to $1.30 per day.
Screen men $1.10 per day.
Engineer, $1.35 " "
Firemen, $1.10 to $1.35 " "
Boys 45¢ to 90¢ " "

The mine is supervised according to the rank of overseers.

An inspection by Mr. Madden, government inspector is made once a month.

The amount of coal per car is about 1650 lbs. This is obtained by averaging. The total quantity of coal shipped per month is divided by the total number of cars from the

mine, and this result is taken as the average weight per car.

The cost of timbering is 2½ ¢ per ton of coal mined. The contractors are permitted to do this timbering if they are considered competent. Otherwise the work is done by the company.

The timbers are of spruce, cut on land owned by the company.

Acadia Iron Mine.

Captain of the day - Rich.

For this mine, special questions were prepared. The questions and assignments were as follows.

1 Sketch of working.

Morse.

2. Routine for moving the ore, stope to level, level to dump, dump to furnace.

Rich

3 System of advancing face of stope, and of managing the worked-out part, for filling-in, &c.

Robinson

4 Ventilation how much, and how much needed.

Frost.

5. Draining and pumping

Robertson

6. Geology of deposit, probable origin, age and kind of country rock, surface indications for prospecting.

Barlow.

7. Men, wages &c.

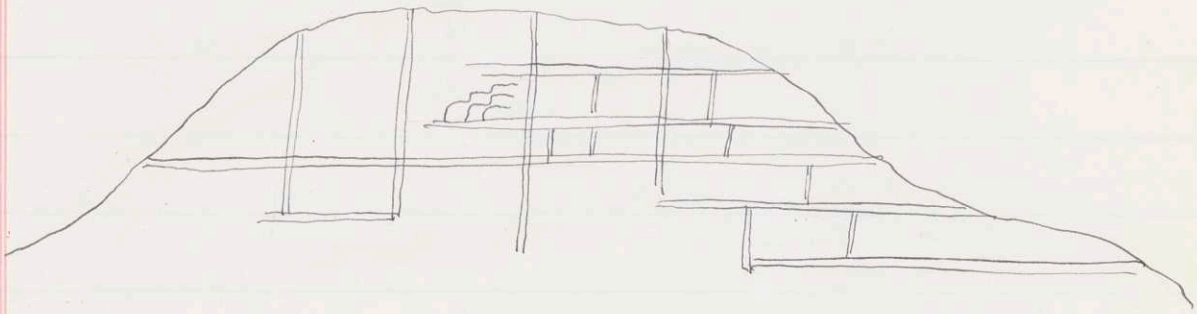
Richards

The mine is in a high hill, and is worked by means of adit levels, driven in from the side of the hill. There is one of these levels extending through the hill, and other shorter ones, above and below.

There are several shafts, one of them extending as deep as any level is found. Others are driven part way down. The deep shaft is, or will be, the pump shaft. The others are used for hoisting up ore, for ven-

tilation &c.

Plan of Mine

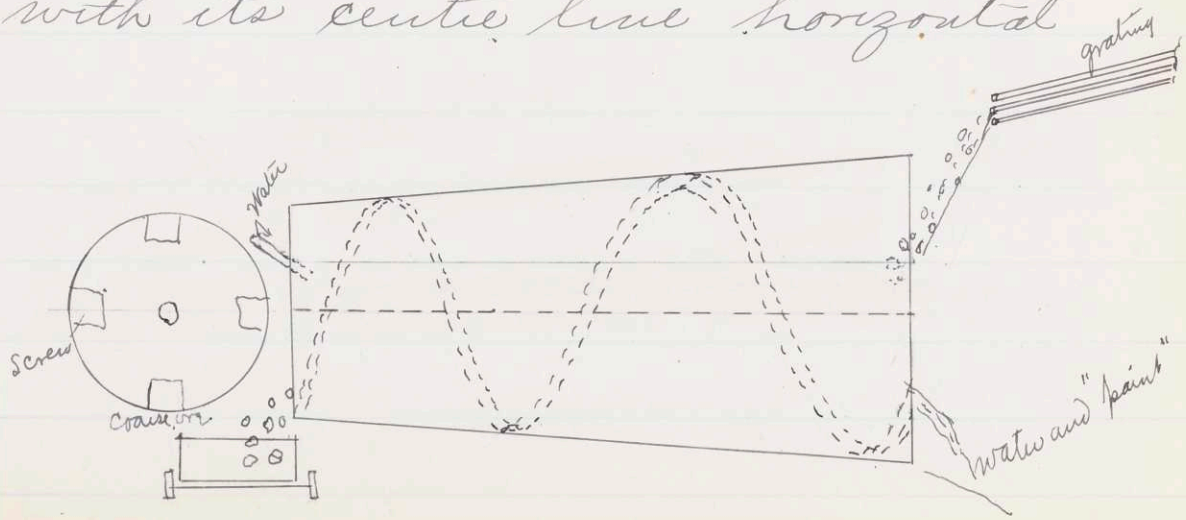


The ore, at the stopes, is loaded on the cars, each car holding 1¼ tons. The cars are then drawn to the main shaft, and hoisted, in a cage, to the main adit.

From this place, the cars are drawn by a horse, four cars ~~being~~ comprising one load, through the main adit, to the upper end of an incline, and then are lowered to the bottom. From loaded cars going down draw up four empty ones. The cars, of course, go down by

the force of gravity, and the speed is regulated by a brake on the drum, around which the cable is coiled.

At the foot of this incline, the clean ore is dumped directly into cars, and sent down to the furnaces. The dirty ore is taken to the washhouse. It is there dumped into a large bin with a grating in the bottom, set at an angle. The finer part passes through this grating into the washers. These are shaped like the frustrum of a cone, with its centre line horizontal



The washer is 10 feet long 5 feet ~~wide~~ in diameter at the larger end, and 3 1/2 feet in diameter at the smaller end.

A screw is attached to the inside of this washer, and water turned in at the smaller end. As the cone revolves, the coarser portion of the ore settles to the bottom, and is carried towards the smaller end by the thread of the screw, while the finer portion (called "paint") is washed out at the larger end. This "paint" is kept by itself and used in the furnaces being mixed in proper proportions with the coarser part.

The ore, after washing goes to the cars, and this, with the clean ore from the mine, is sent on a railroad about 3 miles long to the furnaces, where it is smelted.

The mining is done by

overhand stoping. The base of the stope is carried ahead first, and when that is far enough advanced, another set start above.

Each man does his own timbering, making a tight roof over him, as a flooring for the man who is working above.

The height to which each man mines his stope is 8 feet. They usually run only two stopes at a time

The ventilation is natural No difficulty is experienced, excepting after a dynamite explosion.

Draining.

At the present time the water is allowed to flow down the main shaft to a place 85 feet below the main adit. From this place two Cameron pumps located at the bottom of the shaft raise all the water, and carry it,

by 10 inch pipes, to within 500 feet of the opening of the level. From here it flows out of the mine.

In the future, all the water is to be allowed to flow to a lower level now being driven, and to run out of the mine by an adit.

Geology.

The deposit seems to be in the shape of a vein running about S.E. and N.W. through the hill. Possibly the form of the hill may be due to the vein. The enclosing rock "wall" is probably a volcanic rock, diorite or diabase.

The dip is 20° or 22° from the vertical, towards the south.

The thickness varies greatly. In some parts it is

4 feet, in other parts it is a great many feet. It is very indefinite.

For surface indications there are found yellow limonite stains and pieces of ore.

The deposit is composed of limonite, penetrated often, and underlaid always by ankerite and sydhoplesite (46% Fe with Mn, Mg, & Ca) The limonite has been formed by a change from carbonate. There is no satisfactory reason given why the carbonate should have formed within volcanic walls.

140 men are employed about the mine, miners, laborers, fillers, teamsters. Men working outside in the wash-houses and

in other places. The best men get $1.50 per day, and the laborers $1.25.

Acadia Blast Furnace.

Special questions were prepared for the blast furnace.

Captain - Richards.

Questions and assignments as follows.

1 Cup and cone arrangement. life of furnace. length of campaign.

Frost and Rich

2 Heaters and boilers, kinds, size and management

Morse

3 Charge; ores, lime flux, magnesia flux, alumina flux, sources, costs, cost of fuel.

Richards

4 Pig bed, tappings, times, quantities, grades. prices in market. localities of market chief competitors.

Robertson.

5 Tuyeres, number, kinds, life, crucible, construction lump dam or slag eye &c.
Robinson.

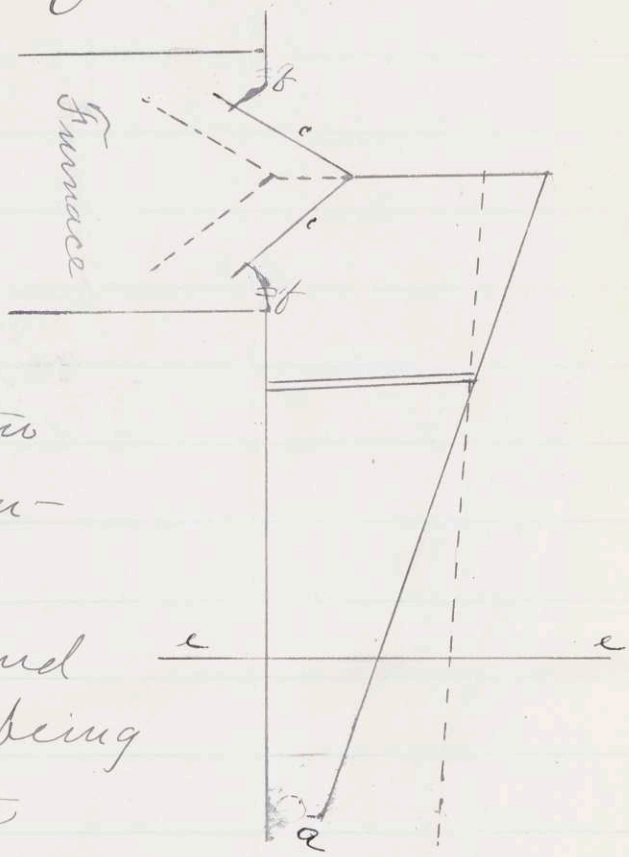
6 Men, wages &c.
Richards.

The furnace dimensions are as follows, #

Height	65 feet
Diameter at top	8 "
" " bosh	19 "
" " crucible	8 "
Height of boshes	23 "

The cup and cone arrangement is a device for feeding the furnace, and at the same time, for keeping it open as short a time as possible. The construction is as follows. In the top of the furnace, a cone (called

a "bell" by the furnace men) is hung.



The charge is dumped on top of this bell at c. The bell is then lowered, a combination of gear wheels, and a crank at a being used, and the charge then drops into the furnace.

The height of the charge in the furnace is ascertained by sounding, by thrusting a long iron rod through the holes f. At e is a screen to protect the workman from gaseous fumes, while lowering and raising the bell.

The life of a blast furnace is varied in length. One of the Acadia furnaces ran 2½ years and was then banked down. Mr Jamme mentioned instances of furnaces having lasted 10 or 12 years, or even longer. In this country an average time would be perhaps 2 or 3 years.

The heating is done by Siemens-Cowper stoves, of which three are used for one furnace. Two of these are heating, while one is in blast. They change every hour and a half.

The stove is 60 feet high, and 5 feet inside diameter to within 6 feet of

the top. In this upper part is a large space, the entire diameter of the stove.

The outside diameter of the stove is 2½ feet. The thickness of the stove between the two radii is filled in with bricks 17"x1½"x1½" making a checker work, with 4-inch openings, through which air can pass.

The air and gas comes in at the bottom, passes up through the circular opening in the centre of the stove to the large space at the top, where they are allowed to burn. (There is one entrance where waste gases come into the stove, and another where air is admitted. These

openings are regulated by valves.

The gas is allowed to burn for 3 hours and then put into blast for 1½ hours. All the valves are closed, air turned on from the blast, and the valve leading to the furnace is opened. The blast is heated to 1600° F.

The boilers were made by Galloway and Son. There are six of these in the boiler house. They are each 34 feet long, 7 feet in diameter. For one furnace three boilers are used, and for both furnaces five, thus always having a spare one.

Slack will serve as fuel, but gas is more

often used. There are fire-places and two circular flues for about half the length of the furnace, and at this point, the two flues join together, forming a large elliptical flue.

Through this elliptical flue are vertical water tubes.

The gas is admitted by a pipe, at each side of the front of the furnace. It passes through the two circular flues, then through the elliptical one, returns on the sides, and again advances under the circular flues.

The ores in the charge are limonite, sydroplesite and ankerite. The ankerite furnishes the magnesian-

flux. The quantity of iron in the different ores is as follows.

Limonite	37-39 %
Sydroplesite	46 %
Ankerite	10-11 %

The limestone is obtained from Brookfield, 10 miles beyond Truro.

The fuel is coke, made by themselves, from slack from Spring Hill. This coke is very impure, sometimes containing 20% of ash

The proportions of the different parts of the charge were not given, but were kept as private property. But, roughly, the charge was

7 Barrows coke.
1 " Soft coal.
3 " Limestone

1 Barrow Ankerite
8 " 2 ore

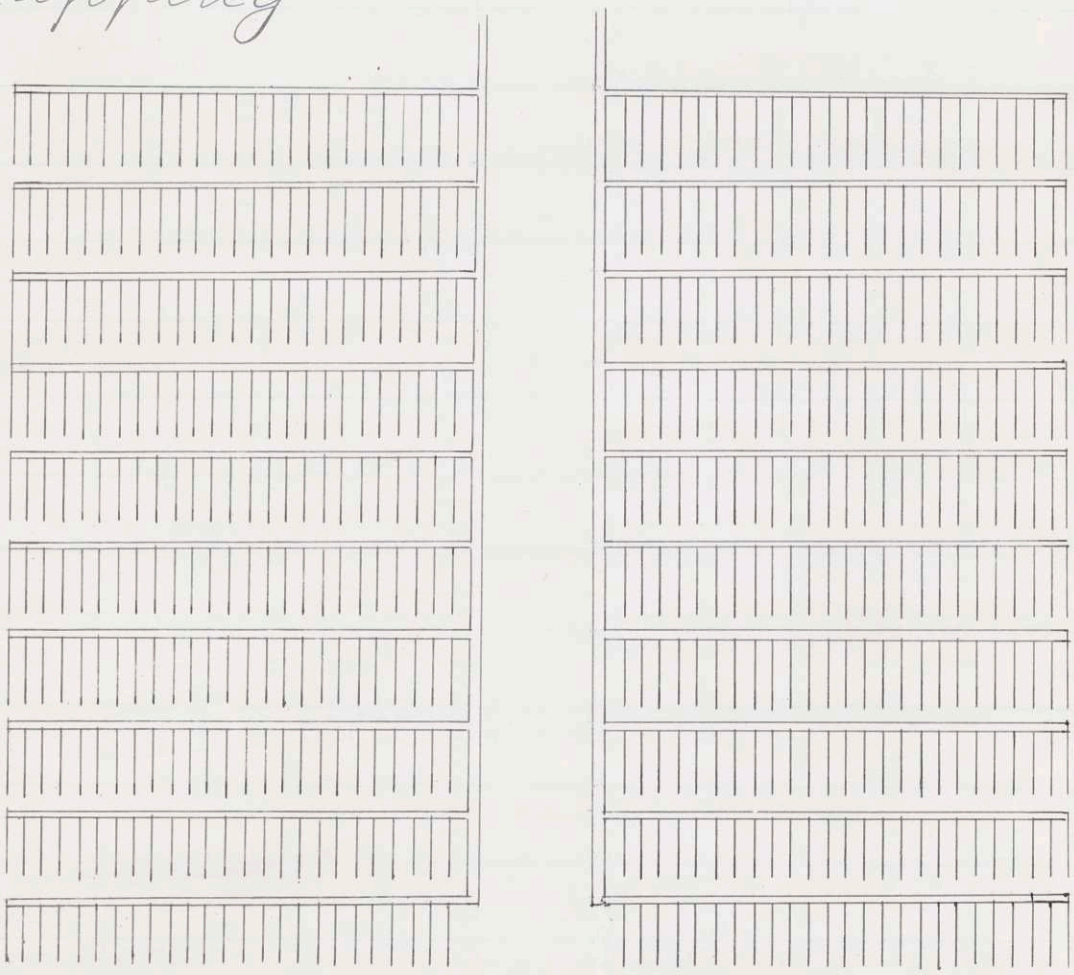
The proportion of fuel to ore was usually 40 to 86 but when were we were there they were running with a proportion of 40 : 92.

The slag made is very basic, so much so that it will slake upon exposure to the air. This was seen at slag heaps by the furnaces.

Over one ton of coke is required to make one ton of iron. About 1 ton 12 or 14 cwt., sometimes 1 ton 16 cwt. This is the furnace ton, consisting of 2268 lbs.

The pig beds are laid out directly in front of the tap hole of the furnace. There are two beds

each of them containing 10 sows, with 25 pigs to a sow. Hence the maximum capacity is 500 pigs to a tapping



The furnaces are tapped three times per day.

The grades of iron made are different numbers of forge

and foundry pig

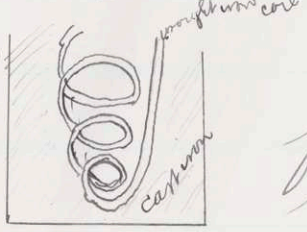
The cheapest price at which the pig iron is made is $11.00 per ton

The market for the iron is exclusively in Canada, but there extending all over the dominion from Halifax to Hamilton. Two-thirds of it goes west of Montreal. The total production is 40 000 tons annually, while the total consumption in the dominion is 63 000 tons.

The chief competitors are the Scotch, there being a protective duty of only $2.00 per ton against English iron while against American iron the duty is $6.00.

There are six furnaces

made of cast iron, moulded around a coil of wrought iron



The life varies from five minutes to 2 years. It depends principally on the amount of sulphur in the ore, or the quantity of sulphuric acid in the water.

The crucible is made of fire bricks, 8 inches in diameter, and is about 5 feet high.

There was no tymp or dam here; instead of these, there was a "cinder notch."

There are three rings of water coolers.

1st. A mantle above the tuyères just below

the boshes,
2nd. Around the lowers - and
3rd. A ring fully 8 feet high, around the crucible

The blowers were built by Daniel Adamson & Co, Manchester England. There are two of these, one at present being idle. Each is of 250 H.P. and will deliver 15000 cubic feet of air per minute, at a pressure of 4 pounds

The steam cylinder is 8 feet in diameter. The inside diameter of the blower is 72 inches, outside diameter 96 inches. Stroke 5 feet, diameter of fly-wheel 14 feet.

This fly-wheel weighs 14 tons. One half of the wheel

is solid, and the other half hollow. The heavier part counterbalances the upward stroke of the piston.

Halifax Company.

Special questions were given out for this mine.

Captain Barton, Questions and assignments as follows.

1 Plan of the workings of the old mine.

Morse

2 Plan of the workings of the new mine, boundary lines between them, space left.

Robinson

3 Cause of explosion, description and result of it after fire, and how fought, by water, steam, CO_2 or what.

Frost.

4 What precautions in new mine to avoid recurrence of explosion.

Rich

5 Hoisting engine and cages. Boilers and fuel
Robertson.

6 Ventilating fan, air quantity, dividing, regulating, apportioning, testing &c air currents.
Richards.

The seams belonging to this mine have a dip of about 23°. The strike is nearly E and W.

There are four principal seams, the upper one being called the "Main" seam, and below this are, in order, the "Deep" seam, the "Third" seam and the "McGregor" seam.

The thickness of the different seams is as follows.

Main seam	38 to 40 feet	
Deep "	23 "	
Third "	12 to 13 "	
McGregor	About 8 "	

The distances between the veins stratigraphically are,

Between Main & Deep seams	150 feet
" Deep & Third	170 to 180 "
" Third & McGregor	160 to 170 "

Between the Main and Deep seams there is a narrow tunnel.

Fire first caught in the Main seam, and traveled by the connecting tunnel, to the Deep seam. Three weeks after the Main seam took fire, it was observed in the Deep seam. Prof. Richard was of the opinion that the fire had been burning in the Deep seam for some time

before it was discovered, he thought that it took fire at the first explosion.

The seam had been worked by a slope shaft and also by a vertical one.

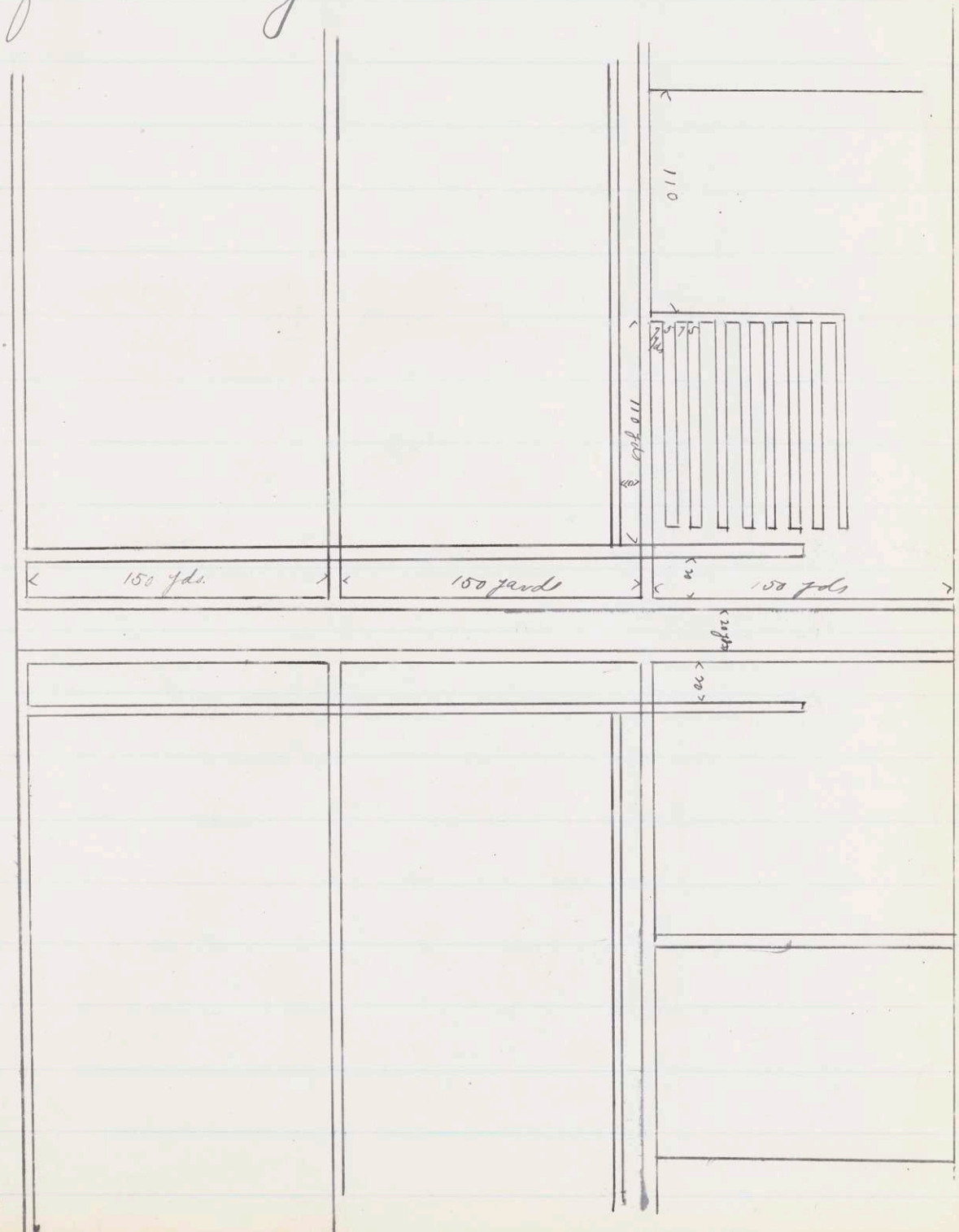
These two seams are now flooded with water.

Very little information was obtained concerning the plan of working, either of the old or the new mine.

In beginning work again the two upper seams were not touched, but work was done on the Third, and McGregor seams.

Between the slope and the rooms, 20 yards is allowed, and between balance 110 yards, between rooms 7 yards and with rooms 5 yards

wide. The following sketch will give an idea of the manner of working



The cause of the explosion is unknown, but it is believed that it happened through the ignorance or carelessness of some green hand, but, as no one who was in the mine came out alive, no information can be obtained. Perhaps a miner went into a room without due precaution, and the globe of his lamp burst.

The mine has not been entered since the explosion, because of the gas and water.

The first manifestation observed outside were, 1st a tremendous noise, which was first heard at about 6.30 A M Friday, Nov. 13th, 1880. Other results were the tearing away of timbers on the surface. The timbers that

supported the drum were blown away from the top of the upcast shaft. Flames or smoke came from all the shafts.

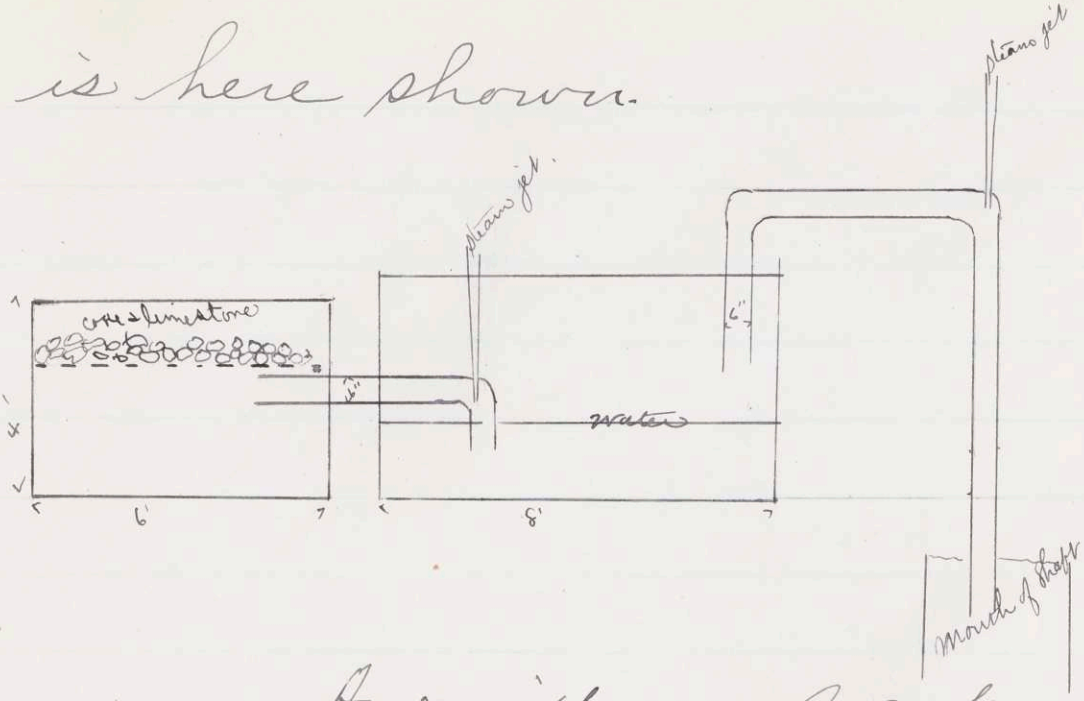
The second explosion occurred on Saturday night

Between 60 and 70 men were killed, all probably at the first explosion

There were other things noticed some time after. The ground caved in in several places, and as it did so, smoke came up through the crevices. Some houses settled, going down even fifty feet, after having been first set on fire

The fire was first fought with CO_2 by Gurney's Method. A sketch of the apparatus

is here shown.



A mixture of coke and limestone was heated (burned) on a grate and the CO_2 carried over to a larger box 8 feet square and from there by a 6 inch pipe to the shaft. As it entered the shaft, a jet of steam was mixed with it.

This method is said to have been used with success in Great Britain, but at New Glasgow it was a total failure. It is possible that the apparatus may have been to small for

the size of the mine, but it is certain that after a trial of twelve weeks, no change was noticed in the fire, and the method was abandoned.

The next and last method was to flood the mine with water. This was brought about by tunneling from an old mine (which was located about north of the Main seam) to the river.

The Main seam was completely filled with water, and the fire was supposed to be entirely extinguished, but it was afterwards discovered that the water had not penetrated through to the Deep seam in quantities large enough to extinguish the fire there. It is not known why the water has

not flowed in, but it is thought that perhaps the explosions had thrown down material into the connecting tunnel to nearly prevent the flowing in of the water.

The water now rises to within 400 feet of the surface in the Ford pit.

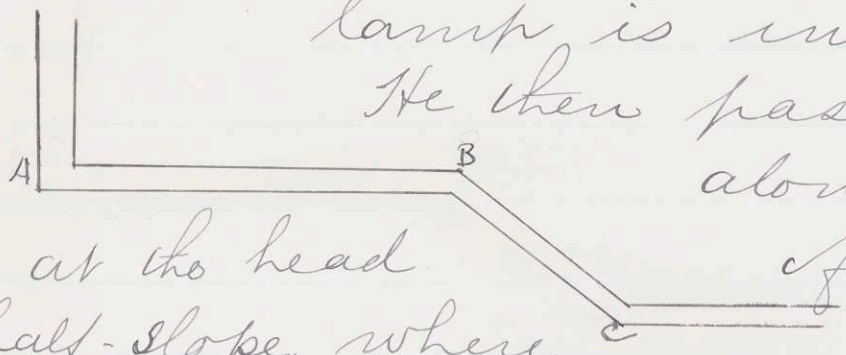
The burnt ground has never been reentered

Guards against explosions.

The rules here intended to prevent explosions are extremely strict.

In the mine, no lamps are used except safety lamps. The Clanny is altogether used. Above ground these lamps are taken care of, examined, filled, and given, in perfect order, but unlighted, to the miner. With his unlighted

lamp, he goes down the vertical shaft, to the point A at the bottom. At this point his lamp is inspected. He then passes along to



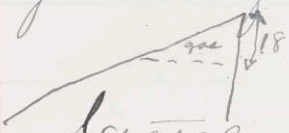
B, at the head of a half-slope, where the lamp is again inspected. From this point he goes down the half-slope to C, where his lamp is inspected a third time, and, if all is right, it is lighted for him by the inspector. At this point he waits until he is notified by the inspector that his room is ready for him. He then goes in and begins work. If he goes in he is prosecuted; the charge being that of wilful, possible destruction

of property. This is thought to be a better way than to discharge the man.

If the miner's lamp goes out during his working hours, he must pick his way in the dark to the foot of the half-slope, where there is a room in which it can be lighted, and a man to do it.

The mine is inspected twice a day; at 5 o'clock in the morning, two hours before the men go to work, (by law this must be done <u>at least</u> four hours before beginning work) and again in the afternoon; this latter inspection has to be finished by 5.45 P.M. If the inspector finds gas in a room he sweeps it out before he allows the miner to

enter; he must also make a record, in a book kept for the purpose, of every inspection, and note the quantity of gas (if any) found in the rooms. This is designated by the distance below the highest part of the room that gas is found. For instance if



gas is found at a distance of 18 inches below the highest part of the room, it is reported as "18 inches of gas"

When a miner wishes to make a blast, he drills the hole, charges it, and waits for the "shot firer" (who is also the one who makes the daily inspections) comes around. The shot firer then examines the hole to see if the ~~blast~~ charge is properly put in; also examines the room to see that there is no gas, and finally

if everything is right, he fires the charge, or permits the miner to do it, he standing by to oversee it; he then watches while the miner picks over the coal to see that no sparks are there.

If, when a lamp is returned at night (as all must be) it is at all out of order, the miner is called to account for it.

Naked lamps can, with safety be used as far as the foot of the slope shaft, but they are not used there. Few naked lamps are used at all, and then only on slope shafts.

The safety lamps are filled in the morning, and hold oil enough to last all day.

Finally, it may be said, as a summing-up, that the guard-

against explosions is in the most thorough inspection, and enforcement of such rules as have been mentioned.

Hoisting engines &c.

In the old shaft (Ford Pit) there was a direct, vertical hoist of 900 feet. There were two cages on pulleys, and the time in going from the top to the bottom was about one minute.

The engine that did the hoisting has a large drum on the main shaft, 18 feet in diameter. This drum is driven by two round cranks connected, each, with a cylinder having 5 feet stroke, and a diameter of 40 inches. This machinery was manufactured by J & C. Joyce & Co Newcastle-upon-Tyne, England

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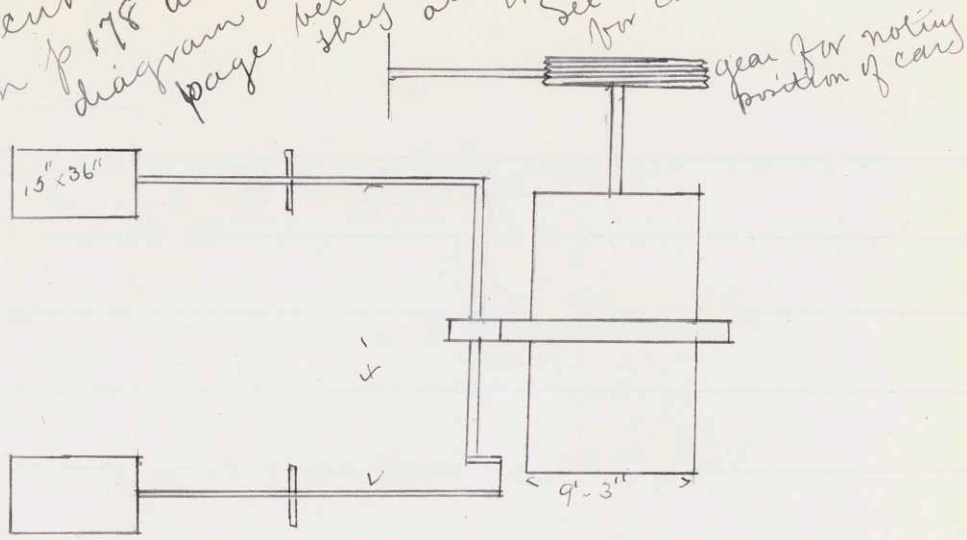
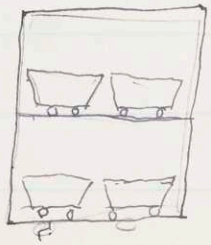


The drum has a large heavy fly-wheel in the cycle to carry it by the dead points. Around the drum ~~are~~ are wound ~~two~~ two ~~a~~ 2-inch cables one going up, while the other goes down. As it goes out from the building, it runs over pulleys, and the ends are attached to cages. Each cage has two stories and on each story ~~are~~ are placed two cars, thus making the load four cars.



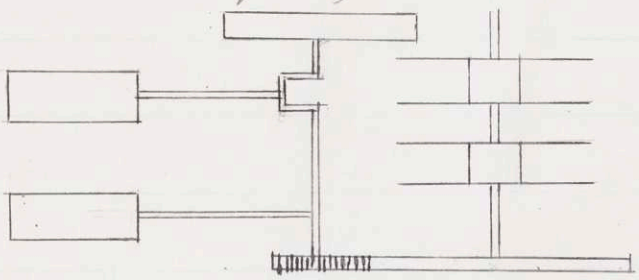
In the present shaft (a slope shaft on the third seam) they

have two small engines side by side. These were built for the Ford pit, and were designed to use compressed air, but are now used with steam.

The dimensions are as follows.

Stroke 16 inches

Diameter of cylinder 12 "



These two ~~fruit~~ engines have independent pulleys, and now but one is used at a time.

The rate of hoisting is 8 or 9 feet per second; The shaft is 1400 feet deep, Distance between levels 150 yards. The weight of coal per car is about 1400 lbs. Each

car load is weighed

The ventilation in the old mine was by means of a Guibal fan; the following data were obtained

Diameter of fan	30 feet
Width " "	10 "
No. revolutions per minute	40
Quantity of air furnished	50000 to 60000 cu. ft. p. m.

The Third seam has two slope shafts, entirely independent of each other, and each ventilated by "lamps" as they were called at Joggins. Furnaces they are called here.

The McGregor seam is at present ventilated by a furnace, but it is to be ventilated by the fan formerly used at the Ford Pit. The cost of running this fan could not be obtained, but it requires two engine men, and takes

steam from other boilers, used for other purposes.

Geology.

The strata surrounding the four seams of coal are ~~all~~ nearly all shale. This shale is very brittle - fissile. Very few fossils are found at all, and the sigillaria and stigmaria, so common at other mines, are not found here at all.

It could not be found that the outcrop has any influence upon the topography of the surrounding country. In this respect it is like Joggins, Spring Hill, and other places.

Miscellaneous

The "back balance" was first used in Yorkshire - England.

The pillars are not disturbed

on the upper left. They save the crop from, avoid surface water, and other dangers.

Acadia Coal Mine

Assignment of Subjects.

Captain - Robertson.

1. Geology	Barton
2. Seam, Section &c.	Rich.
3. Shafts, levels, &c.	Richards
4. Hoisting	Robertson.
5 Sorting	Morse
6. Cost of drifting &c.	Robinson
7 Draining	Frost.
8. Ventilation	Morse
9 Men	Richards
10. Lamps.	Robinson ~~Robertson~~
11. Timbering	Robertson.

As in all the other coal regions visited by the party, the topography of the country is not affected by the strata.

The strike is nearly north and south. The dip varies from 23° to 28° E.

The seam that is worked is 16 feet in total thickness. Of this, the upper 10 feet are now worked. Below this comes a stratum of slate 1½ feet in thickness; and, again below this slate, is found 6 feet of coal.

The whole seam is enclosed in slate and shale, the shale is much stronger than that enclosing the seams at the Halifax mine

The coal is of good quality, but the portion of the seam below the slate is not so good as the part above.

The foot wall and the roof are very good.

Very few fossils are found at present. Some specimens of Sigillaria were found when

the mine was first worked.

There are several other seams on the property, but we could get no information in regard to them. It was said to be kept secret.

The section of the seam would show first

5½ feet of coal, then in order

6 inches Slate

4 feet coal

1½ " Slate

6 " coal

The lower 6 feet of coal is not worked, as the coal is of a poorer quality than that above it. The upper seam of slate (6 inches) is the holing ply.

In getting out the coal, the miners first undercut at the holing ply, and then blow down the coal above it, with

one shot. They then cut (shear) in the lower side of the bench, put in a charge ~~also~~ in the seam, in the upper part. One blast serves to break off about all of the coal. In the lower level no powder of any kind is used.

The mine is entered by slope shafts. Of these there are three. The one farthest north is the hoisting shaft, then 60 feet distant is the shaft for the men to go in and out, and finally, near the middle one and farther south, is the upcast shaft.

The slope of these shafts is 28° at the top; this gradually and quite constantly increases until at the bottom it is 28°

There are two levels

on the same seam. the first one is 1900 feet down (on the slope) and the lower one is 400 feet below this. From the lower level, a half-slope 100 feet long, is driven.

The back balances are 600 or 700 feet apart. The rooms are 300 to 350 feet ~~of~~ long and work into each other. The distance between the rooms is 40 feet. The rooms themselves are 12 feet wide.

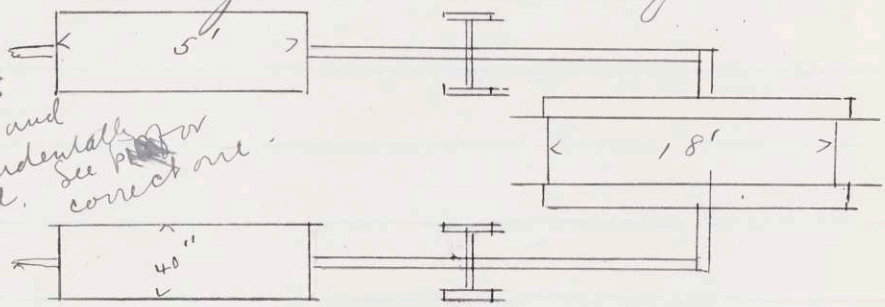
The roof on the south side is very good, and need no support of booms; on the north side, however, the roof is not nearly as good, and booms have to be used every 3 feet.

The lower level is one mile in length. It extends on the south 1700 feet, and the

remainder of the distance is towards the north.

The upper level was 1500 feet long, 800 feet on one side of the slope, and 700 feet on the other.

For hoisting, there is a double cylinder engine



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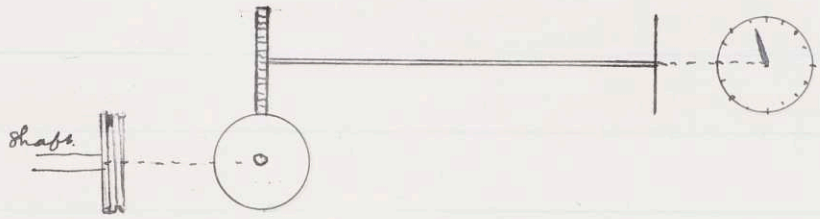
There are two eccentrics of the locomotive style. The teeth on both the shaft and drum are of iron. The distance between the arms on the crank shaft is four feet. The steam cylinders are 15 inches in diameter and 36 inch stroke.

For noting the position

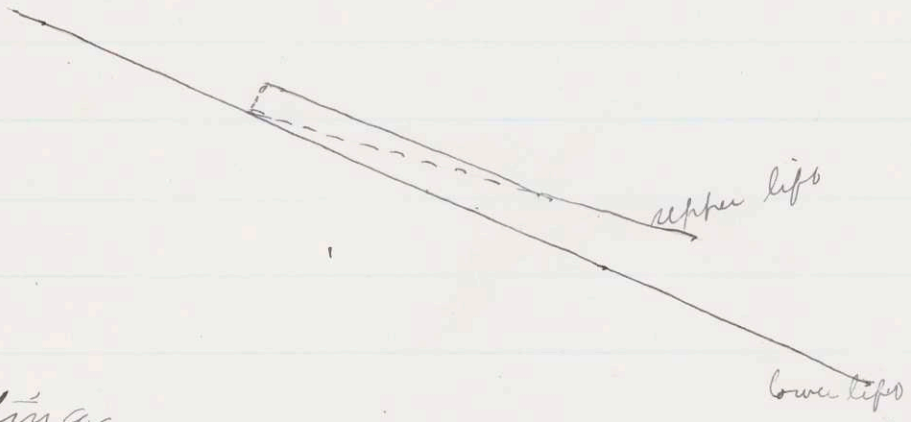
of the cars, there is an attachment consisting of a worm gear, connecting with a dial, so graduated that the engineer can tell just where the cars are. Engine made at Novelty Iron Works, N. Y.



The size of the drum is 9 feet 3 inches. This engine hoists the coal from the 1900 foot level, at a rate of 450 tons per day. For hoisting from the lower level to the upper a small engine is used, capacity 600 tons.

For changing the cars from the lower to the upper level, a peculiar arrangement is used. It consists of changing the slope of the upper level (lessening it) and

where the lower level slope joins, a portion of the upper level flow is raised at one end, giving a space sufficiently large for cars and men to pass. The diagram below will show it



Sorting.

The coal, as it comes from the mine, is dumped first on a screen or grate with bars 6 inches apart. All the coal that doesn't go through this grate is broken up fine enough to allow it to go.

From this screen the coal passes over a grating with apertures 1 inch wide. The coal

that is too coarse to go through this grating is called "round". The fine stuff drops through the grating, and is hoisted by an elevator, and dumped from the buckets into a "drum sieve" This is a screen made like a frustum of a cone with its axis horizontal, The dimensions are as follows.

Length	12 feet
Diameter at large end	5 "
" " small "	4 "

This screen has ½ inch mesh. It continually revolves, and, as the fine coal is apt to stick in the meshes, pieces of wood are suspended above and are hit at stated times by the sieve. This keeps the meshes clear. The coal remaining on this sieve is called "nut" and

that passing through "pea" or "slack".

6" grate. all thro' broken	1" grate	on - Round			
		through	½" drum sieve	on - nut	
				thro' pea or slack	

The coal is sent all over the province, and also to the United States. Considerable is sent by rail to Montreal and its neighborhood.

The coal is not a good coking coal, no is it very good for gas making. The principal and best use for it is for steam purposes.

The mining is all done by contract labor. A "box" will average about 1400 lbs of coal, and for such a box the miner is paid 37 cents. For any

excess in weight the miner is paid. At these prices he will make about $2.00 per day.

Contrary to the custom in most of the mines previously visited, ~~every~~ no carload of coal is weighed. So much is paid "per box"

In rooms, the men are paid 39 cents per cubic yard, surveying being done once a month.

In the lower level, where blasting is not allowed, the price paid per box is 49 cents.

Coal is shipped to the U. S. only in Summer, as in Winter, the shipping port is closed to navigation.

All the water in each level is allowed to flow naturally in drains placed in the sides

of the rooms, or level, or in old abandoned passages, into tanks. These tanks are made of old boilers, which are 9 feet in length and 3 feet in diameter. One of these tanks is placed at the bottom of the main slope, and the other 400 feet below, in the lower level.

The pumping is all done by one engine, which is home made. It has a cylinder 17 inches in diameter, and with 4 feet stroke. The fly-wheel is 12 feet in diameter.

Three plunger pumps are placed in the main shaft, dividing the distance equally. These pumps have cylinders of 8 inches diameter, and 6 feet stroke.

Each pump pumps the water to the one above it, forcing it into

a tank that is 32 inches in diameter, and 9 feet long. The pump that is 2800 feet down has a cylinder 4 inches in diameter, and 2 feet stroke. It lifts the water to the upper level. The pump rods are of wood. The makers of these pumps are not known.

The amount of coal burnt, and the cost are not known, as the engine is run by steam from the main boilers.

The engine makes 5 strokes per minute.

The motive power for ventilation is a Guibal fan, 24 feet in diameter and 8 feet wide. This is run by an engine manufactured by Walker Bros of Wigan, England.

This engine has a

cylinder 20 inches in diameter and 20 inches stroke, The engine makes 45 revolutions per minute.

The fan is used from April or May until the latter part of November. In the winter the ventilation is natural.

The fan is located at the mouth of the southernmost shaft. The hoisting shaft is the principal downcast shaft.

The air current is not divided until it reaches the main lift. From this place part of it passes through the level, and the remainder goes to the lower lift, traveling through the rooms and back until it passes up the upcast shaft.

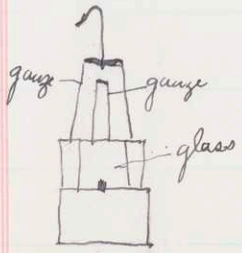
The cost of ventilation was not inquired about.

The pressure of air is usually 1 1/10 inches of water, and the quantity 60 000 cubic feet. When the speed is increased to 70 revolutions, the quantity of air is raised to 90 000 cubic feet, and the pressure to 1½ inches.

There are 150 men employed in the mine. The grades are - Agent - Underground Manager Head Overman - Deputy Overmen, who are also shot firers. - Miner.

Mueseler lamps are used here entirely. The cost of these lamps is $1.50 while the Clanny cost $2.00 to $2.50.

Clanny Lamp.



These lamps are inspected by the man who fills them, and at the bottom of the slope, they are inspected by the overman to see if they are properly

locked and in order. In some parts of the mine naked lamps are used. At heads of levels where safety lamps are required are notices stating that no naked lamps are allowed beyond; and overmen are here also to see that this rule is enforced. Naked lamps, therefore, have to be left here until the return.

The timbers are all of spruce; their life varies according to the place in which they are used. The cost is not known, but the timber is bought in the cheapest market. This is the only mine that buys its own timber.

Oldham Gold Field

No subjects were assigned here, each member of the party getting what information he could. As a consequence, some of the work was duplicated, and perhaps, some facts were not obtained.

There seemed to be but little work going on at the time we visited the place.

Oldham is 3 miles in an easterly direction from Enfield, a station (on the railroad) 28 miles from Halifax

Several mines had been, and ~~are~~ are now being, worked, some of which had paid well, and one is said to have yielded $120000 in four years.

The different places visited were.

McDonald's Mine.
Baker's Mine
(" Mill)
St Andrew's Stamp Mill.
and also a mine in the road
a "mud" mine
McDonald's Mine.

The strike here is about E and W, the dip about 35° S.

The thickness of the quartz will average about 6 inches, but to get this out 5 feet of rock have to be taken out.

"Barrel" quartz is shown in great abundance. This is caused by bending in the strata, pinching up the veins of quartz, and giving them a cylindrical appearance.

The direction of these bands was S. E. downward on the half slope.

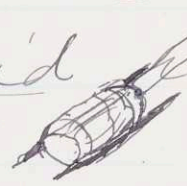
The place was considered to be favorable to underhand stoping, moving westward. By going west, more than three times as much rock could be blown out with the same amount of powder, as could be done in moving eastward. This is caused by the "dovetailing" of the veins.

The mine was said to yield from one ton of rock 2 oz 5 dwts of gold, and to be growing richer, as it was worked downward. It costs $11.50 to mine a ton of the ore, this, on account of the small ~~width~~ thickness of the vein.

There are several (four) shafts about 30 to 40 feet apart. Pillars are built up between the shafts.

Galena and mispickel are considered to be the best finders.

The hoisting and draining is done by means of barrels and a horse whim. The horse & whim are a short distance away under a shed. The hoisting, both of ore and of water, is done in a barrel, which is slid up and down on skids.



The country rock is called by the miners "Whinstone" This is a hard slate or quartzite or something of that description. This whinstone formed ¼ or ⅓ of the dump; the larger part of the

dump, and, consequently, of the rock of the neighborhood of the vein being slate.

The product of the mine per month is about 40 tons. To get this 10 men are employed in and about the mine, which is 100 feet deep

Baker's mine and mill.

Neither the mine nor mill were running, and the mill was fastened up, so that we could not enter it.

This mill is located where there is no water, and no water power. It cost $11.000.

The mine, at one time paid well, $130 000 worth of gold being obtained in four years

There is a large amount of arsenical pyrites in the

ore, This goes into the tailings which, by rain, and by means of the brook near by, and in which a large part of these tailings go, are concentrated, the mispickel remaining behind, and presumably retaining the gold. Plans have been made to recover this gold, but have not yet been put into operation.

St. Andrew's Mill.

This was not in operation the day we visited it, but we had an opportunity to examine it thoroughly.

Work is done entirely on custom ores. The price charged is $1.75 per ton for lots of more than 5 tons. Under 5 tons the price is $2.25 per ton.

The following are some of the statistics obtained by inquiry and measurement.

No. of batteries	2
" " stamps per battery	5
Cams.	double
Weight of stamp shoe rod &c.	800 lb.
Thickness of new die	5 inches
" " old " when discarded	2 "
Capacity of mill per day (10 hours)	4 tons
Kind of screen - holes	cracked
Burr towards	stamps
Weight of shoes	125 lbs
" " dies	65 "
Size of die at base	9 inches square
" " " " cylindrical portion	———
Speed —	Unknown

The distance from the overflow to the bottom of the battery is 11 inches. From the overflow to the top of the new die is 6 inches and from the overflow to the top

of the old die is 9 inches

The holes in the screen are about 3/8 of an inch long and 1/60 of an inch wide.

The stamps are said to have 25 drops per minute

The cam rings on the tappet lifters were on each side of the hub, and were shrunk in. They were in very good condition

The plates were six in number and of the following dimensions

1st plate	4'-2" long	x	5½" wide
2nd "	"	x	2' "
3rd "	"		"
4th "	"		"
5th "	4'	x	15" & 18" wide
6th "	2'-3"	x	"

The length of the first four plates is parallel to the battery,

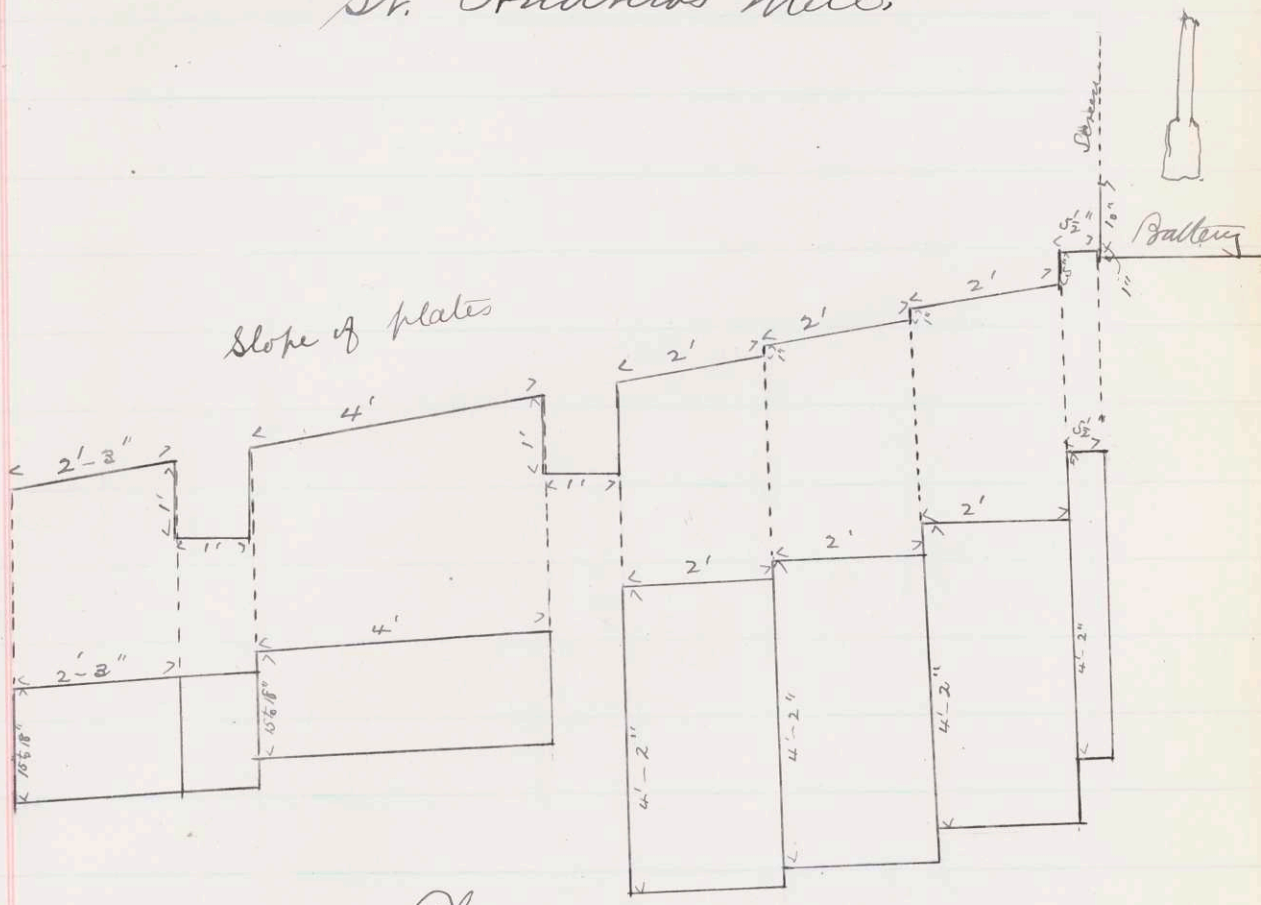
but of the last two, at right angles.

Between the 4th and 5th plates, also between the 5th & 6th, there were placed box traps. The slope of the plates is 2" to 1'.

The mill is driven by water power. Directly in the rear of it, and on a hill, is a pond of water. There is a boiler to heat the water during the winter.

It was said by an outsider that 30% of the gold was lost in the tailings that went down the brook.

Arrangement of plates in St. Andrews Mill.



Plan of plates

Mt. Uniacke Gold Fields.

As was the case at Oldham, no subjects were assigned to the members of the party, and each one obtained all the information he was able to.

The following places were visited and examined more or less thoroughly

Prince of Wales Mine
Prince of Wales Mill
Eugene Mine
Westlake Mine
Montreal Mine
Foster's Mill

Montreal Mine

The mining area controlled by the company is 150 feet on the strike of the seam, and 250 feet at right angles to the

strike.

The mine itself as now worked is 150 feet long, and about 30 feet wide at the top. At the bottom the width is considerably less.

The mine is from 35 to 50 feet deep, and is all open to day.

There are stringers, angles and leaders ~~coxing~~ (generally quartz) striking the vein in several places. At the points of contact the ore is usually richer than in other places.

The best finders are black jack (Sphalerite - ZnS) and galena.

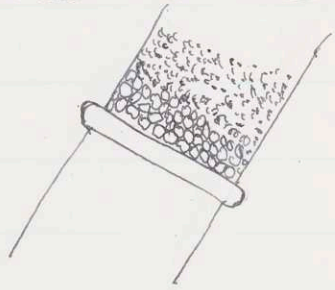
Eugene Mine

The main shaft of this mine is from 275 to 325

feet deep. Only the upper 150 feet have, however, been worked to any extent.

The width of the ~~xxxx~~ working is about 14 feet. In the centre is about 4 feet of white stone, which is barren. Just south of that is the "bull lead" about 12 to 15 inches thick. This is generally barren. South of this is good quartz.

Timbering is put in about every 15 feet. These timbers are put in very particularly, and the holes are made with great care.



Three sticks are said to be able to support 300 tons.

About 100 tons of rock are put on to support the hanging wall, and keep the roof and foot

wall apart.

There are 3 shafts, 2 for hoisting and one for getting rid of the water. This is hoisted up in a barrel. The shafts are about 30 feet apart and timber props are placed all the way between them.

The strike is about east and west, and the dip nearly vertical toward the south.

Adjoining the Eugene mine on the west is the Union mine. This had a vertical shaft from which ~~the~~ a tunnel was driven. Because of poor timbering the mine caved in, making trouble for the Eugene mine. The latter company had to timber it

up again.

The men are paid $1.25 per day. There is said to be no stealing. If a miner is detected he is at once discharged, and will not probably be engaged to work anywhere in the gold district.

Some fine specimens were here shown, of quartz with free gold visible in quite large pieces.

Prince of Wales Mill

~~At~~ This mill has two five stamp batteries, from which the tailings flow into a common box trap, and flow out from the mill by one launder.

The plates and boxes were arranged in the following order.

First - A sill 3'-3" long by 5" wide

Second. A large (brass) plate 4 feet, 7 inches long, and with a width of 3'-3" at the top, and 2', 5" at the bottom

Third. A gravel trap.

Fourth A trough 15 inches long and 1 foot wide.

Each battery had a set of plates as mentioned above, but the troughs from ~~each~~ both batteries connected with a single box trap, and thence with a single long trough carrying away the tailings.

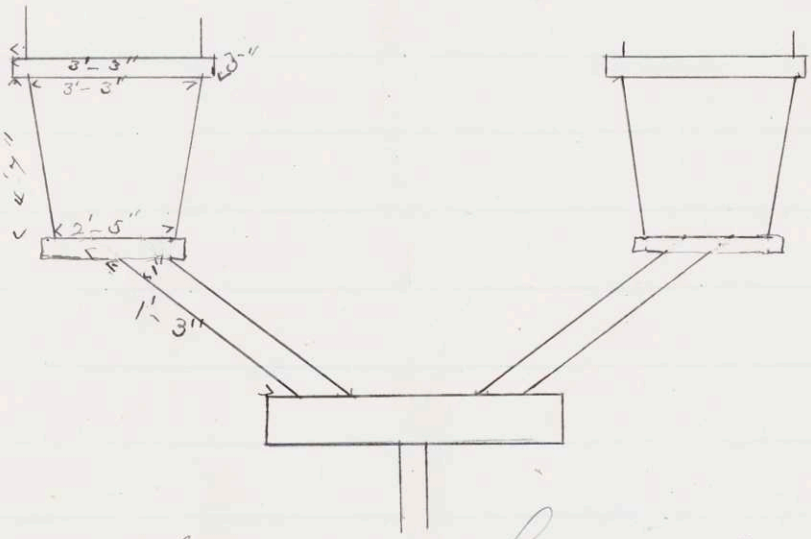
No effort is made to concentrate the tailing. The plates were stained with verdigris, and taken all together the mill seemed to be run in a very rough and wasteful manner.

We were told that

nearly all of the amalgamation takes place in the battery. About one ounce of mercury is used for every ounce of gold supposed to be in the ore.

For screens, sieves of wire of 30 meshes to an inch, were preferred.

The following is a skeleton of the arrangement of the mill and plates.



Some of the weights, dimensions &c, are.

Weight of stamp rods & shoes 750 lb

Fall of stamps 6 inches

Revolutions per minute 36
As there were double cams this gives
Drops of stamp per minute 72
Distance from die to overflow at beginning 2½ inch
" " " " " " End 4 or 5 inches
Power Steam.

The claim is made that the stamping is done in a peculiar way. The stamp falls near to the screen, This throws sand, amalgam &c all backwards, and, consequently, very little amalgam passes beyond the screen.

Prince of Wales Mine.

In this mine, the average width of the vein is 2 inches and at times this proves to be very rich.

Westlake Property.

This property was mined

to a depth of 30 feet. $17000 were spent in erecting a mill, $16000 were paid for a quarter share of the finder of the mine. $40000 worth of gold was taken out, and no more being discovered, the mine shut down.